

# Addressing the Expiration of the Shrimp Permit Moratorium



## Draft Options for Amendment 17 to the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, U.S. Waters

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# Gulf of Mexico Shrimp Amendment 17

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## Type of Action

Administrative  
 Draft

Legislative  
 Final

## ABBREVIATIONS USED IN THIS DOCUMENT

ACL	annual catch limit
AM	accountability measure
AP	advisory panel
BRD	bycatch reduction device
CPUE	catch per unit effort
Council	Gulf of Mexico Fishery Management Council
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ELB	electronic logbook
ESA	Endangered Species Act
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
lbs	pounds
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MSY	maximum sustainable yield
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
RA	Regional Administrator
Reserve Pool	Gulf Shrimp Vessel Permit Reserve Pool
SEFSC	Southeast Fisheries Science Center
SEIS	Supplemental Environmental Impact Statement
SERO	Southeast Regional Office of NMFS
SPGM	federal Gulf commercial shrimp permit

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# **FISHERY IMPACT STATEMENT**

[This statement is completed after selection of all preferred alternatives.]

# CHAPTER 1. INTRODUCTION

## 1.1 Background

The Gulf of Mexico Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS) began managing the shrimp fishery in the Gulf of Mexico (Gulf) in 1981. Four species are included in the fishery management plan: brown shrimp, *Farfantepenaeus aztecus*; pink shrimp, *Farfantepenaeus duorarum*; white shrimp, *Litopenaeus setiferus*; and royal red shrimp, *Pleoticus robustus*.

In 2001, the Council established a federal commercial permit for all vessels harvesting shrimp from federal waters of the Gulf through Amendment 11. Approximately 2,951 vessels had been issued these permits by 2006. After the establishment of the permit, the shrimp fishery experienced economic losses, primarily due to high fuel costs and reduced prices caused by competition with imports. These economic losses resulted in the exodus of vessels from the fishery, and consequently, reduction of effort. The Council determined that the number of vessels in the offshore shrimp fleet would likely decline to a point where the fishery again became profitable for the remaining participants, and new vessels might want to enter the fishery. That additional effort could negate or at least lessen profitability for the fleet as a whole. Consequently, the Council established a 10-year moratorium on the issuance of new federal shrimp vessel permits through Amendment 13 (GMFMC 2005a). The final rule implementing the moratorium was effective October 26, 2006; permits became effective in March 2007.

To be eligible for a commercial shrimp vessel permit under the moratorium, vessels must have been issued a valid permit by NMFS prior to and including December 6, 2003. An exception was made for owners who lost use of a qualified vessel, but who obtained a valid commercial shrimp vessel permit for the same vessel or another vessel prior to the date of publication of the final rule. NMFS estimated 285 of the 2,951 vessels would not meet the control date; thus, the number of permitted vessels under the moratorium would be 2,666. Of those 285 ineligible vessels, 126 were inactive during 2002 (the last year of data available during the time the Council deliberated on this issue). Of the remaining 159 active vessels, only 72 operated in federal waters and were excluded under the moratorium. Of those 72 vessels, 45 were large and 27 were small. The large vessels were expected to be the most affected because the small vessels could continue to fish in state waters.

Vessel owners had one year to obtain the new permit; NMFS issued 1,933 moratorium permits in that time. As of December 31, 2014, 1,470 moratorium permits were valid or renewable (within one year of expiration); therefore, the number of permits decreased by 463 since the moratorium began (Table 1.1.1). These permits have been permanently removed and are no longer available to the fishery. A permit is valid if it has been renewed; a permit is renewable one year from its expiration. After a year with no renewal, a permit is permanently removed from the permit pool.

**Table 1.1.1.** Number of valid, surrendered, and terminated Gulf commercial shrimp permits as of December 31 each year since implementation of the moratorium. Valid permits are those that were fishable at least one day each year. Surrendered permits are those that were voluntarily returned to NMFS by the permit holder – these permits were valid for part of the year, before being lost from the fishery. Terminated permits are those that were lost from the fishery due to non-renewal by the permit holder.

<b>Year</b>	<b>Number of Valid Permits Each Year</b>	<b>Number of Surrendered Permits Each Year</b>	<b>Number of Permits Terminated Each Year*</b>	<b>Cumulative Number of Permits Lost from the Fishery</b>
<b>2007</b>	1,933	0	NA	NA
<b>2008</b>	1,907	0	26	26
<b>2009</b>	1,722	1	184	211
<b>2010</b>	1,633	1	88	300
<b>2011</b>	1,582	0	51	351
<b>2012</b>	1,534	0	48	399
<b>2013</b>	1,501	0	33	432
<b>2014</b>	1,470	0	31	463

Source: NMFS Southeast Regional Office (SERO) Permits Database

The permit moratorium will expire October 26, 2016. The Council may choose to: 1) allow the moratorium to expire and revert all federal shrimp permits to open access; 2) extend the moratorium for another period of time; or 3) establish a permanent limited access system for Gulf shrimp permits. The Council may also consider setting a target number of permits for the moratorium, creating reserve permits instead of allowing permits to expire, and removing the royal red shrimp endorsement.

## 1.2 Purpose and Need

### *Purpose for Action*

The purpose of this amendment is to determine if limiting access to federal permits is necessary to prevent overcapacity, promote economic efficiency and stability, maintain high catch per unit effort, and to protect federally managed Gulf shrimp stocks. Another purpose is to determine if the endorsement to harvest royal red shrimp is still necessary to monitor participation and activity in that component of the fishery.

### *Need for Action*

The need for this action is to maintain increases in catch efficiency while preventing overfishing and to obtain the best available information with which to manage the fishery.

## 1.3 History of Management

The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, U.S. Waters (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, white shrimp, pink shrimp, royal red shrimp, seabobs (*Xiphopenaeus kroyeri*), and brown rock shrimp (*Sicyonia brevirostris*). Seabobs and rock shrimp were subsequently removed from the FMP. 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) with the shrimp management programs of the several states, when 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 purpose of the plan was to enhance yield in volume and value by deferring harvest of small shrimp to provide for growth. The main actions included: 1) establishing a cooperative Tortugas Shrimp Sanctuary with Florida to close a shrimp trawling area where small pink shrimp comprise the majority of the population most of the time; 2) a cooperative 45-day seasonal closure with Texas to protect small brown shrimp emigrating from bay nursery areas; and 3) a seasonal closure of an area east of the Dry Tortugas to avoid gear conflicts with stone crab fishermen.

**Amendment 1**/environmental assessment (EA)(1981) provided the Regional Administrator (RA) of the NMFS Southeast Regional Office (SERO) with the authority (after conferring with the Council) 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 a shrimp-stone crab gear conflict on the west-central coast of Florida.

**Amendment 4**/EA (1988) 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 Council and RA review for the Texas closure was extended to February 1. 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 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

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

**Amendment 5/EA** (1991) defined overfishing for Gulf brown, pink, and royal red shrimp and provided 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 removed from the management unit. The duration of the seasonal closure to shrimping off Texas was adjusted to conform to the changes in state regulations.

**Amendment 6/EA** (1992) 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 continue to open seasonally, without need for annual action. A proposed definition of overfishing of white shrimp was rejected by NMFS because it was not based on the best available data.

**Amendment 7/EA** (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 for royal red shrimp was eliminated; however, a redefinition of overfishing for this species was disapproved.

**Amendment 8/EA** (1995), implemented in early 1996, addressed management of royal red shrimp. It established a procedure that would allow total allowable catch for royal red shrimp to be set up to 30% above maximum sustainable yield (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 amendment to the Magnuson-Stevens Act that defined overfishing as a fishing level that jeopardizes the capacity of a stock to maintain MSY, and does not allow optimum yield (OY) to exceed MSY.

**Amendment 9/supplemental environmental impact statement (SEIS)** (1997), required the use of a NMFS certified bycatch reduction device (BRD) in shrimp trawls used in the EEZ from Cape San Blas, Florida to the Texas/Mexico border, and provided for the certification of BRDs and specifications for the placement and construction. 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 through 1989. This amendment exempted shrimp trawls fishing for royal red shrimp seaward of the 100-fathom contour, as well as groundfish and butterfish trawls, from the BRD requirement. It also excluded small try nets and no more than two ridged frame roller trawls of

limited size. Amendment 9 also provided mechanisms to change the bycatch reduction criterion and to certify additional BRDs.

**Amendment 10/EA** (2002) required BRDs in shrimp trawls used in the Gulf east of Cape San Blas, Florida. Certified BRDs for this area are required to demonstrate a 30% reduction by weight of finfish.

**Amendment 11/EA** (2001) 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 and prohibited the transfer of royal red shrimp at sea.

**Amendment 12/EA** (2001) was included as part of the Generic Essential Fish Habitat (EFH) Amendment that established EFH for shrimp in the Gulf.

**Amendment 13/EA** (2005) established an endorsement to the federal shrimp vessel permit for vessels harvesting royal red shrimp; defined the overfishing and overfished thresholds for royal red shrimp; defined MSY and OY for the penaeid shrimp stocks in the Gulf; established bycatch reporting methodologies and improved collection of shrimping effort data in the EEZ; required completion of a Gulf Shrimp Vessel and Gear Characterization Form by vessels with federal shrimp permits; established a moratorium on the issuance of federal commercial shrimp vessel permits; and required reporting and certification of landings during the moratorium.

**Amendment 14/EIS** (2007) was a joint amendment with Reef Fish Amendment 27. It established a target red snapper bycatch mortality goal for the shrimp fishery in the western Gulf and defined seasonal closure restrictions that can be used to manage shrimp fishing efforts in relation to the target red snapper bycatch mortality reduction goal. It also established a framework procedure to streamline the management of shrimp fishing effort in the western Gulf.

**The Generic Annual Catch Limit (ACL)/Accountability Measures (AMs) Amendment/EIS** (2011) set an ACL and AM for royal red shrimp. Penaeid shrimp were exempt from the ACL/AM requirements because of their annual life cycle.

**The Shrimp Electronic Logbook (ELB) Framework Action** (2013) established a cost-sharing system for the ELB program, and described new equipment and procedures for the program.

**Amendment 15/EA** (2015), if implemented, would redefine stock status criteria for the three penaeid species of shrimp, including MSY and overfished/overfishing thresholds. The general framework procedure would also be updated.

**Amendment 16/SEIS** (2015) eliminated duplicative AMs and the quota for royal red shrimp. The ACL was set equal to the acceptable biological catch and a post-season AM was established.

## CHAPTER 2. MANAGEMENT ALTERNATIVES

### 2.1 Action 1 – Address the Expiration of the Federal Shrimp Permit Moratorium in the Gulf of Mexico

**Alternative 1** – No Action. The moratorium on the issuance of new Gulf of Mexico (Gulf) federal commercial shrimp vessel permits expires on October 26, 2016. With expiration of the federal Gulf commercial shrimp permit moratorium, the commercial shrimp vessel permits would become open access permits, as they were prior to the moratorium, and therefore be available to any eligible applicants.

**Preferred Alternative 2** – Extend the moratorium on the issuance of federal Gulf commercial shrimp vessel permits. The moratorium would be extended for:

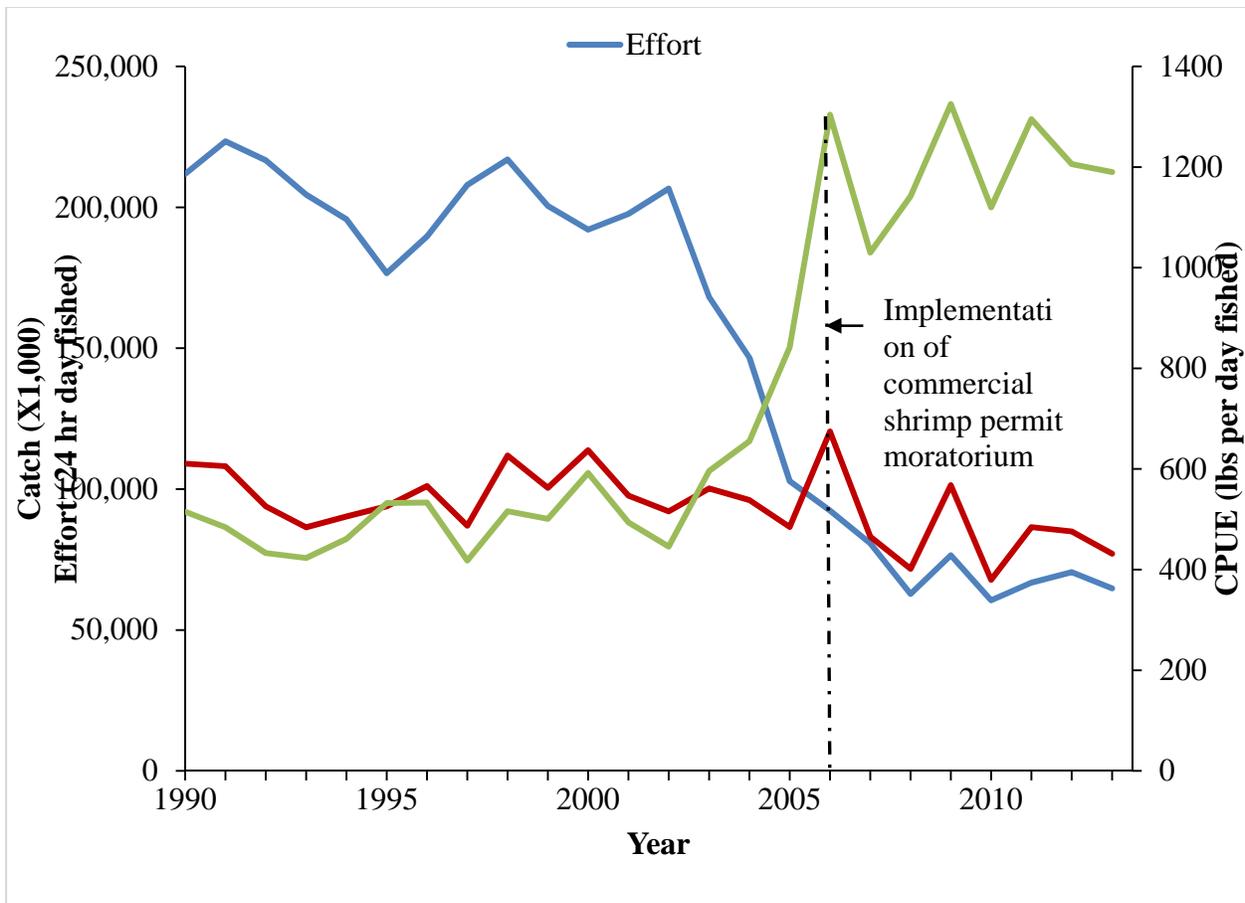
**Option a.** 5 years

**Preferred Option b.** 10 years

**Alternative 3** – Create a federal limited access permit for commercial shrimp vessels in the Gulf. To be eligible for a commercial shrimp vessel permit under the limited access system, vessels must have a valid or renewable federal Gulf commercial shrimp vessel permit on October 26, 2016. Federal Gulf commercial shrimp vessel permits will need to be renewed every year and all previous renewal, transfer, and reporting requirements would still be in effect.

