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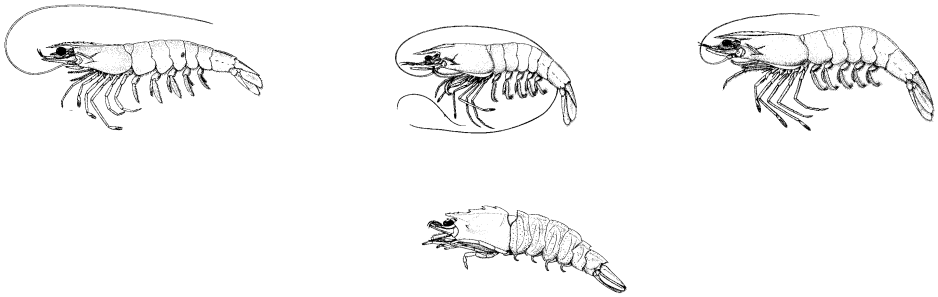
AMENDMENT 7 TO THE FISHERY MANAGEMENT PLAN FOR THE SHRIMP FISHERY OF THE SOUTH ATLANTIC REGION

INCLUDING ENVIRONMENTAL ASSESSMENT, INITIAL REGULATORY FLEXIBILITY ANALYSIS, REGULATORY IMPACT REVIEW, SOCIAL IMPACT ASSESSMENT/ FISHERY IMPACT STATEMENT AND BIOLOGICAL ASSESSMENT



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South Atlantic Fishery Management Council
4055 Faber Place, Suite 201; North Charleston, South Carolina 29405
(843) 571-4366 / FAX (843) 769-4520 Toll Free (866) SAFMC-10
email: safmc@safmc.net

National Marine Fisheries Service, Southeast Regional Office
263 13th Avenue South; St. Petersburg, Florida 33701
(727) 824-5301 / FAX (727) 824-5308

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ABBREVIATIONS AND ACRONYMS

ABC	Allowable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limits
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B	A measure of stock biomass either in weight or other appropriate unit
B_{MSY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	The current stock biomass
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CPUE	Catch per unit effort
CRP	Cooperative Research Program
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFH-HAPC	Essential Fish Habitat - Habitat Area of Particular Concern
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
F	A measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	Fishing mortality that will produce a static SPR = 30%.
$F_{45\%SPR}$	Fishing mortality that will produce a static SPR = 45%.
F_{CURR}	The current instantaneous rate of fishing mortality
F_{MSY}	The rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	The rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FMU	Fishery management unit
FONSI	Finding of No Significant Impact
GFMC	Gulf of Mexico Fishery Management Council
IFQ	Individual fishing quota
M	Natural mortality rate
MARFIN	Marine Fisheries Initiative
MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MBTA	Migratory Bird Treaty Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act of 1972

MRFSS	Marine Recreational Fisheries Statistics Survey
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuary Act
NOAA	National Oceanic and Atmospheric Administration
OY	Optimum Yield
R	Recruitment
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE Report	Stock Assessment and Fishery Evaluation Report
SAMFC	South Atlantic Fishery Management Council
SDDP	Supplementary Discard Data Program
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
TL	Total length
T_{MIN}	The length of time in which a stock could rebuild to B_{MSY} in the absence of fishing mortality
USCG	U.S. Coast Guard

AMENDMENT 7 TO THE FISHERY MANAGEMENT PLAN FOR THE SHRIMP FISHERY OF THE SOUTH ATLANTIC REGION

INCLUDING A FINAL ENVIRONMENTAL ASSESSMENT, INITIAL REGULATORY FLEXIBILITY ANALYSIS, REGULATORY IMPACT REVIEW AND SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT

Proposed actions: Address the current 15,000-pound landing requirement for rock shrimp; address loss of limited access rock shrimp endorsements due to not meeting the landing requirement by 12/31/2007; address loss of limited access rock shrimp endorsements due to failing to renew within the specified timeframe; change the names given to the rock shrimp permit and endorsement to minimize confusion and require the provision of economic data by shrimp permit holders.

Lead agency:

FMP – South Atlantic Fishery Management Council
EA - NOAA Fisheries Service

For Further Information Contact:

Robert K. Mahood
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
866-SAFMC-10
safmc@safmc.net

Dr. Roy E. Crabtree
NOAA Fisheries, Southeast Region
263 13th Avenue South
St. Petersburg, FL 33701
727-824-5301

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ABSTRACT

The need for action through Amendment 7 to the Shrimp Fishery Management Plan stems from the desire to maintain a viable rock shrimp fishery in the South Atlantic region. It is now necessary for the Council to assess whether actions implemented through Amendment 5 have resulted in the desired reduction in capacity and are no longer necessary in light of changes in the rock shrimp fishery over the past 6 years. Actions being proposed in this amendment would:

- Address the need to for the 15,000-pound landing requirement;
- Address the loss of limited access rock shrimp endorsements due to not meeting the landing requirement by 12/31/2007;
- Address the loss off limited access rock shrimp endorsements due to failing to renew within the specified timeframe;
- Change the names given to the rock shrimp permit and endorsement to minimize confusion; and
- Require the provision of economic data by shrimp permit holders.

This Draft Environmental Assessment (DEA) has been prepared to analyze the effects of implementing regulations as listed above. Comments on this DEA will be accepted for XX days from publication of the Notice of Availability (NOA) in the Federal Register.

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SUMMARY

Purpose and Need

The Council is considering management measures to address the ability of vessels to retain their South Atlantic rock shrimp limited access endorsements. Concern exists regarding the provision to require vessels with endorsements to land a minimum of 15,000 pounds of South Atlantic rock shrimp in at least one calendar year during four consecutive calendar years. In addition, the Council is considering reinstatement of endorsements lost due to either not meeting the landing requirement by 12/31/2007 or failing to renew the endorsement within the specified timeframe. This is to ensure that enough effort will continue to be active to maintain a viable fishery and its infrastructure. The Council is also concerned about confusion about the rock shrimp limited access endorsement as implemented in the final rule versus the limited access permit as specified in Amendment 5. Indications are that a number of individuals did not renew their endorsements when they renewed their rock shrimp permits because they did not understand they needed both an open access permit and a limited access endorsement. A latent need exists to acquire economic data from shrimp permit holders in the region. Such data collection would allow NOAA Fisheries Service to conduct the analyses required by the Magnuson-Stevens Act and other applicable law and assist the Council to fully understand how proposed management measures would impact shrimp fishermen and dealers.

Alternatives Being Considered

Action 1. The 15,000-pound rock shrimp landing requirement.

Alternative 1 (No-action). Retain the 15,000-pound rock shrimp landing requirement.
Preferred Alternative 2. Remove the 15,000-pound rock shrimp landing requirement.
Alternative 3. Change the landing requirement to 7,500 pounds of rock shrimp.

Action 2. Endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement by 12/31/07.

Alternative 1. (No-action). Do not reinstate lost endorsements.

Preferred Alternative 2. Reinstate all endorsements lost due to not meeting the landing requirement of 15,000 pounds of rock shrimp in one of four consecutive calendar years.

Alternative 3. Reinstate endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement in one of four consecutive calendar years, for those vessels that landed at least 7,500 pounds of rock shrimp during the same time period.

Action 3. Endorsements lost through failure to renew the rock shrimp limited access endorsement.

Alternative 1 (No-action). Do not reinstate lost endorsements.

Preferred Alternative 2. Reinstate all endorsements for those who renewed their permit in the year in which they failed to renew their endorsement. Require rock shrimpers eligible to have their endorsements reinstated to apply for a limited access endorsement within one year after the effective date of the final rule of for this amendment. Note: Eligible individuals need to have had an endorsement at one time.

Alternative 3. Extend the time allowed to renew rock shrimp endorsements to one calendar year after the effective date for this action.

Action 4. Change the names given to the rock shrimp permit and endorsement to minimize confusion.

Alternative 1. (No-action). Continue to require an "open access permit" to fish for rock shrimp in the EEZ off the Carolinas and a "limited access endorsement" to fish for rock shrimp in the EEZ off Georgia and Florida.

Alternative 2. Create two types of permits for the rock shrimp fishery and specify that a vessel can only have one permit:
A. Rock Shrimp Permit (South Atlantic EEZ) – would allow fishing throughout the South Atlantic EEZ.
B. Rock Shrimp Permit (Carolinas Zone) – would allow fishing in the EEZ off North and South Carolina .