*NOTE: Action 2.1 and Action 2.2 are relevant only if Preferred Alternative 2 or Alternative 3 in Action 1 is selected by the Council*

**Discussion:** The moratorium on the issuance of federal Gulf commercial shrimp permits (SPGM) was established in Shrimp Amendment 13 (GMFMC 2005a). The purpose of the amendment was to help stabilize the shrimp fishery. Increasing fuel costs, decreasing shrimp prices and increasing foreign shrimp imports all contributed to the overcapitalization of the commercial shrimp fleet. Since the implementation of the moratorium, the number of permits has decreased each year with terminations peaking in 2009, when initially issued SPGMs were terminated due to non-renewal (Table 1.1.1). Vessels were expected to continue to exit the fishery until the reduced number of permits allowed the resource to be harvested profitably (GMFMC 2005a). Effort in the offshore fishery has decreased, and landings have slightly declined (Figure 2.1.1). Additionally, the catch per unit effort (CPUE) for the offshore fishery has remained relatively constant since implementation of the moratorium.



**Figure 2.1.1.** Catch, effort and CPUE from 1990-2013 for all shrimp caught in offshore waters<sup>1</sup> and landed in Gulf ports.<sup>2</sup>

**Alternative 1** would allow the moratorium to expire and federal Gulf shrimp permits would be open access. This would allow new entrants into the commercial shrimp fishery and could have negative effects if the fishery became overcapitalized. This (overcapitalization and/or effort increases) could lead to increases in protected resources bycatch and potentially result in additional requirements for bycatch reduction. This alternative could undo any positive effects of the moratorium and revert the fishery back to an open access fishery. Under this alternative permits would no longer be transferrable and would have no market value.

<sup>1</sup> Offshore waters are waters outside the COLREGS lines. The COLREGS lines are the set of demarcation lines that have been established by the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (commonly called COLREGS). COLREGS define boundaries across harbor mouths and inlets for navigation purposes.

<sup>2</sup> Although landings information can be obtained from both the Gulf Shrimp System (GSS) and Annual Landings Form (ALF) databases, effort is not reported on the ALF and it is not possible to determine whether the reported landings on the ALF came from offshore or inshore waters. Thus, landings estimates are based solely on GSS data, and only shrimp landed at Gulf ports is taken into account. Further, because separate permits are not required to harvest each of the penaeid species, and multiple species of shrimp may be harvested simultaneously, these estimates include all shrimp harvested from offshore waters, regardless of whether they are federally managed.

**Preferred Alternative 2** would extend the permit moratorium for a specified number of years. This could contract the fishery more if additional permits are terminated. Extending the moratorium for an additional 5 years (**Option a**) would require the Council to review the status of the fishery sooner than if the 10 year option (**Preferred Option b**) was selected. **Option a** gives the least flexibility as the time required to produce an amendment to address an additional expiration date would be between 18 and 24 months, thus not allowing for more than 3 or 4 years of data to be incorporated before re-evaluating the expiration of the SPGM extension. **Preferred Option b** would allow for more data collection and may result in a stable number of permits if fewer fishermen exit the fishery. The number of permits that have been terminated declined from 2010 until 2014, but the number of permits has not yet reached a minimum as the number of terminated permits per year has not reached zero.

**Alternative 3** would create a federal limited access permit for commercial shrimp vessels in the Gulf. Current permit holders would receive the limited access permit if their vessel has a valid or renewable federal Gulf commercial shrimp permit on October 26, 2016. Federal Gulf commercial shrimp vessel permits would need to be renewed every year and all previous renewal, transfer, and reporting requirements would still be in effect. This alternative would make the federal commercial shrimp fishery a limited access fishery until the Council takes action to change that status, unlike the moratorium which has an expiration date. Additionally, the number of permits could continue to decline due to non-renewal of permits unless the Council implemented other measures (such as Action 2.1). For both **Preferred Alternative 2** and **Alternative 3**, persons wishing to enter the fishery could purchase a valid permit from another permit holder. Permits that have expired but are still renewable cannot be transferred unless and until they are renewed prior to termination; a permit must be valid to be transferred.

## 2.2 Action 2 – Target Number of Commercial Shrimp Permits and Disposition of Non-Renewed Permits

Currently any federal permit issued by the NMFS Southeast Regional Office is generally only valid for one year. After the expiration date, the holder of a limited access or moratorium permit has an additional year to renew the permit. If a permit is not renewed within one year of the expiration date, it is terminated; i.e., it is no longer renewable or transferable, and effectively ceases to exist. Through non-renewal, 463 Gulf shrimp permits have been terminated during the moratorium. Action 2 is only appropriate if Alternative 2 (continue the moratorium) or Alternative 3 (create a limited access permit) is chosen in Action 1, because Alternative 1 (no action, moratorium allowed to expire) would result in the permit becoming an open access permit, for which anyone can apply and does not need to be renewed.

### Action 2-1. Target Number of Gulf Shrimp Vessel Permits and Creation of a Gulf Shrimp Vessel Permit Reserve Pool

**Alternative 1.** No Action. Do not set a target number of Gulf shrimp vessel permits. Any Gulf shrimp vessel permit not renewed within one year of the expiration date on the permit will be terminated and no longer available for purchase or use.

**Alternative 2.** Set a target number of Gulf shrimp vessel permits based on effort needed to attain aggregate maximum sustainable yield (MSY) in the offshore fishery (2,018 permits).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

**Alternative 3.** Set a target number of Gulf shrimp vessel permits based on the number of valid permits issued at the beginning of the moratorium (1,933 permits).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

**Alternative 4.** Set a target number of Gulf shrimp vessel permits based on the number of valid or renewable permits at the end of 2014 (1,470 permits).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

**Alternative 5.** Set a target number of Gulf shrimp vessel permits based on the number of valid or renewable permits at the end of the initial moratorium, October 26, 2016 (number of permits unknown).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

**Alternative 6.** Set a target number of Gulf shrimp vessel permits based on effort needed to maintain the gains in catch per unit effort (CPUE) in the offshore fishery during the moratorium (882 permits).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

**OR**

**Alternative 6.** Set a target number of Gulf shrimp vessel permits based on effort needed to maintain the gains in catch per unit effort (CPUE) in the offshore fishery during the moratorium without substantially reducing landings (between 909 and 1,133 permits depending on year chosen from 2.2.2).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

**Alternative 7.** Set a target number of Gulf shrimp vessel permits based on the number of active permitted vessels (those with landings from offshore waters) when effort was highest during the moratorium in the area monitored for red snapper juvenile mortality but without reaching the bycatch reduction target and triggering closures (938 permits).

**Option a.** If the number of permits reaches the target number, any permits that are not or were not renewed within one year of the expiration date on the permit will go into a Gulf Shrimp Vessel Permit Reserve Pool.

**Option b.** If the number of permits reaches the target number, the Council will review the status of the fishery to determine if action is needed.

*Note: For Alternatives 2-4, the number of permits has already decreased below the target; therefore, Option b encompasses the review included in this amendment.*

**Discussion:** A decrease in the number of permits is an expected part of a moratorium or limited access permit. The federal Gulf commercial shrimp permit moratorium was based on the likelihood that, at some point in time, the number of vessels in the offshore shrimp fleet would decline to a point where the fishery again became profitable for the remaining participants. The Council determined that there was a need to prevent new effort from entering the fishery and

thus negating, or at least lessening, profitability when that time came. Various members of the Council, the Council's Shrimp Advisory Panel (AP), and the public have suggested that the fishery has reached that point, and the decline in permits should end. Others have suggested that the time is past, or that it is in the near future. In any case, the Council may decide to set a target number of permits for the Gulf shrimp fishery. If so, when that target is reached, NMFS would need to determine if the termination of permits should be stopped.

**Alternative 1** would not set a target number of permits and would continue the practice of terminating permits that were not renewed within one year of the expiration date. The number of Gulf shrimp permits would be expected to continue to decrease over time, although the rate of decrease would be expected to slow as fewer inactive permits remain. The AP was concerned that the fleet would also continue to shrink because of vessel age and the high cost of replacement. These factors could cause the rate of attrition to increase in the future.

**Alternatives 3-5** base the target number of permits on the number of permits at a certain period of time or under certain conditions; **Alternatives 2, 6, and 7** base the target number of permits on a level of effort needed to achieve a specific management goal. The Council does not directly control effort in the offshore fishery, so the relationship between permits and/or vessels and effort needs to be determined. That is, it would be helpful to know how many permits/vessels are needed to achieve alternative levels of effort that may be desired by the Council.

A preliminary model indicates a strong relationship exists between the number of permitted vessels and effort. However, even though the estimated model explained much of the variability in effort, it also consistently overestimated observed effort and thus is not considered reliable for policy purposes. Further, in theory, effort should be more closely related to the number of active vessels rather than the number of permitted vessels in the fishery. For current purposes, a vessel is only considered to be active in a particular year if it had shrimp landings from Gulf offshore<sup>3</sup> waters according to the most currently available Gulf Shrimp System (GSS) data for 1990-2013. Thus, for example, if a vessel only had landings from inshore waters or another region (e.g., South Atlantic), it is not considered active in this analysis. The number of active vessels in the offshore fishery declined significantly (49%) between 2002 and 2008, but has remained relatively stable since, with the notable exception of 2010 (Table 2.2.1).

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<sup>3</sup> Gulf offshore waters includes some state waters, as well as federal waters. Though most of these vessels had federal permits, a federal permit is not required to harvest shrimp in state offshore waters. Thus, the number of active vessels in the offshore fishery will generally exceed the number of permitted or active permitted vessels.

**Table 2.2.1.** Number of permitted and active vessels by size category in the offshore Gulf shrimp fishery. Large vessels are greater than or equal to 60 feet length, small vessels less than 60 feet length.

Year	Active Vessels	Large Active Vessels	Small Active Vessels	Permitted Vessels	Active Permitted Vessels	Large Active Permitted Vessels <sup>1</sup>	Small Active Permitted Vessels <sup>2</sup>
2000	2,989	1,918	1,071	N/A	N/A	N/A	N/A
2001	3,011	2,032	979	N/A	N/A	N/A	N/A
2002	3,357	1,956	1,401 <sup>3</sup>	N/A	N/A	N/A	N/A
2003	3,085	1,810	1,275	2,688	1,953	1,656	297
2004	2,888	1,658	1,230	2,791	1,833	1,548	285
2005	2,427	1,493	934	2,713	1,676	1,405	271
2006	2,250	1,252	998	2,578	1,426	1,182	244
2007	1,940	1,137	803	2,514	1,283	1,084	199
2008	1,714	994	720	1,930	1,059	942	117
2009	1,891	1,001	890	1,764	1,075	959	116
2010	1,365	902	463	1,685	951	865	86
2011	1,638	929	709	1,641	1,013	898	115
2012	1,724	938	786	1,587	1,014	885	129
2013	1,649	904	745	1,544	970	858	112

<sup>1</sup> Length data was missing from the Coast Guard database for a small number of documented vessels that did not have permits. These vessels were assumed to be large because only vessels with a net tonnage less than 5 net tons must be documented.

<sup>2</sup>NMFS does not possess length data for non-permitted vessels. State registered vessels without permits are assumed to be small vessels because vessels with a net tonnage less than 5 net tons must be documented, and vessels less than 5 net tons are typically less than 60 ft in length.

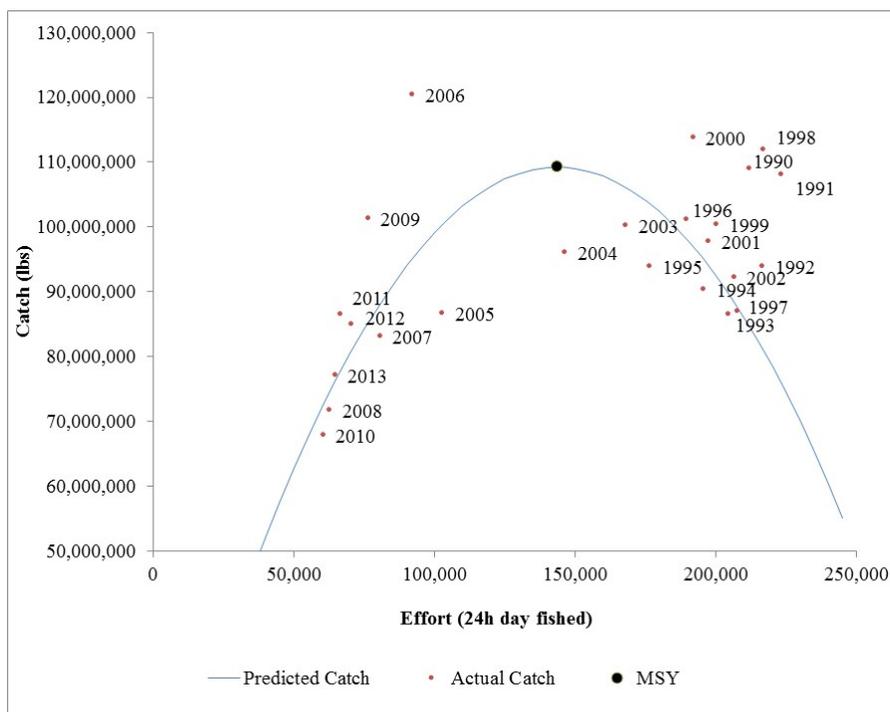
<sup>3</sup>Reflects artificial increase due to change in Gulf Shrimp System data protocols wherein landings data came from LA and AL trip tickets, rather than port agents, which explicitly identified state registered boats. Florida trip ticket data was also incorporated over the next few years.