Action 5. Require all shrimp permit holders to provide economic data.

Alternative 1 (No-action). Do not require collection of economic data from any shrimp permit holders.

Alternative 2. Require all South Atlantic shrimp permit holders to provide economic data.

Preferred Alternative 3. Require all South Atlantic shrimp permit holders to provide economic data if selected to do so.

Affected Environment

The immediate impact area would be the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia and east Florida to Key West. A larger area could be affected as some fishermen may fish in and out of the federal 200-mile limit off of North Carolina, South Carolina, Georgia, and east Florida.

Section 3.1.2 provides a description of the essential fish habitat. The biological environment is described in **Section 3.2.** A description of the human environment is provided in **Section 3.4.**

Environmental Consequences

Action 1. The 15,000-pound rock shrimp landing requirement.

Biological Effects

Alternative 1 (No-action) would result in the largest reduction in fishery participation out of all the alternatives. Thus, effort would be expected to be lowest and consequently adverse biological impacts would be lowest. **Preferred Alternative 2** would allow the greatest number of participants in the rock shrimp fishery and presumably have the greatest impact on targeted and non-targeted species. Future management measures in other South Atlantic fisheries may cause an increase in effort in the rock shrimp fishery thereby increasing adverse biological impacts. The biological impacts of **Alternative 3** would be intermediate to **Alternatives 1 and 2**.

Social/Economic Effects

Alternative 1 (No-action) would produce direct and indirect adverse social and economic impacts since fishery participation would decrease by 34% this year, and would likely result in a proportionate loss of revenue generated by the rock shrimp fishery affecting the supporting infrastructure and surrounding communities. **Alternative 2** would remove the landing requirement altogether allowing for the highest level of fishery participation of all the alternatives. Allowing all vessels in question the opportunity to continue their participation in the fishery would yield the most beneficial effect on the socioeconomic environment of the three alternatives being considered. **Alternative 3** would allow the continued participation of few vessels relative to the number affected under **Alternative 2**, yielding a much lower beneficial socioeconomic impact, yet still beneficial nonetheless.

Action 2. Endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement by 12/31/07.

Biological Effects

Under the **Alternative 1 (No-action)** no endorsements would be reinstated, thus reducing potential fishery participation and effort, resulting in an indirect beneficial biological effect. **Alternatives 2 and 3** would result in adverse biological effects due to increased fishing effort, however **Alternative 2** would likely result in a higher level of fishery participation than **Alternative 3**.

Social/Economic Effects

Under **Alternative 1 (No-action),** the maximum fleet size would be reduced from 125 vessels to 82 vessels. These vessels will permanently lose their ability to participate in the fishery as well as the market value of their endorsements. At a value of $5,000 per endorsement, the estimated loss to these vessels would be $215,000 with respect to the

market value of their endorsements. With respect to losing their ability to participate in the fishery, these vessels have not been very dependent on the South Atlantic rock shrimp fishery during the past five years. **Alternative 1 (No-action)** may place the fishery in jeopardy of collapse, deemed to be especially unnecessary due to the apparent abundance of rock shrimp biomass. There are communities throughout the South Atlantic and the Gulf that would be especially impacted similar to those impacted under **Alternative 1 (No-action)** in **Action 1**. Bayou LaBatre, Alabama, Seaford, Virginia and Tarpon Springs and Jacksonville, Florida are a few of the communities most likely impacted by the lost endorsements. On the other hand, these same communities would benefit from reinstatement of endorsements under **Preferred Alternative 2**. Under this alternative, the 43 vessels discussed above would not lose their endorsements and thus would retain their ability to participate in the fishery, at least in the short-term. Moreover, the potential productive capacity associated with these vessels would be retained in the fishery. It is also possible that as many as five additional vessels would benefit under **Preferred Alternative 2** depending on which alternative the Council selects under **Action 3**. Selection of **Alternative 3** would only allow three more vessels with active or renewable endorsements to remain in the fishery relative to **Alternative 1**. Depending on the alternative selected under **Action 3**, one additional vessel with a terminated endorsement could be allowed back in the fishery under this alternative.

Action 3. Endorsements lost through failure to renew the rock shrimp limited access endorsement.

Biological Effects

The **Alternative 1 (No-action)**would eliminate a small number of vessels from the fishery, possibly reducing effort, which may produce a beneficial yet minimal indirect biological impact. **Alternatives 2 and 3** would also result in indirect biological effects to the same minimal degree as **Alternative 1 (No-action)** but would be adverse in nature due to a potential increase in fishing effort.

Social/Economic Effects

Under **Alternative 1 (No-action)**, at least five vessels will permanently lose their limited access endorsements and these endorsements would therefore be retired from the fishery. In effect, because of a paperwork error, these vessels will have permanently lost their ability to operate in the limited access portion of the fishery. Further, they will have lost the market value of these endorsements. Current information suggests that the current market value of these endorsements is approximately $5,000. However, in the short-run, although **Preferred Alternative 2** would reinstate these five vessels' endorsements, thereby increasing the maximum number of endorsements in the fishery to 130, it is unlikely to increase production in the rock shrimp fishery to any great extent, particularly given current economic conditions in the rock and penaeid shrimp fisheries. However, these vessels would also regain the current market value of their endorsements. Therefore, the direct, short-term economic benefits are minimal under **Preferred Alternative 2.** However, this would benefit local fishermen as it would give them the opportunity to re-engage in the fishery and thus support local dealers and processors, as well as captains and crew. An improvement in economic conditions would also increase

the market value of the reinstated endorsements and thus the long-term benefits as well, though a continued decline in the fishery's economic condition would lead to the opposite. With respect to **Alternative 3**, the economic impacts of this alternative are less certain and could be equivalent to the impacts under **Alternative 1 (No-action)**, **Preferred Alternative 2**, or somewhere in between. Presumably, if these vessel owners place any value on their endorsements and their ability to participate in the rock shrimp fishery in the future, they would take advantage of this opportunity as soon as possible. However, since the desires of these vessels' owners, current or future, cannot be predicted or known, it is not possible to predict the benefits of **Alternative 3** with a high degree of certainty.

Action 4. Change the names given to the rock shrimp permit and endorsement to minimize confusion.

Biological Effects

The alternatives in this action are purely administrative and would have no impacts on the biological environment.

Social/Economic Effects

The direct economic effects of this action would be minimal, though positive in nature. by retaining the status quo under **Alternative 1 (No-action)**, confusion over the rock shrimp permit structure would likely continue. As a result, unintended adverse effects on potential and, in the long-term, actual productive capacity and production could occur as a result of endorsements being terminated because of vessel owners' confusion over the permit application structure and process. Under **Preferred Alternative 2**, a vessel would only need one permit or the other rather than both. This would simplify the application process for these vessel owners and hopefully avoid any unintended short or long-term reductions in the fleet size and thus productive capacity.

Action 5. Require all shrimp permit holders to provide economic data.

Biological Effects

The alternatives in this action are purely administrative and would have no impacts on the biological environment.

Social/Economic Effects

Very limited historical information on vessel costs and profitability is available for the South Atlantic fishery as a whole or certain components thereof, such as the rock shrimp fishery. Given the lack of such data, it is difficult for the Council to conduct regulatory impacts analyses that meet the requirements of the Magnuson-Stevens Act (MSA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act, E.O. 12866, and other federal statutes. More specifically, the recently revised version of MSA explicitly states that all FMPs must indicate all economic information necessary to meet the requirements of the Act. Furthermore, the lack of such data compromises the accuracy of scientific research and regulatory impact analyses and, as such, can lead to the provision of potentially misleading information and guidance which can in turn lead to less than optimal fishery management decisions by the Council and NOAA Fisheries

Service. With respect to economic effects, industry participants would experience no direct effects under **Alternative 1 (No-action)**. However, the problems noted above would persist, which is contrary to the Council's objectives and current federal mandates. Furthermore, indirect adverse impacts could be imposed on industry participants as a result of inaccurate scientific research and policy guidance. Under **Alternative 2** or **Preferred Alternative 3**, no direct cash expense would be imposed on industry participants. However, there is an opportunity cost associated with any time burden created by additional reporting requirements. The potential implementation of this new data collection requirement under either **Alternative 2** or **Preferred Alternative 3** would only impact approximately 400 additional vessels at most that are unique to the federal South Atlantic shrimp fisheries. It is highly likely that the indirect benefits of **Preferred Alternative 3** would outweigh the opportunity costs imposed on vessels, particularly if only a sample are required to respond each year.