An analysis of the relationship between the various estimates of active vessels in the offshore fishery in Table 2.2.1 was conducted to see whether any had a strong, direct relationship with offshore effort (see Table 2.2.2). The analysis found a very strong relationship exists between active permitted vessels and observed offshore effort, which suggests the Council can indirectly control or at least limit offshore effort by controlling the number of vessels with federal permits. The predicted or expected number of active permitted vessels at various levels of observed effort is provided in Table 2.2.2. If a particular level of offshore effort is desired, based on various management objectives, these results are suggestive of what the target number of federally permitted vessels should be if the Council wants to implement a target that implicitly assumes all permitted vessels are and should be active (i.e., the target would not allow for latent permits). If the Council thinks the target number of permits should allow for vessels that are not active in the offshore fishery each year (i.e., vessels that only participate in fishery in certain years), then it may want to consider adding a buffer to the provided estimates. Further, a percentage of the offshore landings in each year cannot be ascribed to a particular vessel due to missing or invalid vessel identifiers in the GSS data. Although this percentage was relatively high before federal permits were required, it has declined from 3% in 2003 to 0.6% in 2013. Nonetheless, the issue

of missing or invalid vessel identifiers suggests the estimates of active vessels in Table 2.2.1 may be slightly underestimated.

**Alternative 2** bases the target number of permits on the number of active permitted vessels that could harvest the aggregate MSY in the offshore shrimp fishery. The estimated yield curve (Figure 2.2.1) for the offshore fishery produced by the model indicates that aggregate MSY is 109,237,618 lbs (tails) and effort at MSY is 143,756 days fished.<sup>4</sup> The predicted number of active permitted vessels and thus the target number of permits needed to attain effort at MSY is 2,018. Model results should only be used to review previously observed data, and thus should not be used to predict what catch/landings would be at effort levels above or below observed levels, as they are subject to year to year variations in the abundance of shrimp stocks.

The level of effort needed to achieve aggregate MSY in the offshore fishery was most closely observed in 2004 (Figure 2.2.1). Recent levels of effort have been well below the level needed to achieve aggregate MSY in the offshore fishery. Based on observed effort in 2013, effort would need to increase by more than 126% from current levels to achieve aggregate MSY.



**Figure 2.2.1.** Yield curve for the offshore Gulf shrimp fishery used to estimate aggregate maximum sustainable yield (MSY). Estimates are based on catch and effort data for all shrimp species caught in offshore Gulf waters and landed in Gulf ports, 1990-2013.

Source: SEFSC, Galveston

**Alternative 3** presumes the number of permits at the beginning of the moratorium (1,933) was, in fact, the appropriate number of permits to maintain in the shrimp fishery, and the decrease in permits since then was undesirable. However, between 2007 and 2013, only 1,539 vessels with moratorium permits had landings from Gulf offshore waters in any year. Thus, many of the lost

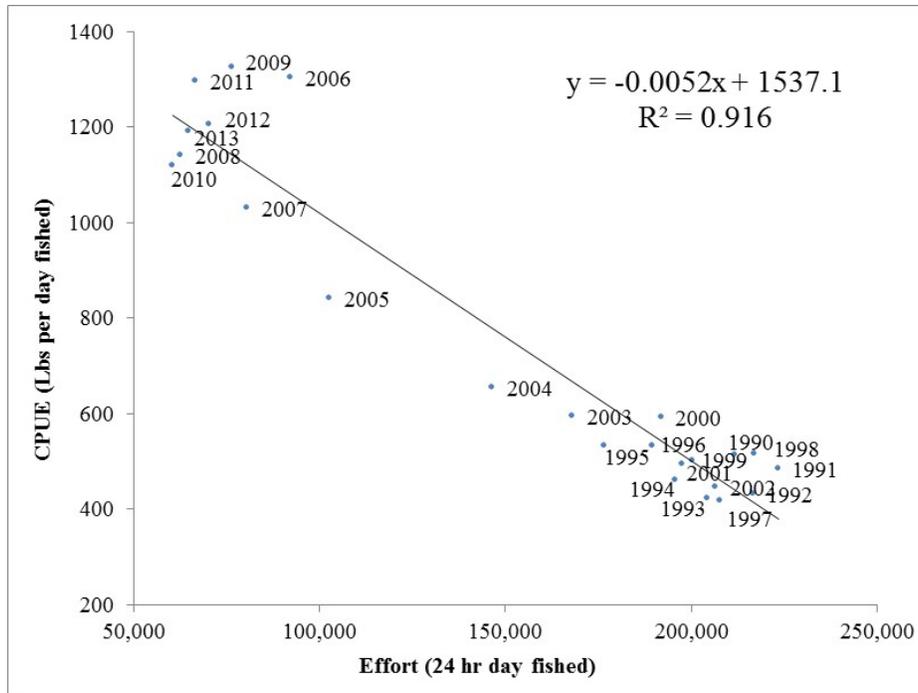
<sup>4</sup> Aggregate MSY is not equal to the sum of each species' MSY.

permits may have been inactive. The highest number of terminated permits was in 2009. This was two years after initial issuance of the moratorium permits and is when those initial permits would have terminated if they were never renewed. This suggests that those vessels were not actively fishing in offshore or federal waters. This situation will be explored further with development of this amendment.

**Alternative 4** presumes the number of permits at the end of 2014 (1,470) was the appropriate number of permits to maintain in the shrimp fishery. This represents a 24% decrease from the number of permits at the beginning of the moratorium. The Council will need to provide rationale for why this is the appropriate target number of permits.

**Alternative 5** presumes the number of permits at the end of the moratorium will be the appropriate number of permits to maintain in the shrimp fishery. This represents an unknown decrease from the number of permits at the beginning of the moratorium. In the last two years, the number of permits lost has leveled at around 32 permits per year. If we assume a similar loss in 2015 and 2016, the number of permits at the end of 2016 would be around 1,406, a decrease of 27% from the beginning of the moratorium. Again, the Council will need to provide rationale for why this is the appropriate target number of permits.

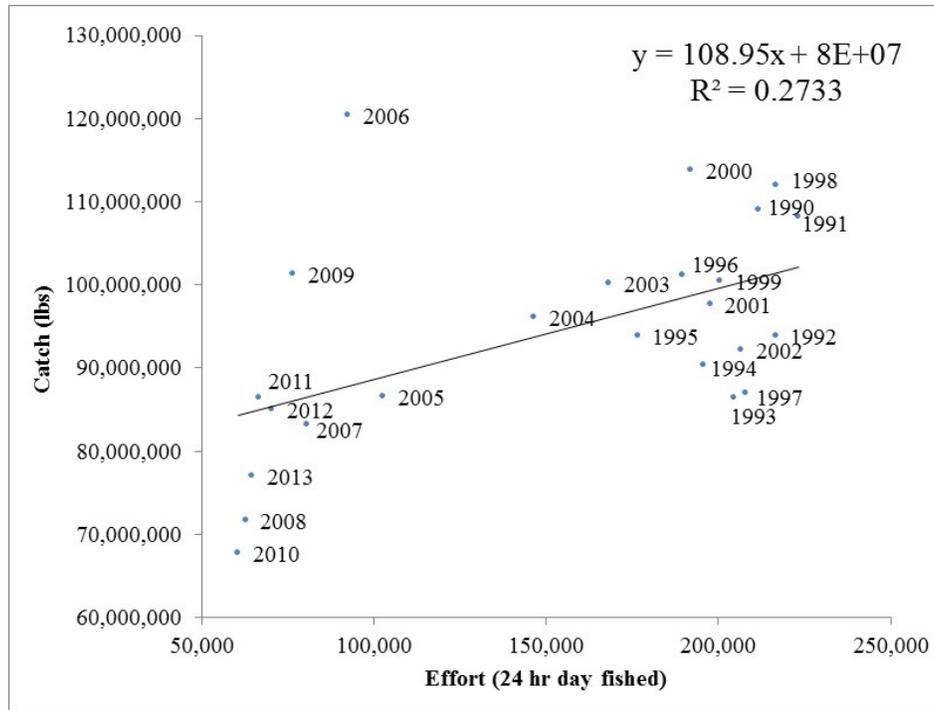
**Alternative 6** is an attempt to calculate the number of permits needed to maintain the level of effort that has produced the high CPUE values attained during the moratorium, without allowing total landings to decrease substantially. Economic conditions have led to substantial consolidation in this industry creating significant efficiency gains for the remaining participants. It should be noted that these efficiency gains did not translate into substantial profitability; instead, they allowed survival in the face of deteriorating economic conditions (high fuel prices, decreasing shrimp prices). The relationship between effort and CPUE is strong (Figure 2.2.2); as effort decreases, CPUE increases.



**Figure 2.2.2.** Relationship between CPUE and effort in the offshore Gulf shrimp fishery, 1990-2013.

Source: SEFSC, Galveston

This consolidation and the resulting efficiency gains for fishermen would be locked in by maintaining the number of vessels that could harvest at a high CPUE. This was the objective of the moratorium as stated in Amendment 13 (GMFMC 2005). However, as effort decreases, total landings also decrease (Figure 2.2.3). Landings reductions would be expected to cause adverse economic impacts in the onshore sector (i.e., dealers and processors).



**Figure 2.2.3.** Relationship between landings and effort in the offshore Gulf shrimp fishery, 1990-2013.

Source: SEFSC, Galveston

Observed CPUE and observed landings during the moratorium were highest in 2009 (Table 2.2.2); however, care must be exercised in relying on trends in observed landings as they are subject to year to year variations in abundance of the shrimp stocks. For example, although observed landings were highest in 2006, the high landings were due to higher than average shrimp abundance in that year. Thus, the level of effort in 2006 would not be expected to generate that same level of landings under long-term average levels of shrimp abundance. Therefore, observed landings levels should not be used to predict what would be expected under average abundance conditions in the future. The same caution applies to using observed levels of CPUE. Although observed CPUE was highest in 2009, this result was similarly driven by above average abundance. It is not prudent to expect or rely on above average abundance conditions in the future.

Instead, the modelled yield curve (Figure 2.2.1) can be used to generate expected values for landings and CPUE that account for changes in abundance over time and thus are more reliable with respect to determining the underlying trends in those values and expected values in the future. Expected CPUE would be highest when effort was lowest. The highest expected CPUE was in 2010, but this finding should be viewed with caution given the effects of the Deepwater Horizon MC 252 oil spill on fishing behavior in 2010. A safer way forward is to omit 2010 and conclude that expected CPUE was at its maximum in 2008. If the Council intends simply to maximize CPUE, the predicted number of active permitted vessels needed to attain effort observed in 2008 produces 882 as a target number of permits (Table 2.2.2).

**Table 2.2.2.** Observed effort (days fished = 24 hours trawling), landings, and CPUE (pounds per day fished); and expected landings (pounds tails), and CPUE for the offshore component of the fishery (see text for explanation of expected values). The predicted number of active permitted vessels is for the offshore component of the Gulf shrimp fishery.

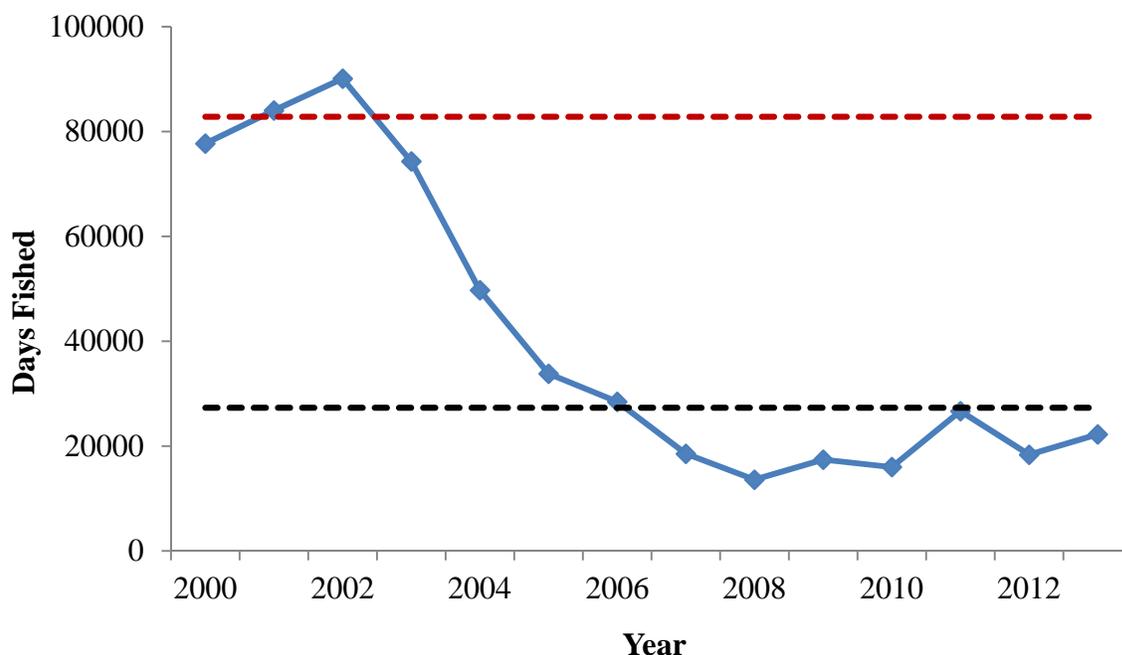
Year	Observed Effort	Observed Landings	Observed CPUE	Expected Landings	Expected CPUE	Expected Active Permitted Vessels
2000	192,073	113,783,105	592	97,116,225	538	N/A
2001	197,644	97,706,647	494	94,119,050	509	N/A
2002	206,621	92,119,199	446	88,600,977	463	N/A
2003	168,135	100,203,686	596	106,263,503	663	2,361
2004	146,624	96,079,478	655	109,321,652	775	2,059
2005	102,840	86,571,515	842	100,451,078	1,002	1,444
2006	92,372	120,437,081	1,304	95,332,055	1,057	1,297
2007	80,733	83,126,655	1,030	88,281,093	1,117	1,133
2008	62,797	71,689,314	1,142	74,615,625	1,211	882
2009	76,508	101,339,883	1,325	85,368,059	1,139	1,074
2010	60,518	67,790,473	1,120	72,635,863	1,222	850
2011	66,777	86,482,240	1,295	77,941,409	1,190	938
2012	70,505	85,004,590	1,206	80,904,495	1,170	990
2013	64,764	77,063,083	1,190	76,280,038	1,200	909

Source: Landings are based on GSS data, J. Primrose, SEFSC Galveston, 7/10/15; effort and CPUE estimates, R. Hart, SEFSC Galveston, 7/15/15; expected and predicted estimates, M. Travis, NMFS SERO, 7/17/15.

Recent analysis demonstrates the importance of maintaining a relatively high CPUE with respect to profitability in the offshore fishery. Though based on limited data (2006-2013), a linear regression model determined that annual net revenue per vessel is primarily driven by CPUE, with ex-vessel shrimp price also being important though slightly less so, and fuel price somewhat less important. However, reductions in observed effort and fleet size after 2007 have not caused substantial improvements in CPUE, but they have caused noticeable reductions in landings.

The expected values illustrate that landings have been on a downward trend since 2006 (Table 2.2.2). These results suggest that additional effort reductions would be expected to further reduce landings. If the Council wishes to balance CPUE and landings, the number of predicted active permitted vessels in a year other than 2008 (or 2010) may better achieve that intent. Using the number of predicted active permitted vessels from one of these other years would set a target higher than the target based on 2008.

**Alternative 7** takes into account the target effort level in specific areas of the western Gulf (statistical zones 10-21, 10-30 fathoms) to protect juvenile red snapper. This target was set in Amendment 14 (GMFMC 2007) as 74% less than the effort in the benchmark years of 2001-2003. That target was reduced in 2012 to 67% less than the benchmark years because the red snapper rebuilding plan was proceeding as planned. If effort in the area increases above this target, selected areas of the EEZ must be closed to shrimp fishing. In 2011, the effort level for the area was very near to exceeding the target effort level (Figure 2.2.3). Therefore, the predicted number of active permitted vessels in that year could be considered a reasonable target for the number of permits in the shrimp fishery. In 2011, 938 permitted vessels were active.



**Figure 2.2.3.** Offshore Gulf shrimp effort in statistical zones 10-21, 10-30 fathoms relative to target effort levels to reduce red snapper juvenile mortality. The red line shows the baseline 2001-2003 effort levels; the black line shows the target effort level of 67% of the baseline. Source: SEFSC, Galveston.

**Alternatives 2-7, Option a** would create a Gulf Shrimp Vessel Permit Reserve Pool (Reserve Pool). If the number of permits reaches the target, permits that normally would be terminated, revoked, or surrendered would instead be transformed into “reserved” permits that could be re-issued. The NMFS Pacific Islands Regional Office maintains a similar pool for the American Samoa longline limited access permits, wherein if a permit is relinquished, revoked, or not renewed, the Regional Administrator makes that permit available for re-issuance. Action 2-2 addresses the issuance of Gulf shrimp permits from the reserve pool, if created. **Alternatives 2-4** would be expected to set a target number of permits above the number expected to be valid or renewable when measures in this amendment would be implemented, and would require NMFS to create new permits for the Gulf Shrimp Vessel Permit Reserve Pool. **Alternatives 5-7** would set a target number of permits below the current number, which would delay the creation of the Gulf Shrimp Vessel Permit Reserve Pool until the target is reached. Any reserved permit in the Reserve Pool would not have a landings history associated with it, regardless of whether it was newly created or transformed from a regular permit; in other words, permits in the Reserve Pool will act as new permits without associated catch history.

**Alternatives 2-7, Option b** would set a target number of permits for the shrimp fishery, but not establish any specific response to reaching that target. Instead, NMFS would notify the Council that the target had been reached, and then the Council would review the status of the fishery to decide what action might be needed. Depending on the alternative, the target could be reached far into the future. Economic conditions, health of the stocks, and other factors may have changed by that time, and the target number of permits set in this amendment may no longer be

appropriate for the fishery. Thus, **Option b** allows the Council flexibility to tailor future management measures to the actual situation at that time, rather than analysis based on the current situation. For **Alternatives 2-4**, **Option b** would not be valid, as the target number of permits in those alternatives has already passed. In other words, the trigger for Council review would be immediate; because this amendment actually is a Council review, the decision made here would fulfill the terms in **Option b** and no additional action beyond this amendment would be warranted.

### Summary of Potential Impacts

**Alternatives 2-4** would set the target number of Gulf shrimp permits above where they are expected to be when the measures in this amendment are implemented. If the Council implemented a permit pool, as in Option a, this increase in permits could allow effort to increase, which could provide a greater chance of harvesting more shrimp. On the other hand, increased effort increases the risk of exceeding the target bycatch mortality of juvenile red snapper and protected species in shrimp trawls. Also, the effort<sup>5</sup> in 2009 was the baseline effort level used for the most recent biological opinion to evaluate the present and future effect of the shrimp fishery on ESA-listed species (NMFS 2014). The biological opinion concluded that this level of effort would not jeopardize the continued existence of protected sea turtles, small-tooth sawfish, and sturgeon. If effort levels are expected to increase above this level, a new biological opinion would be needed; and if captures of protected species increase, additional requirements for bycatch reduction could be imposed. Finally, only 1,539 vessels with moratorium permits had landings from Gulf offshore waters in any year between 2007 and 2013, indicating any permits beyond that number have not been used for shrimping in the past seven years. Thus any target higher than 1,539 permits (**Alternatives 2 and 3**) would allow inactive permits to continue in the fishery.

**Alternatives 5-7** would allow a passive reduction in the number of permits from where they are now. Fewer permits could result in a lower number of vessels actively fishing, decreasing bycatch and impacts on the environment. If fewer vessels could maintain the same level of total landings, each remaining vessel would have more landings and greater benefit. However, vessels cannot continue to increase CPUE indefinitely, and landings have been declining as effort has decreased in recent years. If the number of vessels is severely limited, shrimp harvest may not be able to support the shore-side infrastructure needed by the industry.

The expected effects of these alternatives are dependent on changes in fishing effort, which may or may not change based on the number of permits. Inactive permits during the moratorium years have provided an opportunity for increased effort, either by the owners of those vessels starting to fish or by transferring permits to new entrants that intend to fish. Yet effort has not increased. Reasons to maintain a permit that is not being used to harvest shrimp include waiting for fishing to be more economical, accounting for bycatch of shrimp when trawling for other purposes, or speculating that the value of the permit will increase in the future. This last reason would be negated by a permit pool as reserve permits could be purchased from NMFS for only \$25 each.

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<sup>5</sup> Effort from otter trawls only, inshore and offshore waters.

## Action 2-2. Issuance of Reserved Gulf Shrimp Vessel Permits

*Note: Action 2-2 presumes Option a in Action 2-1 is chosen. If any Option b is chosen, Action 2-2 is not applicable.*

**Alternative 1.** No action. Individuals must submit a completed application to NMFS to be issued a Reserved Gulf Shrimp Vessel Permit. Eligible applicants will receive a Gulf Shrimp Vessel Permit Reserve Pool permit if one is available.

**Alternative 2.** The Reserved Gulf Shrimp Vessel Permits will be available from NMFS and will be issued to eligible applicants in the order in which applications are received. Individuals must submit a completed and up-to-date application to NMFS to be issued a Reserved Gulf Shrimp Vessel Permit. To be eligible for a Reserved Gulf Shrimp Vessel Permit the applicant must also:

**Option a** - be a U.S. citizen or business

**Option b** - assign the permit to a vessel that is of at least X length on the application

**Option c** - assign the permit to a vessel with a USCG Certificate of Documentation on the application (five net ton minimum)

**Alternative 3.** The Reserved Gulf Shrimp Vessel Permits will be available from NMFS *once per year* and will be issued to eligible applicants in the order in which applications are received. Individuals must submit a completed application to NMFS to be issued a Reserved Gulf Shrimp Vessel Permit. To be eligible for a Reserved Gulf Shrimp Vessel Permit the applicant must also:

**Option a** - be a U.S. citizen or business

**Option b** - assign the permit to a vessel that is of at least X length on the application

**Option c** - assign the permit to a vessel with a USCG Certificate of Documentation on the application (five net ton minimum)

**Alternative 4.** The Reserved Gulf Shrimp Vessel Permits will be available from NMFS *once per year*. If the number of applicants is greater than the number of Reserved Gulf Shrimp Vessel Permit, NMFS will conduct a lottery to determine which individuals may be issued the available permits. Individuals must submit a completed application by the published deadline to NMFS to be eligible for the lottery. To be eligible for a Reserved Gulf Shrimp Vessel Permit the applicant must:

**Option a** - be a U.S. citizen or business

**Option b** - assign the permit to a vessel that is of at least X length

**Option c** - assign the permit to a vessel with a USCG Certificate of Documentation on the application (five net ton minimum)

*Note: All current permit renewal/transferability and recordkeeping/reporting requirements would apply regardless of the alternative chosen. These requirements can be found in detail in 50 CFR 622.4 and 622.51.*

**IPT Questions for Council: Would each individual be limited to one application? How long would the applications be valid? Would these permits be transferrable?**

**Discussion:** If a reserve pool for Gulf shrimp permits is created through Action 2-1, distribution of those permits must also be considered. Distribution could follow the regular permit application process with no additional restrictions with **Alternative 1**. The Reserved Gulf Shrimp Vessel Permits would be obtained by submitting a completed application and the appropriate application fee (currently \$25 for the first permit, \$10 for each additional permit on the application). If a Reserved Gulf Shrimp Vessel Permits is available, it would be assigned to the applicant. However, if a permit is not available, the application fee would be forfeited. This alternative would require the applicant to have some knowledge of permits that may have an upcoming termination date, or of someone willing to surrender their permit, or for applicants to simply apply based on speculation.

With **Alternative 2**, NMFS would issue a Reserved Gulf Shrimp Vessel Permit to any qualified applicant, if a permit is available. Again, if a permit is not available, the application fee would be forfeited and the applicant would need some knowledge of permits that may have an upcoming termination date, or of someone willing to surrender their permit, be willing to submit an application on speculation. NMFS could create a waiting list for Reserved Gulf Shrimp Vessel Permits, but updated applications would still need to be submitted regularly. If one or more of the options are selected, NMFS would only accept applications from certain entities. The AP suggested these options to help reduce the number of people obtaining reserve permits to resell. However, restricting applicants would set a new precedent, as no other permits restrict who may apply.

With **Alternative 3**, NMFS would hold all Reserved Gulf Shrimp Vessel Permits in the pool until a specific date, when a notice would be published in the *Federal Register* announcing the availability of those permits. NMFS would also distribute a Southeast Fisheries Bulletin. After the announcement, the permits would be distributed to entities submitting a completed application and the appropriate fee on a first come, first served basis, until no permits were left in the pool. As with **Alternative 2**, if one or more of the options are selected, NMFS would only accept applications from applicants who met the eligibility requirements.

**Alternative 4** is similar to **Alternative 3** in that NMFS would hold all Reserved Gulf Shrimp Vessel Permits in the pool until a specific date, when a notice would be published in the *Federal Register* announcing an application period for those permits. NMFS would also distribute a Southeast Fisheries Bulletin announcing the application period. Applications would be held until the end of the announced application period before being issued. If NMFS received more completed applications and fees than the number of available Reserved Gulf Shrimp Vessel Permits, a lottery would be conducted to determine which qualified applicants would receive a permit. As with **Alternative 2**, if one or more of the options are selected, NMFS would only accept applications from those who met the eligibility requirements.

The AP was concerned that if Reserved Gulf Shrimp Vessel Permits were available to anyone for \$25 from NMFS, some people might buy all available permits to control the cost of permits on the market. A permit must be attached to a vessel, but the vessel can be of any size, such as a canoe. To help ensure Reserved Gulf Shrimp Vessel Permits are only issued to entities intending to use them for shrimping, the AP suggested qualifications be established, such as U.S. citizenship (**Option a**) and a minimum vessel size (**Options b** and **c**).

The AP considered various minimum vessel lengths, but deferred making a recommendation until information about vessel lengths associated with current permits could be available. Two methods of classifying vessels by length are presented in Table 2.2.3. Method 1 is based on a longstanding distinction between large and small vessels in historical economic analyses as a proxy between vessels used to harvest shrimp in offshore versus inshore waters. Method 2 separates vessels into four classes by 25-foot lengths to allow a finer distinction. The Council should choose which method to use for **Option b**.

**Table 2.2.3.** Proportion of vessels with valid or renewable SPGM permits in each size class (as of January 6, 2015). Methods are explained in the text.

	<b>Method 1</b>			
<b>Vessel Length</b>	<b>&lt; 60 ft</b>		<b>≥ 60 ft</b>	
<b>Proportion of Vessels</b>	24.3%		75.7%	
	<b>Method 2</b>			
<b>Vessel Length</b>	<b>&lt;25 ft</b>	<b>25 - &lt;50 ft</b>	<b>50 - &lt;75 ft</b>	<b>≥75 ft</b>
<b>Proportion of Vessels</b>	2.8%	13.6%	42.8%	40.8%

Source: NMFS SERO permits database.