1 Introduction

1.1 Background

The South Atlantic Fishery Management Council (the Council), in cooperation with NOAA's National Marine Fisheries Service (NOAA Fisheries Service), is responsible for the management of shrimp fisheries off the coast of the southeastern United States. Fishery management plans (FMPs) and FMP amendments are developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act as amended by the Sustainable Fisheries Act (SFA) (16 U.S.C. 1801 *et seq*.) (Magnuson-Stevens Act). Section 301(a) of the Magnuson-Stevens Act contains ten national standards for fishery conservation and management, with which FMPs and FMP amendments must comply. The proposed actions in this amendment to the FMP for the Shrimp Fishery of the South Atlantic Region (Shrimp FMP) focus on advancing the Council's and NOAA Fisheries Service's compliance with National Standard 5, which requires management measures to consider efficiency in the utilization of fishery resources.

Rock shrimp were added to the Shrimp FMP in 1996. Rock shrimp landings in the South Atlantic region averaged just less than 3 million pounds per year for 2003-2006, with large interannual variability. In particular, landings in 2005 were less than 5% of the average, while landings in 2004 were more than 200% of the average. Most rock shrimp fishing occurs off the Florida east coast, especially near the Cape Canaveral area.

All vessels fishing for rock shrimp in the South Atlantic exclusive economic zone (EEZ) must have an open access South Atlantic rock shrimp permit. In 2003, a limited access program was created in Amendment 5 for the rock shrimp fishery in the EEZ south of the South Carolina/Georgia state line. Endorsements were issued to vessels with at least 15,000 pounds of rock shrimp landings in any one year during 1997-2000. An **endorsement is considered active** for one year after it is issued and then expires. Endorsements are **renewable** until one year after expiration; endorsements are **non-renewable** at the end of that year and cannot be transferred. A **vessel is considered inactive** if the vessel lands less than 15,000 pounds of rock shrimp in a year, and the endorsement cannot be renewed if the vessel is inactive for four consecutive years. If an endorsement is transferred to another vessel before it expires, the four-year time period for the landings requirement restarts.

The Shrimp Advisory Panel (AP) suggested these landings requirements because they were concerned about the high number of latent permit holders and vessels that fished infrequently. The limited access program criteria were set so the core group of participants would remain in the fishery while overall effort was reduced. The AP suggested the fishery could support no more than 150 vessels. However, fewer vessels may not fully utilize the resource.

1.2 Purpose and Need

Purpose

The Council is considering several management measures to address the ability of vessels to retain their South Atlantic rock shrimp limited access endorsements. They are primarily concerned about the provision requiring vessels with endorsements to land a minimum of 15,000 pounds of South Atlantic rock shrimp in at least one calendar year during four consecutive calendar years. The AP suggested the Council consider whether this provision should be retained, revoked, revised, or possibly extended (i.e. allow vessels a longer time period to meet the requirement). In addition, the AP suggested reinstatement of endorsements lost as a result of not meeting the landings requirement.

Another issue involves the requirement for vessel owners to renew their endorsement in a timely manner to retain their eligibility. Specifically, for vessels to retain eligibility, the permit holder must send a complete application for renewal to the Southeast Regional Administrator within one year after the endorsement's expiration date. The Council is concerned about confusion over the rock shrimp limited access endorsement as implemented in the Final Rule for Amendment 5 (FRN citation) versus the limited access permit as specified in Amendment 5. The AP and members of the public have told the Council that a number of individuals did not renew their endorsements when they renewed their rock shrimp permits because they did not understand they needed both an open access permit and a limited access endorsement.

Requiring shrimp permit holders to provide economic data would allow NOAA Fisheries Service to collect these data for the shrimp fishery. When such data become available, the Council could conduct the analyses required by the Magnuson-Stevens Act and other applicable law. These data would also allow the Council to fully understand how proposed management measures would impact shrimp fishermen and dealers.

The Council's stated objective to be addressed by actions in this amendment is: "To ensure that sufficient effort remains active to sustain the fishery and the infrastructure."

Need

Review of the 15,000-pound landings requirement and possible reinstatement of endorsements is needed because the makeup of the fishery could change under current requirements. Of the 155 vessels issued limited access endorsements, 107 vessels obtained them in 2003 and the other 48 vessels received them during 2004-2007. Of these endorsements, 105 are currently active, 20 are renewable, and 30 are non-renewable. Therefore, a maximum of 125 endorsements are or may become active in the rock shrimp fishery under the current permit requirements.

Each vessel must meet the landings requirement within four years from the time its endorsement is issued for the vessel to remain active in the fishery. Of the 125 vessels, 55 have met the landing requirement. Of the 70 vessels that have not met the requirement, 27 still have one to four years (depending on when the endorsement was

issued) to do so. Thus, 43 vessels lost their endorsements because they did not meet the 15,000-pound requirement by December 31, 2007. Of the 30 vessels with non-renewable endorsements, five have met the 15,000-pound requirement but can no longer fish for rock shrimp because their permit has expired.

In total, 73 vessels could be eliminated from the rock shrimp fishery due to not meeting the 15,000-pound requirement, the renewal period, or both. Thus 47% of the 155 endorsements originally issued may be eliminated if no changes are made to the current requirements and even more could be eliminated in the future for the same reasons.

The AP determined the rock shrimp fishery could support 150 vessels. If endorsements are eliminated for failure to meet either the 15,000-pound landing requirement or the renewal period, the number of vessels in the fishery would be reduced below the recommended number. The Council received input from the AP and members of the public stating this reduction would result in insufficient effort to support the rock shrimp infrastructure and fishery.

The confusion over the need to renew both the open access permit and the limited access endorsement will continue under the current regulations. Potentially all 20 of the renewable endorsements could be lost if those permit holders do not understand the renewal process. This would reduce the fishery to the 105 vessels with currently active permits by the end of 2008, and even further as more endorsements come up for renewal. A change in the permit structure to more closely resemble the one intended in Amendment 5 could decrease the chance for shrimpers to lose their fishing privileges due to confusion.

Economic data are necessary to complete analyses required by the Magnuson-Stevens Act and other applicable law. Currently, the Shrimp FMP does not specify collection of economic data in the fishing record reporting requirement. The Council cannot fully understand potential impacts of management regulations without such data. This data collection addresses Objective 9 of the Shrimp FMP as amended: “Implement permit and reporting requirements needed to ensure necessary data are provided by the rock shrimp industry.” However, the data reporting requirements would apply to all shrimp permit holders.

1.3 History of Management

The **Fishery Management Plan/EIS** for the Shrimp Fishery of the South Atlantic Region (SAFMC 1993) provided South Atlantic states with the ability to request concurrent closure of the Exclusive Economic Zone (EEZ) adjacent to their closed state waters following severe winter cold weather and to eliminate fishing mortality on over-wintering white shrimp following severe winter cold kills. In addition the fishery management plan also established a buffer zone extending seaward from shore 25 nautical miles, inside of which no trawling would be allowed with a net having less than four-inch stretch mesh during an EEZ closure. Vessels trawling inside this buffer zone cannot have a shrimp net aboard (i.e., a net with less than four-inch stretch mesh) in the closed portion of the EEZ. Transit of the closed EEZ with less than four-inch stretch mesh aboard, while in possession of penaeid species (brown, pink, and white shrimp), is allowed provided the nets are in an unfishable condition which is defined as stowed below deck. The fishery management plan provided an exemption for the royal red and rock shrimp fisheries to allow the rock shrimp fishery to be prosecuted with minimal disruption during a closure of federal waters for protection of white shrimp.

The Shrimp FMP defined Maximum Sustainable Yield (MSY) as the mean total landings for the southeast region:

White shrimp – 14.5 million pounds
Brown shrimp – 9.2 million pounds
Pink shrimp – 1.8 million pounds

Optimum Yield (OY) for the white shrimp fishery was defined as the amount of harvest that could be taken by U.S. fishermen without reducing the spawning stock below the level necessary to ensure adequate reproduction. This level has been estimated only for the central coast of South Carolina, and only in terms of subsequent fall production (assumed to represent recruitment).

The Shrimp FMP established the overfishing criterion for white shrimp as "when the overwintering white shrimp population within a state's waters declines by 80% or more following severe winter weather resulting in prolonged cold water temperatures." Regulations implementing the Shrimp FMP were published October 27, 1993 and became effective on November 26, 1993.