The AP also discussed USCG regulations certifying only vessels of five net tons or larger. Vessel documentation (**Option c**) is a national form of vessel registration issued by the USCG. Vessels which engage in either coastwide trade or fisheries on navigable waters of the U.S. or in the EEZ, must be documented, subject to certain exclusion or exemption provisions. Vessels of less than five net tons are excluded from such documentation. Thus, **Option c** would only allow applications for vessels of at least five net tons. However, vessels not engaged in commercial fishing or owned by foreign entities may also be certified, so the Council may wish to use this option in conjunction with another option. Currently, federally permitted vessels can be registered with the USCG or a state, and owners of state-registered vessels are not required to submit the tonnage of their vessel; therefore, the number of current federally permitted vessels below five net tons cannot be determined.

Additional options the Council may consider:

**Option d** - have **X** lb shrimp landings associated with the vessel via a state permit or another federal permit (e.g. South Atlantic) – This option would restrict Reserved Gulf Shrimp Vessel Permits to vessels already harvesting shrimp elsewhere.

**Option e** – assign the permit to a vessel that has not been issued a SPGM permit during the last 5 years (unless the current owner purchased the vessel in a market or arms-length transaction during this time) – This option would prevent a current permit holder from moving their permit to a small vessel, then applying for a Reserved Gulf Shrimp Vessel Permits with the original vessel, circumventing Option b or c.

## 2.3 Action 3 – Royal red shrimp endorsement

**Alternative 1 – No Action.** Continue to require a royal red shrimp endorsement to the federal Gulf shrimp vessel permit to harvest royal red shrimp from the Gulf EEZ. Endorsements are open access for entities with a federal Gulf shrimp vessel permits

**Alternative 2 – Discontinue the royal red shrimp endorsement.** Only the Gulf shrimp vessel permit will be required to harvest royal red shrimp.

### Discussion:

In Amendment 13 to the FMP for the Shrimp Fishery in the Gulf of Mexico (GMFMC 2005a), an endorsement for royal red shrimp was required to conduct commercial harvest of royal red shrimp. The purpose was to help inform data collectors about who the royal red shrimpers were and collect better information about the fishery. Royal red shrimp are primarily harvested from deep waters, so historically, only a small number of boats has been engaged in harvesting them. Information for the fishery was lacking, particularly for catch, effort, operating costs and maximum sustainable yield estimates. With the extensive number of endorsements and the limited number of active royal red shrimping vessels (Table 2.3.1), it is unclear if the establishment of the endorsement has helped with collecting the desired data outlined in Shrimp Amendment 13.

**Table 2.3.1.** Number of royal red shrimp endorsements and the number of vessels actively landing royal red shrimp (as of May 26, 2015).

Year	Number of Royal Red Shrimp Endorsements	Number of Unique Vessels Actively Landing Royal Red Shrimp
2003		17
2004		17
2005		12
2006		6
2007	369	8
2008	388	8
2009	339	6
2010	325	7
2011	331	8
2012	351	7
2013	332	15
2014	323	7

Source: NMFS Southeast Fisheries Science Center (SEFSC).

**Alternative 1** would continue the royal red shrimp endorsement requirement. This would require anyone with a federal Gulf commercial shrimp permit to also have a royal red shrimp endorsement to harvest royal red shrimp. These endorsements are available to anyone with a federal commercial shrimp permit. This alternative would continue to provide a readily accessible royal red shrimp database.

**Alternative 2** would eliminate the requirement for a royal red shrimp endorsement; however, a federal Gulf commercial shrimp permit would still be required to harvest royal red shrimp. This would decrease administrative costs to NMFS, and be a minor cost savings of ten dollars to applicants. Additionally, an economic database specific to royal red shrimp would not be maintained. This may hinder data collection in the future on this fishery. However, royal red shrimp landings are still collected.

## CHAPTER 3. AFFECTED ENVIRONMENT

### 3.1 Description of the Fishery

The Environmental Impact Statement (EIS) for the original shrimp fishery management plan (FMP) and the FMP as revised in 1981 contain a description of the Gulf of Mexico (Gulf) shrimp fishery. This material is incorporated by reference and is not repeated here in detail. Amendment 9 (GMFMC 1997) with supplemental environmental impact statement (SEIS) updated this information. 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 shrimp fishery with most catches made from June through October. Annual commercial landings in 2003 through 2013 have ranged from about 45 to 88 million pounds (mp) of tails (Table 3.1.1). The fishery is prosecuted to about 40 fathoms and is highly dependent on environmental factors such as temperature and salinity. The maximum sustainable yield established in Shrimp Amendment 15 is 146,923,100 lbs of tails (GMFMC 2015).

White shrimp are found in nearshore waters to about 20 fathoms from Texas through Alabama. The majority are taken from August through December though there is a small spring and summer fishery. From 2003 through 2013, annual commercial landings have ranged from approximately 55 to 87 mp of tails (Table 3.1.1). The maximum sustainable yield established in Shrimp Amendment 15 is 89,436,907 lbs of tails (GMFMC 2015).

Pink shrimp are found off all Gulf states but are most abundant off Florida's west coast, particularly in the Tortugas grounds off the Florida Keys. Annual commercial landings in 2003 through 2013 have ranged from approximately 3 to 11 mp of tails (Table 3.1.1); most landings are made from October through May in 30 fathoms of water. In the northern and western Gulf states, pink shrimp are sometimes mistakenly counted as brown shrimp. The maximum sustainable yield established in Shrimp Amendment 15 is 17,345,130 lbs of tails (GMFMC 2015).

Royal red shrimp occur only in federal waters. Commercial fishing for royal red shrimp is most common on the continental shelf from about 140 to 300 fathoms, and east of the Mississippi River (GMFMC 2005a). The peak fishing season is March through June. Royal red shrimp are available in other areas and at other times, but costs are generally too high to make fishing practical (GMFMC 2005a). Thus far, landings have not reached the current maximum sustainable yield (MSY) estimate of 392,000 lbs of tails in the years 2003 through 2013 and have ranged from approximately 130,000 to 353,000 lbs of tails (Table 3.1.1). In 2013, 74% of landings were from federal waters off Alabama, 24% were from off Florida, and 2% were from off Louisiana.

The three species of penaeids are short-lived and provide annual crops; royal red shrimp live longer, and several year classes may occur on the fishing grounds at one time. The condition of

each penaeid shrimp stock is monitored annually, and none has been overfished for more than 40 years.

**Table 3.1.1.** Landings (pounds of tails) of shrimp from the Gulf, 2003-2013.

Year	All Species	Brown	White	Pink	Royal R	Others
2003	161,010,611	84,077,981	61,029,451	9,992,981	279,013	5,631,185
2004	162,372,773	74,512,744	72,992,775	10,245,766	278,519	4,342,969
2005	135,418,633	58,658,224	65,399,784	8,784,798	150,316	2,425,511
2006	182,981,364	87,471,753	86,229,598	7,691,431	163,323	1,425,259
2007	139,962,049	70,675,513	64,350,692	3,459,355	229,024	1,247,465
2008	120,209,917	50,344,159	63,738,475	4,919,903	138,116	1,069,264
2009	154,642,342	75,372,722	74,431,059	4,113,970	173,065	551,526
2010	110,491,956	44,951,233	59,032,638	5,243,681	127,358	1,137,046
2011	136,543,421	72,387,001	57,969,171	4,070,606	195,354	1,921,289
2012	136,717,883	64,674,384	67,787,889	3,213,402	177,658	864,550
2013	123,471,746	62,475,827	55,869,792	3,241,638	103,076	1,781,413
Average	142,165,699	67,781,958	66,257,393	5,907,048	183,166	2,036,134

Source: NMFS Gulf Shrimp Survey, James Primrose, pers. comm., 2014; Rick Hart, pers. comm. 2013.

Cooperative management of penaeid shrimp species include: simultaneous closure in both state and federal waters off the coast of Texas, the Tortugas Shrimp Sanctuary, and seasonally closed zones for the shrimp and stone crab fisheries off the coast of Florida. The royal red shrimp fishery is only prosecuted in deeper waters of the exclusive economic zone (EEZ). An endorsement to the federal permit is required for vessels engaging in royal red shrimp fishing.

As of May 7, 2015, there were 1,468 valid or renewable federal Gulf shrimp permits and 289 endorsements for royal red shrimp. There has been a moratorium on the issuance of new Gulf shrimp permits since 2007. Permits are fully transferrable, and renewal of the moratorium permit is contingent upon compliance with recordkeeping and reporting requirements. State licenses may vary and vessels may have more than one state license. If selected, a vessel with a Gulf shrimp permit must carry a National Marine Fisheries Service (NMFS) approved observer. The size of the shrimp industry and its total effort has been substantially reduced since the benchmark 2001-2003 time period established in Amendment 14 (GMFMC 2007).

Approximately 500 vessels with SPGM have electronic logbooks (ELBs) which help monitor shrimping effort in the Gulf. This effort reduction reflects both a reduction in the number of vessels estimated to be participating in the fishery, and a reduction in the level of activity for those vessels remaining in the fishery.

Commercial shrimp vessels are classified by NMFS as part of either a nearshore or an offshore fleet. More than half of the commercial shrimp vessels fall into a size range from 56 to 75 feet (Table 2.2.2). The number of vessels prosecuting the fishery at any one time varies because of economic factors such as the price and availability of shrimp and cost of fuel. In addition to the federal shrimp vessel permits, NMFS maintains three types of databases/files, two of which are largely dependent on port agent records. One, the shrimp landings file or GSS database, is based almost entirely on trip ticket data; another is the annual landings form which is submitted by the

permit holders; the last is the vessel operating units file that lists vessels observed at ports. In the past, NMFS estimated fishing effort independently from the number of vessels fishing. NMFS used the number of hours actually spent fishing from interview data with vessel captains to develop reports as 24-hour days fished. NMFS currently uses the ELB program from the selected number of vessels fishing and the number of hours spent towing to calculate effort.

A shrimp trawl fishery occurs seasonally inside state waters. However, not all states have a permitting system for shrimping in state waters and not all states track the amount of bait shrimp landed. In 2012, there were approximately 4,000 shrimp permits for Texas, Louisiana and Mississippi; Florida and Alabama do not require special shrimp permits for state waters. There are about 3,500 small boats participating using trawls up to 16 feet in width. More than 75% of the state licenses are in Louisiana.

Bait landings of juvenile brown, pink, and white shrimp, occur in all states. Estimates from 2012 suggest landings of at least 2.5 mp (whole weight). Total values for this component of the fishery cannot be calculated as not all states estimate values.

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, and there has been a decline in the number of otter trawls in recent years (NMFS 2014). Details about the specifics of each gear type as well as the historical development of the fishery can be found in Shrimp Amendment 14 (GMFMC 2007). Royal red shrimp have been a small component of Gulf shrimp landings since the early 1960s. A few vessels in the Gulf shrimp fishery have targeted royal red shrimp, but fishing effort has been variable and inconsistent. Participation in this fishery requires larger vessels and heavier gear than used for shallow-water penaeid shrimp. 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; each gear type is well outlined in Shrimp Amendments 13 and 14 (GMFMC 2005a, 2007). In recent years, the skimmer trawl has become a major gear in the inshore shrimp fishery in the northern Gulf. All trawls used in federal waters are required to have bycatch reduction devices (BRDs) unless: the vessel is fishing for and catching more than 90% royal red shrimp; the vessel is using a try net; the trawl is a rigid frame roller trawl; the vessel is trawling within the tow-time restrictions; or the vessel is testing the efficacy of a BRD under an authorization by NMFS.

## **3.2 Description of the Physical Environment**

The EIS for the original Shrimp FMP and the FMP as revised in 1981 contains a description of the physical environment. The physical environment for penaeid shrimp is also detailed in the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2005b). This material is incorporated by reference and is not repeated here in detail.

The Gulf is a semi-enclosed oceanic basin of approximately 600,000 square miles (Gore 1992). It is connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel. Oceanic conditions are primarily influenced 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 12° C to 29° C (54° F to 84° F) depending on depth and season. In the Gulf, adult penaeid shrimp are found in nearshore and offshore on silt, mud, and sand bottoms; juveniles are found in estuaries. Primary fishing grounds for royal red shrimp are the Desoto Canyon about 75 miles off Mobile, Alabama; offshore of Tampa Bay, Florida; and the Dry Tortugas northwest of the Florida Keys.

Several area closures, including gear restrictions, may affect targeted and incidental harvest of penaeid shrimp species in the Gulf. These are described in detail in Amendment 13 (GMFMC 2005a) and incorporated by reference. The areas include:

- Cooperative Texas Shrimp Closure
- Tortugas Shrimp Sanctuary
- Southwest Florida Seasonal Closure
- Central Florida Seasonal Closure
- Longline/Buoy Gear Area Closure
- Madison-Swanson and Steamboat Lumps Marine Reserves
- The Edges Marine Reserve
- Tortugas North and South Marine Reserves
- Tortugas Shrimp Sanctuary
- Alabama Special Management Zone

Reef and bank areas designated as Habitat Areas of Particular Concern (HAPCs) in the northwestern Gulf include: 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, Florida Middle Grounds HAPC and Pulley Ridge HAPC.

Generic Amendment 3 addressed EFH requirements (GMFMC 2005b) and established that a weak link in the tickler chain is required on bottom trawls for all habitats throughout the Gulf 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. The amendment established an education program on the protection of coral reefs when using various fishing gears in coral reef areas for recreational and commercial fishermen.

### **3.3 Description of the Biological/Ecological Environment**

The EIS for the original Shrimp FMP and the FMP as revised in 1981 contains a description of the biology of the shrimp species. In its appendix, the EIS 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) updated this information which has essentially remain unchanged, except with respect to protected species as discussed below.