Shrimp Amendment 1/EA (SAFMC 1996a) addressed measures pertaining to the rock shrimp fishery in the South Atlantic EEZ. In this amendment rock shrimp was added to the management unit and a Federal South Atlantic Rock Shrimp Permit was required beginning November 1, 1996. Trawling for rock shrimp was prohibited east of 80° W. longitude between 27° 30' N. latitude and 28° 30' N. latitude in depths less than 100 fathoms to limit the impact of the rock shrimp fishery on essential bottom fish habitat, including the fragile coral species existing in the *Oculina* Bank Habitat Area of Particular Concern (HAPC). This prohibition enhanced existing federal regulations for coral and snapper grouper species by protecting essential live/hard bottom habitat including

Oculina coral and the *Oculina* Bank HAPC from trawl-related damage. To address the need for better data, NOAA Fisheries Service was directed to require dealers to submit reports to accurately account for harvest of rock shrimp in the South Atlantic. Shrimp Amendment 1 established OY for the rock shrimp fishery as MSY in the South Atlantic EEZ. As stated previously, MSY is defined as the amount of harvest that can be taken by U.S. fishermen without reducing the spawning stock below the level necessary to ensure adequate reproduction. This amendment established MSY for rock shrimp as the mean total landings for the southeast region. Through this amendment, an overfishing threshold was established for rock shrimp; the rock shrimp resource was considered overfished when the annual landings exceeded the value which is two standard deviations above mean landings 1986-1994. This level was set at 6,829,449 pounds based on the more accurate state data. Shrimp Amendment 1 (SAFMC 1996a) was sent to NOAA Fisheries for formal review and implementation on January 17, 1996. Regulations implementing the actions in Shrimp Amendment 1 became effective on October 9, 1996 (closure) and November 1, 1996 (remaining measures).

Shrimp Amendment 2/SEIS (SAFMC 1996b) added pink shrimp to the management unit, defined overfishing OY for brown and pink shrimp, required the use of certified bycatch reduction devices (BRDs) in all penaeid shrimp trawls in the South Atlantic EEZ (the large mesh extended funnel and the fisheye) and established a framework for BRD certification specifying BRD certification criteria and testing protocol. OY for the brown and pink shrimp fisheries in the South Atlantic EEZ was defined as the amount of harvest that can be taken by U.S. fishermen without annual landings falling two standard deviations below mean landings 1957-1993 for three consecutive years (2,946,157 pounds [heads on] for brown shrimp and 286,293 pounds [heads on] for pink shrimp). When annual landings fall below this level, the resource is considered overfished. Shrimp Amendment 2 was sent to NOAA Fisheries Service for formal review and implementation on April 30, 1996, was approved on February 24, 1997, and regulations became effective on April 21, 1997.

Shrimp Amendment 3/EIS was included in the Council's Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (SAFMC 1998a) which addressed the habitat requirements of the Magnuson-Stevens Act, as amended in 1996. Under Shrimp Amendment 3, Essential Fish Habitat for the South Atlantic shrimp resource was defined as follows (Note: Detailed information is presented in the Council's Habitat Plan [SAFMC 1998b]):

> Penaeid shrimp (brown, pink, and white shrimp): inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity and all interconnecting water bodies as described in the Habitat Plan (SAFMC 1998b). Inshore nursery areas include tidal freshwater (palustrine), estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non-vegetated flats. This applies from North Carolina through the Florida Keys.

Rock shrimp: offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters (59-597 ft) in depth with highest concentrations occurring between 34 and 55 meters (112-180 ft). This applies for all areas from North Carolina through the Florida Keys. Essential fish habitat includes the shelf current systems near Cape Canaveral, Florida, which provide major transport mechanisms affecting planktonic larval rock shrimp. These currents keep larvae on the Florida shelf and may transport them inshore in spring. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse rock shrimp larvae.

Shrimp Amendment 3 also established Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for penaeid shrimp in the South Atlantic. Areas that meet the criteria for EFH-HAPCs for penaeid shrimp include: all coastal inlets, all state-designated nursery habitats of particular importance to shrimp, and state-identified overwintering areas. The Comprehensive Amendment was approved in June 1999; no regulations were required to make the designations of EFH and EFH-HAPCs effective. Regulations were implemented as part of this amendment, under the FMP for Coral, Coral Reefs, and Live Hard Bottom Habitats of the South Atlantic Region (Coral FMP, see below).