#### **3.3.1 Target Species**

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. Post-

larvae migrate to estuaries through passes on flood tides at night mainly from February until April; there is another minor peak in the fall. Post-larvae and juveniles are common in all U.S. estuaries from Apalachicola Bay, Florida to the Mexican border. Brown shrimp post-larvae and juveniles are associated with shallow, vegetated, estuarine habitats, but may occur on silt, sand, and non-vegetated mud bottoms. Adult brown shrimp occur in 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 eggs are demersal and larval stages are planktonic in nearshore marine waters. Post-larvae migrate through passes mainly from May until November with peaks in June and September. Juveniles are common in all Gulf estuaries from Texas to the Suwannee River in Florida. Post-larvae and juveniles commonly occur on bottoms with large quantities of decaying organic matter or vegetative cover such as mud or peat. Juvenile migration from estuaries occurs in late August and September and is related to juvenile size and environmental conditions (e.g., sharp temperature drops in fall and winter). Adult white shrimp are demersal and inhabit nearshore Gulf waters to depths of 16 fathoms on soft bottoms. More detailed information on habitat associations of white shrimp is available from Nelson (1992) and Pattillo et al. (1997).

Pink shrimp eggs are demersal, early larvae are planktonic, and post-larvae are demersal in marine waters. 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 5 to 25 fathoms.

Royal red shrimp occur exclusively in the EEZ, live longer than penaeid shrimp and many year classes may be present on fishing grounds at one time. The fishery occurs in water depths of 80 to 300 fathoms.

### **3.3.2 Bycatch**

Between 2007 and 2010, 185 species were observed as bycatch in the shrimp fishery (Scott-Denton et al. 2012). By weight, approximately 57% of the catch was finfish, 29% was commercial shrimp, and 12% was invertebrates. The species composition is spatially and bathymetrically dependent, but for the Gulf overall, Atlantic croaker, sea trout, and longspine porgy are the dominant finfish species taken in trawls (approximately 26% of the total catch by weight). Other commonly occurring species include portunid crabs, mantis shrimp, spot, inshore lizardfish, searobins, and Gulf butterflyfish. Although red snapper comprise a very small percentage (0.3% by weight) of overall bycatch, the mortality associated with this bycatch affects the recruitment of older fish (age 2 and above) to the directed fishery and ultimately the recovery of the red snapper stock.

To address finfish bycatch issues, especially bycatch of red snapper, the Gulf of Mexico Fishery Management Council (Council) initially established regulations requiring BRDs specifically to reduce the bycatch of juvenile red snapper. In 1998, all shrimp trawlers operating in the EEZ, inshore of the 100-fathom contour, west of Cape San Blas, Florida were required to use BRDs;

later BRDs were required in the eastern Gulf (GMFMC 2002). Only two Gulf states (Florida and Texas) require the use of BRDs in state waters. Shrimp trawls fishing for royal red shrimp seaward of the 100-fathom contour are exempt from the requirement for BRDs. The shrimp fishery is also a source of bycatch mortality on sea turtles (see Section 3.3.3). Bycatch is currently considered to be reduced to the extent practicable in the Gulf shrimp fishery. The actions in this amendment are not likely to change bycatch in the shrimp fishery. Bycatch levels and associated implications will continue to be monitored and issues will be addressed based on new information.

### 3.3.3 Protected Species

Species in the Gulf protected under the Endangered Species Act (ESA) include: five marine mammal species (sei, fin, humpback, sperm whales, and manatees); five sea turtles (Kemp's ridley, loggerhead, green, leatherback, and hawksbill); two fish species (Gulf sturgeon and smalltooth sawfish); and four coral species (elkhorn coral, lobed star coral, boulder star coral, and mountainous star coral). Seven species of fish and invertebrates in the Gulf are currently listed as species of concern.

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.

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and are known to occur in areas subject to shrimp trawling. Bycatch of the species by commercial fisheries is a major contributor to past declines and a potential threat to future recovery (NMFS and USFWS 1991, 1992a, 1992b, 2008; NMFS et al. 2011). Historically, southeastern U.S. shrimp fisheries (both Gulf and South Atlantic) have been the largest threat to benthic sea turtles. Regulations requiring turtle excluder devices (TEDs) have reduced mortalities from trawl fisheries on sea turtles. During a four year study period, 55 sea turtles were captured in shrimp trawls; 80% were released alive and conscious (Scott-Denton et al 2012).

The most recent biological opinion evaluated was the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. Shrimp Fisheries in Federal Waters (NMFS 2014). The Gulf shrimp fishery was considered specifically as part of this larger consultation. The biological opinion, which was based on the best available commercial and scientific data, concluded the continued authorization of the Southeast U.S. Shrimp Fisheries in Federal Waters (including the Gulf shrimp fishery) is not likely to jeopardize the continued existence of threatened or endangered species (NMFS 2014). The biological opinion implemented measures to minimize the impacts of incidental take to sea turtle or smalltooth sawfish. After the completion of the biological opinion, NMFS designated new critical habitat for the Northwestern Atlantic distinct population segment of loggerhead sea turtles defined by 5 specific habitat types. Two of those habitat types (nearshore reproductive and *Sargassum*) occur within the GMFMC's jurisdiction. NMFS determined that all federal Gulf fisheries operate outside the nearshore reproductive habitat and will not affect it. Gulf fisheries

(including the shrimp fishery) could overlap with the *Sargassum* habitat. However, NMFS determined any effects from those fisheries would be insignificant and were not likely to adversely affect the *Sargassum* habitat unit.

The shrimp fishery is classified in the 2015 List of Fisheries as a Category II fishery (79 FR 77919; January 28, 2015). This classification indicates the annual mortality and serious injury of a marine mammal stock is greater than 1% but less than 50 % of the stocks potential biological removal (PBR), not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. This fishery was elevated to Category II from Category III (mortality or serious injury to <1% of the PBR) in 2011 based on increased interactions reported by observers, strandings, and fisheries research data.<sup>6</sup>

### **3.3.4 Status of the Shrimp Stocks**

The three species of penaeid shrimp harvested by the shrimp fishery are short-lived and provide annual crops; royal red shrimp live longer (2-5 years) and multiple year classes can be found on the same fishing grounds. The condition of each shrimp stock is monitored annually, and none has been classified as overfished or undergoing overfishing (Hart 2013). Specific landings and values are provided in Table 3.1.1.

## **3.4 Description of the Economic Environment**

## **3.5 Description of the Social Environment**

### **Regional Quotients by Community**

Descriptions of the social environment associated with the Gulf shrimp fishery have been provided in previous amendments and documents (GMFMC 2005a, 2007, 2013) and will be incorporated herein by reference if appropriate. However, recent descriptions of the Gulf shrimp fishery's social environment do not provide a historical trend related to the moratorium or recent landings; therefore, more recent data are presented that will update more recent descriptions and focus on the moratorium and changes over time.

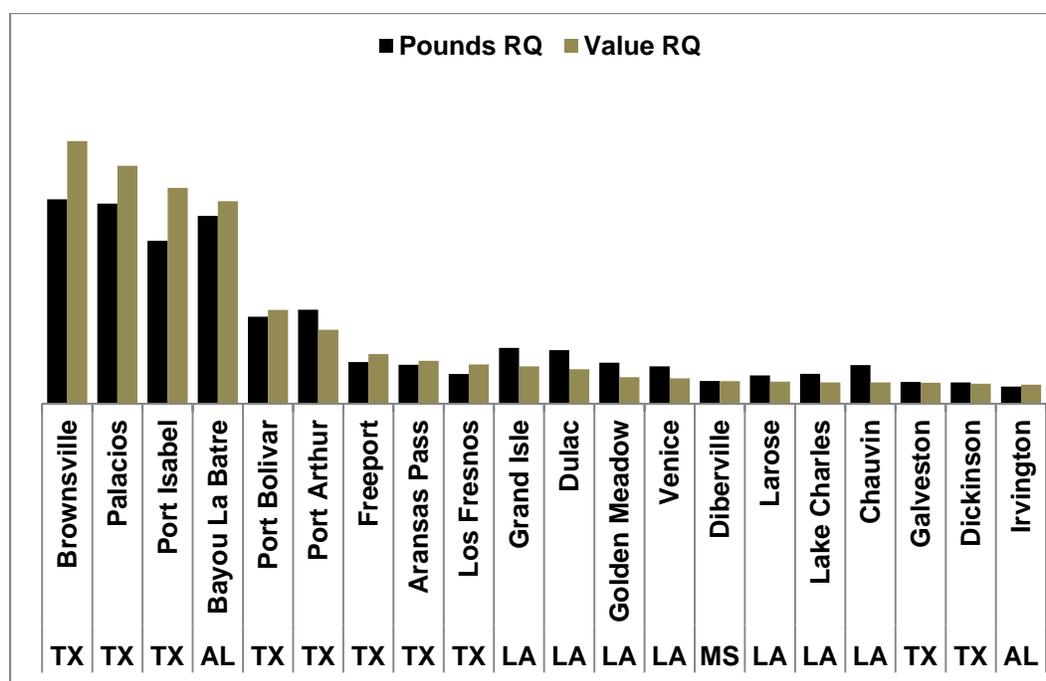
The regional quotient (RQ) is a way to measure the relative importance of a given species across all communities in the region and represents the proportional distribution of commercial landings of a particular species. This graphical representation of this proportional measure does not provide the number of pounds or the value of the catch, data which might be confidential at the community level for many places. The RQ is calculated by dividing the total pounds (or value) of a species landed in a given community, by the total pounds (or value) for that species for all communities within the Gulf of Mexico region. This measure includes all landings of a particular species, but it does not distinguish where they may have been caught. It is important to note that for some communities, especially in the Florida Keys, catches from South Atlantic vessels, that are not affected by this amendment, may be included in summary data for certain

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<sup>6</sup> [http://www.nmfs.noaa.gov/pr/pdfs/fisheries/lof2012/southeastern\\_us\\_atlantic\\_gulf\\_shrimp\\_trawl.pdf](http://www.nmfs.noaa.gov/pr/pdfs/fisheries/lof2012/southeastern_us_atlantic_gulf_shrimp_trawl.pdf).

shrimp species and the communities where they are landed. It is also important to note that location of the dealer in the ALS dataset may not always correspond to where seafood was harvested. The landings associated with a dealer location within a community are derived from the reported address of that dealer, which is not always the docks where some product may have been landed.

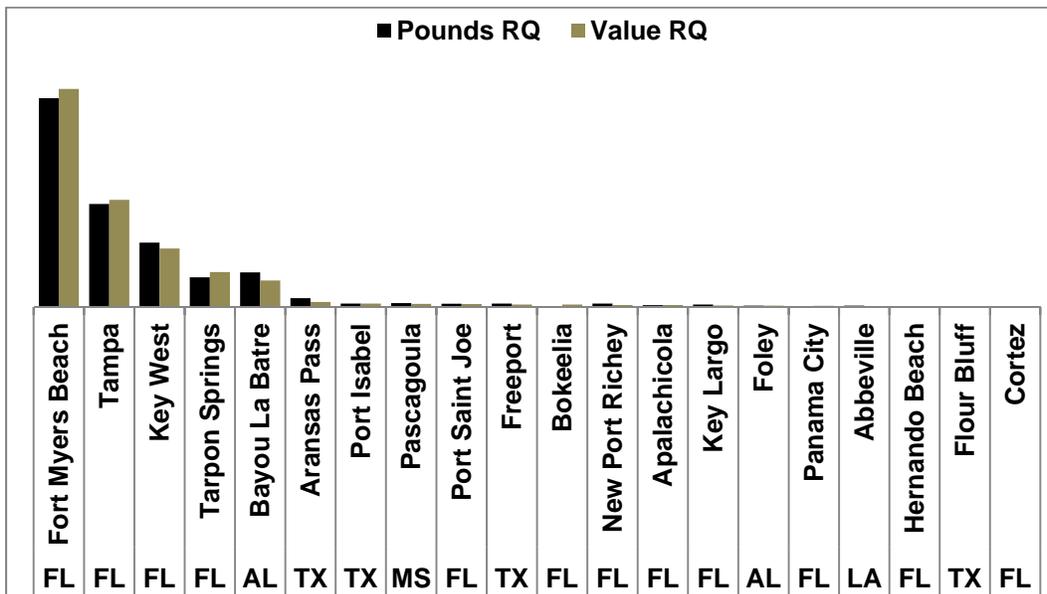
Depending upon which shrimp species is being targeted, the volume and value for regional quotient varies considerably by community. In Figure 3.5.1, except for Bayou La Batre, Alabama, the top five communities are in Texas. In fact, Texas and Louisiana communities dominate brown shrimp landings. Louisiana communities tend to have higher landings but lower value compared to dealers in other states, which may be indicative of size differentiation in harvest, with smaller sizes being landed from inshore fisheries in Louisiana that bring lower prices than larger shrimp from offshore waters.



**Figure 3.5.1.** Top twenty communities based upon pounds and value regional quotient (RQ) for brown shrimp in the Gulf.

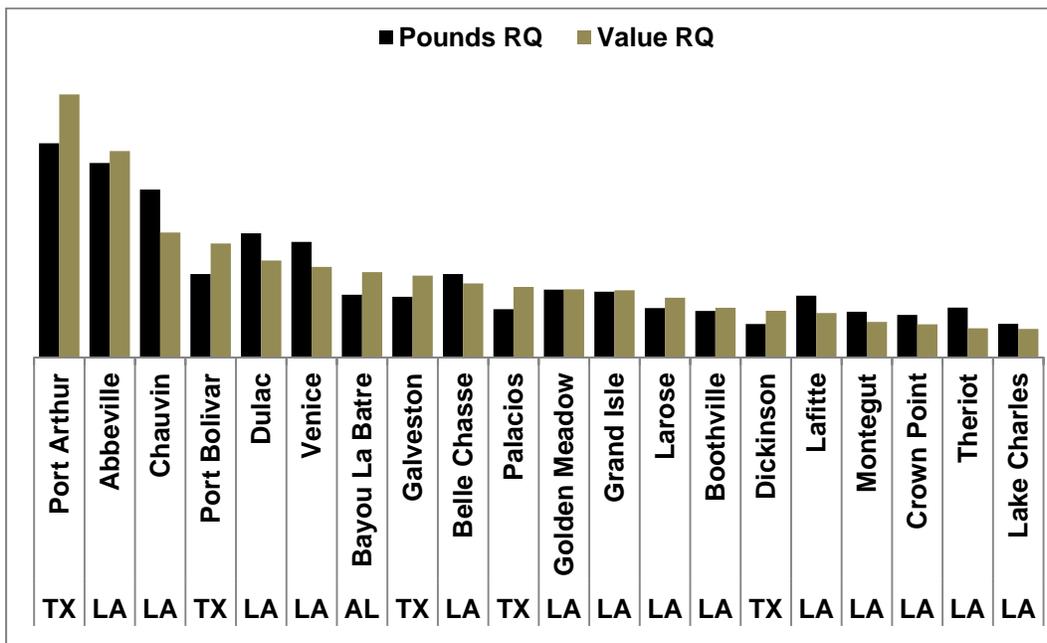
Source: SERO ALS 2012

Pink shrimp landings are primarily in Florida with the majority of landings in Fort Myers Beach (Figure 3.5.2). Tampa, Key West, and Tarpon Springs follow with Bayou LaBatre, Alabama fifth in ranking. There are several Texas communities within the top twenty, although pink shrimp landed in Texas may have been harvested elsewhere since the majority of pink shrimp are harvested off the west coast of Florida. Although, there may also be some mislabeling of brown shrimp.

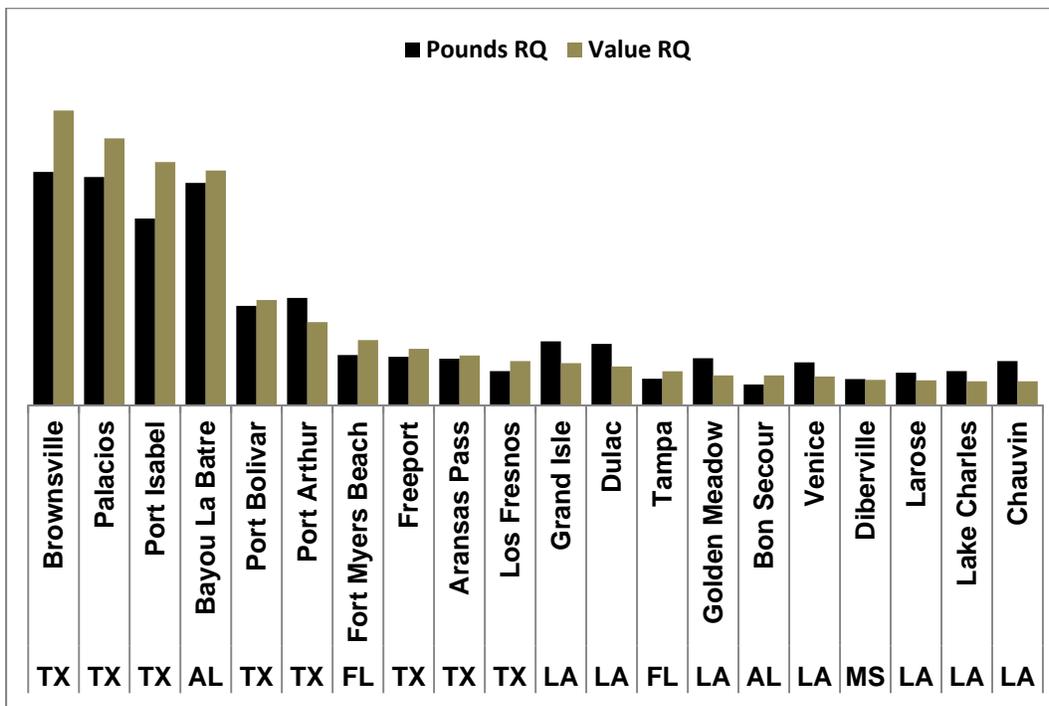


**Figure 3.5.2.** Top twenty communities based upon pounds and value regional quotient (RQ) for pink shrimp in the Gulf.  
Source: SERO ALS 2012

White shrimp landings (Figure 3.5.3) are primarily in the northern and western Gulf with Port Arthur, Texas having the highest regional quotient in terms of pounds and value. Other communities have comparable regional quotients with regard to pounds landed but are not near the value quotient found in Port Arthur.



**Figure 3.5.3.** Top twenty communities based upon pounds and value regional quotient (RQ) for white shrimp in the Gulf.  
Source: SERO ALS 2012



**Figure 3.5.4.** Top twenty communities based upon pounds and value regional quotient for total shrimp in the Gulf.

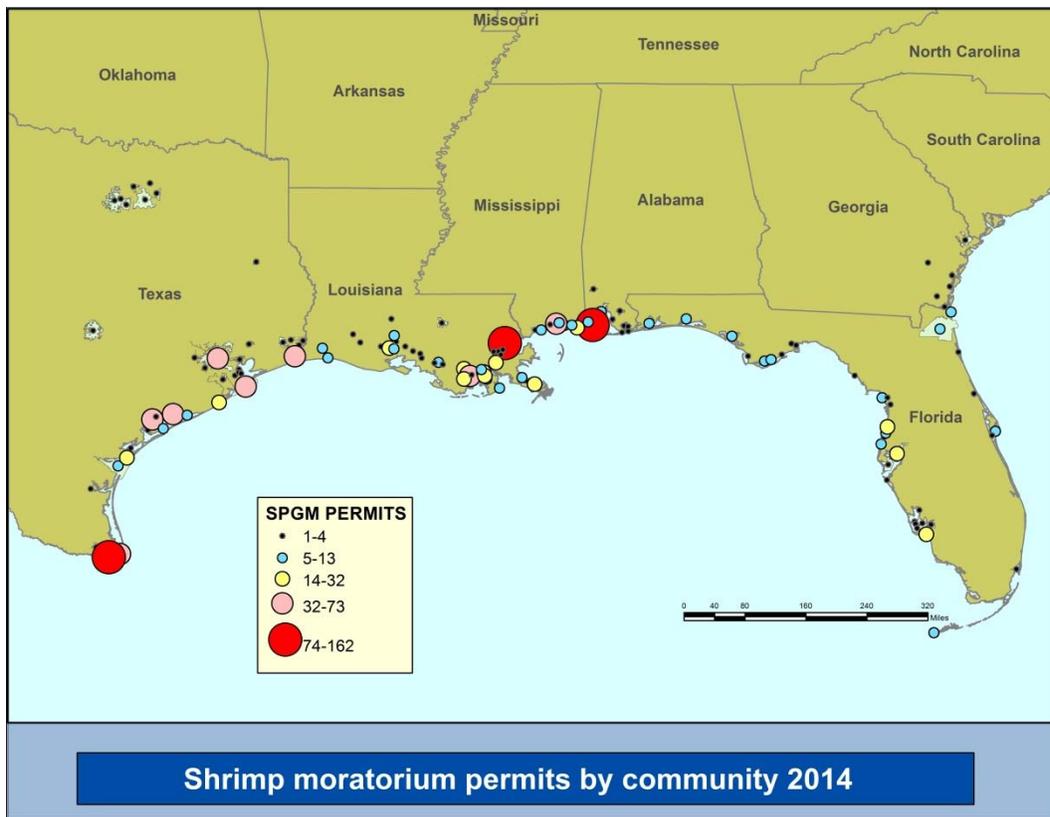
Source: SERO ALS 2012

When the combined landings of shrimp are compared in Figure 3.5.4, the landings are dominated by Texas communities with Bayou La Batre, AL fourth and Fort Myers Beach, FL ranked sixth in terms of value. Overall, communities from Texas and Louisiana dominate the top twenty communities in terms of regional quotient for shrimp.

### Demographics and Fleet Characteristics

#### Vessel Permits

As stated earlier, at the end of 2014, there were 1,470 valid Gulf commercial shrimp permits, with 463 permits terminated since the inception of the moratorium. Figure 3.5.5 displays the distribution of all Gulf shrimp permits by homeport community as of 2014. The majority of permits are in the Western Gulf; New Orleans, LA, Brownsville, TX, and Bayou La Batre, AL have more permits than other communities.



**Figure 3.5.5.** Number of Gulf shrimp permits by homeport communities.  
 Source: NMFS SERO Permits Database

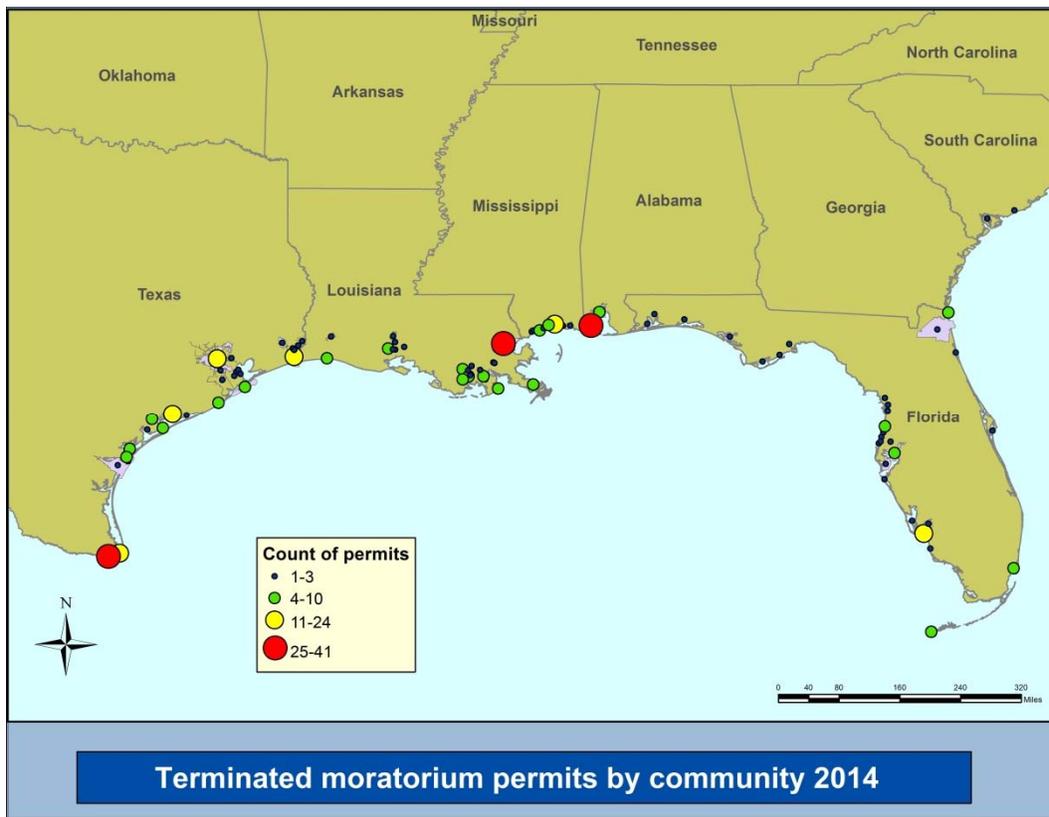
As shown in Table 3.5.1, the three above mentioned communities have considerably more Gulf shrimp permits held by vessels homeported in those communities. It should be mentioned that while the designated homeport may not be where a vessel is docked most of the time, it is the best approximation given the data available to be able to collocate people and infrastructure in a port. These three communities also have the largest number of terminated permits since the inception of the moratorium. Several communities have had a larger portion of permits terminated over the years. The states of Texas and Louisiana have the largest share of Gulf shrimp permits and terminated permits.

**Table 3.5.1.** Gulf shrimp permits and terminated permits for top 35 homeport communities.

State	Homeport Community	SPGM Permits	Terminated Permits
LA	New Orleans	162	35
TX	Brownsville	109	41
AL	Bayou La Batre	91	29
MS	Biloxi	73	15
TX	Port Isabel	53	21
TX	Port Lavaca	53	6
TX	Palacios	51	14
TX	Houston	49	24
TX	Port Arthur	49	12
LA	Chauvin	48	7
TX	Galveston	37	7
FL	Hernando Beach	32	6
LA	Cut Off	27	3
LA	Galliano	25	5
FL	Fort Myers Beach	21	12
LA	Abbeville	21	4
MS	Pascagoula	18	0
TX	Aransas Pass	17	10
FL	Tampa	16	6
LA	Dulac	16	4
TX	Freeport	16	4
LA	Intracoastal City	15	5
LA	Venice	15	5
LA	Houma	14	9
LA	Lafitte	14	1
LA	Grand Isle	13	4
FL	Jacksonville	12	2
FL	Panama City	12	0
LA	Cameron	12	4
TX	Port Bolivar	12	0
FL	Key West	11	6
AL	Mobile	10	4
LA	Lafayette	10	2
FL	Apalachicola	8	2
LA	Larose	8	2

Source: SERO Permits Database 2014

Figure 3.5.6 provides an overall representation of the geographical distribution of all terminated permits. It should be noted that some vessels with terminated shrimp permits did have designated homeports outside of the Southeast, and they may not appear in the map.



**Figure 3.5.6.** Terminated Gulf shrimp permits by community since moratorium.  
Source: NMFS SERO Permits Database

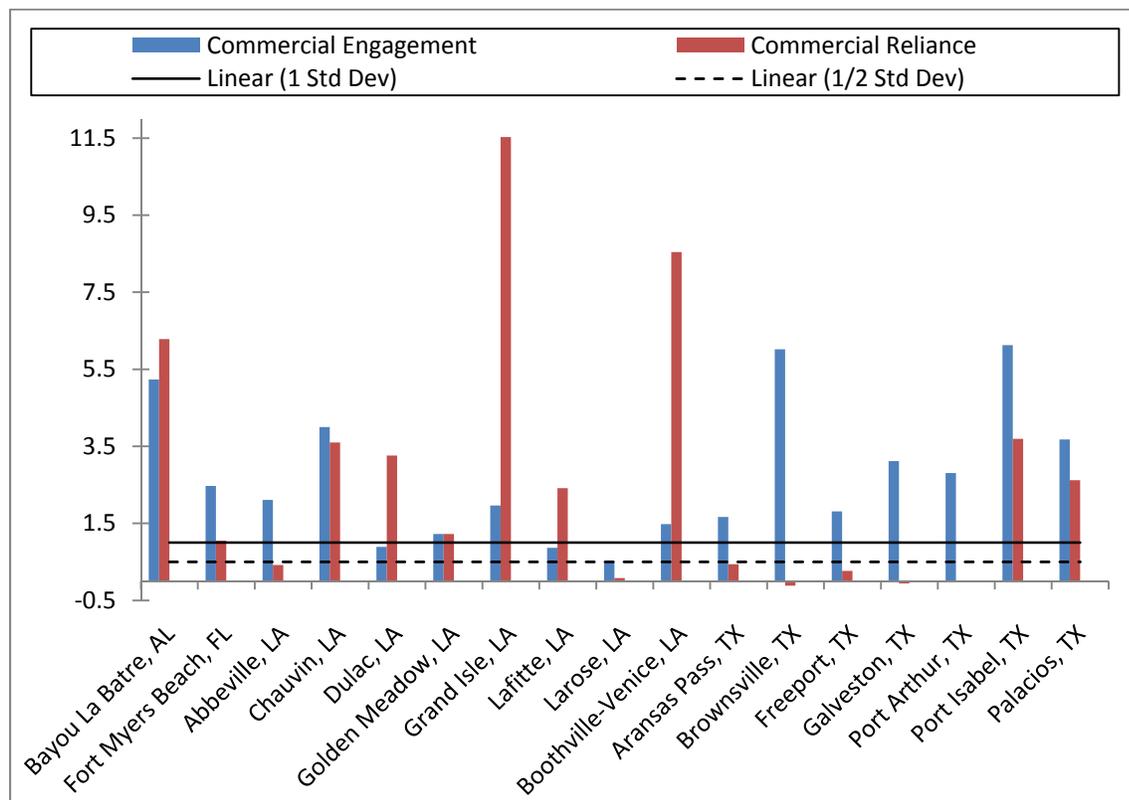
### Overall Fishing Engagement and Reliance

While we can characterize the fleet landings with regard to those communities that have high regional quotients for landings and value, it is more difficult to characterize the fleet and its labor force regarding demographics and places of residence for captains and crew of vessels. There is little to no information on captains and crew including demographic makeup.

To better understand how Gulf shrimp fishing communities are engaged and reliant on fishing overall, several indices composed of existing permit and landings data were created to provide a more empirical measure of fishing dependence (Jepson and Colburn 2013; Colburn and Jepson 2012; Jacob et al. 2012). Fishing engagement uses the absolute numbers of permits, landings, and value, while fishing reliance includes many of the same variables as engagement, but divides by population to give an indication of the per capita impact of this activity.

Using a principal component and single solution factor analysis each community receives a factor score for each index to compare to other communities. Factor scores of both engagement and reliance on commercial fishing for the top 20 communities from Figure 3.5.4 were plotted onto graphs (Figure 3.5.7). For some communities data were not available to calculate a factor score and do not appear on the chart. Each community's factor score is located on the Y axis, the higher the score the more engaged or reliant. Factor scores are standardized, therefore the mean is zero. Two thresholds of 1 and ½ standard deviation above the mean are plotted onto the

graphs to help determine a threshold for significance. Because the factor scores are standardized, a score above 1 is also above one standard deviation. Those communities with factor scores above the thresholds should be considered to have high engagement and reliance upon commercial fishing. Those that exceed both thresholds might be considered dependent upon commercial fishing.



**Figure 3.5.7.** Commercial fishing engagement and reliance indices for top twenty communities in terms of pounds and value regional quotient for total shrimp in the Gulf.  
Source: SERO Social Indicator Database

In Figure 3.5.7, all communities exceed either one or both of the thresholds of ½ or 1 standard deviation, which means they are highly engaged or reliant on commercial fishing. Those that exceed thresholds for both indices have a substantial component of their local economy dependent upon commercial fishing. The ten communities that exceed both thresholds are: Bayou LaBatre, AL; Fort Myers Beach, FL; Chauvin, LA; Dulac, LA; Golden Meadow, LA; Grand Isle, LA; Laftite, LA; Boothville-Venice, LA; Port Isabel, TX; and Palacios, TX. More in-depth profiles of some of these communities appear in previous amendments (GMFMC 2005a, 2007).

There have been relatively few if any recent descriptions of the Gulf shrimp fishery from both a social and economic perspective. Liese and Travis (2010) have provided the most recent economic analysis of fleet-wide economic performance, but there is little information concerning the demographic makeup or characterization of the fleet. While we do not have demographics for captains and crew, we can identify a proxy for the number of vessels that may have minorities associated with the vessel by looking at surnames from the permit file and counting

those that are Southeast Asian in their origin. This technique was first utilized in a memorandum from Gulf Council Director Wayne Swingle to the Shrimp Management Committee dated March 28, 2003. In that memorandum Dr. Swingle indicated that of the 1,836 federally permitted shrimp vessels, 524 (or 28.7%) had owners with Southeast Asian surnames or corporate names. A similar count conducted by SERO in 2009 resulted in 484 out of 1853<sup>7</sup> (or 26.1%) of permit owners with Southeast Asian surnames. Unfortunately, we do not know if these are active vessels and whether the crew is also of Southeast Asian ethnicity. However, this does give a rough indication of the participation rate of Southeast Asians within the Gulf shrimp fishery.

When we examine terminated permits using this same methodology, we also find that approximately 28% of those permits had owners or lessees with Southeast Asian surnames. Thus, the proportion of terminated permits for those owned by those of Southeast Asian descent is approximately the same as their participation in the shrimp fishery overall.

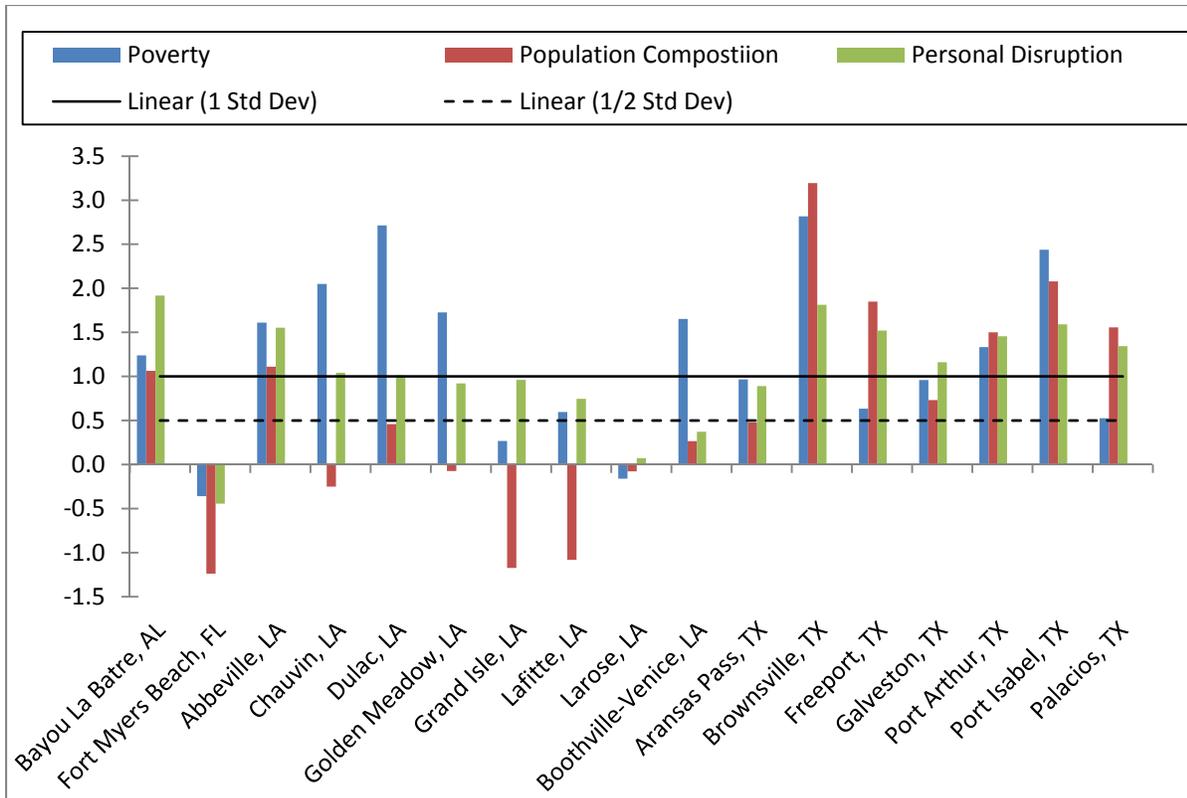
### **3.5.1 Environmental Justice Considerations**

Executive Order 12898 requires that federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. This executive order is generally referred to as environmental justice (EJ).

In order to assess whether a community may be experiencing EJ issues, a suite of indices created to examine the social vulnerability of coastal communities (Colburn and Jepson 2012; Jacob et al. 2012) is presented in Figure 4.2.1. The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified as important components that contribute to a community's vulnerability. Indicators such as increased poverty rates for different groups, more single female-headed households and children under the age of 5, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of vulnerable populations. These indicators are closely aligned to previously used measures of EJ which used thresholds for the number of minorities and those in poverty. For those communities that exceed the threshold, it is expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

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<sup>7</sup> This is a snapshot of permits at one point in time and not exclusive to shrimp vessels, so numbers may vary at different points in time. This is a very rough estimate of the number of vessels with owners of Indochinese background. It is not a precise count of persons involved in the fishery who may be of Southeast Asian descent or other minorities.



**Figure 4.2.1.** Social vulnerability indices for top twenty communities in terms of pounds and value regional quotient for total shrimp in the Gulf.

Source: SERO Social Indicator Database

In terms of social vulnerabilities, several of the top shrimp fishing communities exhibit medium to high vulnerabilities. In fact, only four communities are below the thresholds for two or more indices and do not exhibit vulnerabilities. Those that exceed both thresholds for two or more indices are: Bayou LaBatre, Alabama; Abbeville, Chauvin, Dulac, Golden, Meadow, and Boothville-Venice in Louisiana; Aransas Pass, Brownsville, Freeport, Galveston, Port Isabel, and Palacios in Texas (Figure 4.2.1). It is expected that these communities would be especially vulnerable to any social or economic disruption because of regulatory change, depending upon their engagement and reliance upon commercial fisheries. Because most of these communities are either highly engaged or reliant on commercial fishing, it is likely that any negative social effects from regulatory changes will have an impact. Whether that impact will be long-term or short-term would depend upon the regulatory change.

These indicators of vulnerability have been developed using secondary data at the community level. Because these types of data are not collected at the individual level by NMFS or other agencies, it is difficult to understand the social vulnerabilities that might exist on either a household or individual level. It is hard to recognize or attribute impacts that will directly affect individuals who are fishermen or work in a related business because we do not know what those specific vulnerabilities may be. Therefore, our measure of vulnerability is a broader measure at the community level and not specific to fishermen or the related businesses and their employees. Furthermore, there has been little research and relatively no data collected on subsistence fishing patterns of fishermen in the Southeast. Impacts on subsistence fishing within the Gulf shrimp

fishery cannot be assessed, other than to say we know very little and it is unlikely because it is an offshore fishery.

## **3.6 Description of the Administrative Environment**

### **3.6.1 Federal Fishery Management**

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (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 U.S. anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (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 that management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Appendix A. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for fishery resources in federal waters of the Gulf. 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 Council consists of 17 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. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard (USCG), and Gulf States Marine Fisheries Commission.

The Council uses its Science and Statistical Committee to review data and science used in assessments and fishery management plans/amendments. Regulations contained within FMPs are enforced through actions of the NMFS' Office for Law Enforcement, the USCG, and various state authorities.

The public is involved in the fishery management process through participation at public meetings, on advisory panels and through Council meetings that, with few exceptions for discussing personnel matters, are open to the public. The regulatory process is 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.

### 3.6.2 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 have the authority to manage their respective state fisheries including enforcement of fishing regulations. Each of the five states exercises legislative and regulatory authority over its state's natural resources through discrete administrative units. Although each agency listed below is the primary administrative body with respect to the state's natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. The states are also involved through the Gulf States Marine Fisheries Commission in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries.

NMFS' State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national Acts (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act). Additionally, it works with the Gulf States Marine Fisheries Commission to develop and implement cooperative State-Federal fisheries regulations.

Texas Parks & Wildlife Department - <http://www.tpwd.state.tx.us>

Louisiana Department of Wildlife and Fisheries <http://www.wlf.louisiana.gov/fishing>

Mississippi Department of Marine Resources <http://www.dmr.state.ms.us/>

Alabama Department of Conservation and Natural Resources

<http://www.outdooralabama.com/fishing-alabama>

Florida Fish and Wildlife Conservation Commission <http://www.myfwc.com>

## CHAPTER 4. REFERENCES

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## Appendix A. ALTERNATIVES CONSIDERED BUT REJECTED

REMOVED AT JUNE 2015 COUNCIL MEETING

One alternative from Action 3- Royal red shrimp endorsement

**Alternative 3** – To renew a royal red shrimp endorsement, the applicant must have had a minimum royal red shrimp landings during one of the three calendar years preceding the application

Option a: 300 lbs

Option b: 1,000 lbs

Option c: 10,000 lbs

**Alternative 3** would require landings to be eligible to be issued a royal red shrimp endorsement. **Option a** is the minimum landings that have been recorded from a vessel in the past 5 years. **Options b** and **c** are larger values that indicate that the fisher is targeting royal red shrimp at least sometime during the year. In 2013, the landings for royal red shrimp were below 200,000 lbs of tails (GMFMC 2014). The maximum landings recorded for royal red shrimp (from the years 1962-2013) was 336,710 lbs of tails in 1994. **Alternative 3** would prevent new entrants into the fishery from gaining a royal red endorsement and would eliminate latent endorsements.