In addition, Shrimp Amendment 3 called for implementation of a voluntary Vessel Monitoring System (VMS) in the rock shrimp fishery. The voluntary pilot program was intended to provide information concerning the future use of transponders in the rock shrimp fishery. This voluntary program was not implemented because of logistical issues associated with the evolving VMS technologies at the time.

The Council's Comprehensive Habitat Amendment (including Shrimp Amendment 3) was sent to NOAA Fisheries Service for formal review and implementation on October 9, 1998. The Amendment was approved on June 3, 1999. Regulations implementing these actions were published on June 14, 2000 and became effective on July 14, 2000.

Coral Amendment 4/EIS, included in the Comprehensive Sustainable Fisheries Act (SFA) Amendment (SAFMC 1998c), expanded the *Oculina* Bank HAPC to an area bounded to the west by 80°W. longitude, to the north by 28°30'N. latitude, to the south by 27°30'N. latitude, and to the east by the 100 fathom (600 foot) depth contour. Coral Amendment 4 expanded the *Oculina* Bank HAPC to include the area closed to rock shrimp harvest. The Draft Calico Scallop FMP proposed to close this area to calico scallop harvest. The expanded *Oculina* Bank HAPC is 60 nautical miles long by about 5 nautical miles wide although the width tracks the 100 fathom (600 foot) depth contour rather than a longitude line. Within the expanded *Oculina* Bank HAPC area no person may:

1. Use a bottom longline, bottom trawl, dredge, pot, or trap.
2. If aboard a fishing vessel, anchor, use an anchor and chain, or use a grapple and chain.

3. Fish for rock shrimp or possess rock shrimp in or from the area on board a fishing vessel.
4. Possess *Oculina* coral.

Coral Amendment 4 also established two satellite *Oculina* HAPCs with the same prohibitions as shown above: (1) Satellite *Oculina* HAPC #1 bounded on the north by 28°30'N. latitude, on the south by 28°29'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude; and (2) Satellite *Oculina* HAPC #2 bounded on the north by 28°17'N. latitude, on the south by 28°16'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude.

It is the Council's intent to prohibit the possession of calico scallops and rock shrimp within these areas to enhance enforceability of the prohibition of harvest and the prohibition on use of bottom-tending gear in these areas.

Shrimp Amendment 4/EA was included in the Council's Comprehensive Amendment Addressing Sustainable Fishery Act (SFA) Definitions and Other Required Provisions in Fishery Management Plans of the South Atlantic Region (SAFMC 1998c), which addressed the Sustainable Fisheries Act requirements of the Magnuson-Stevens Act, as amended in 1996. Shrimp Amendment 4 included reporting requirements as specified in the Atlantic Coastal Cooperative Statistics Program (ACCSP). It was established that Council staff would work with NOAA General Counsel to determine the appropriate procedure to remove all the varied data reporting requirements in individual fishery management plans and reference one comprehensive data reporting document. The Shrimp Plan was also amended to include available information on fishing communities (detailed discussion in the SFA Comprehensive Amendment; SAFMC 1998c). In addition, Shrimp Amendment 4 designated biological reference points and status determination criteria. The Council approved MSY for rock shrimp as 6,829,449 pounds, OY for rock shrimp as equal to MSY, and the overfished definition for rock shrimp as two standard deviations above mean landings for the period 1986-1994.

The Council's Comprehensive SFA Amendment (including Shrimp Amendment 4) was sent to NOAA Fisheries Service for formal review and implementation on October 7, 1998. The final rule was published on November 2, 1999 and regulations became effective on December 2, 1999.

Shrimp Amendment 5/EIS to the Shrimp Plan was developed to address issues in the rock shrimp fishery (SAFMC 2002). Amendment 5 established a rock shrimp limited access program, required a vessel operator's permit, established a minimum mesh size for the tail bag of a rock shrimp trawl (at least 40 meshes of 1 and 7/8 inch stretched mesh above the 2 inch rings), and required use of an approved Vessel Monitoring System in the limited access rock shrimp fishery. Shrimp Amendment 5 was sent for formal review on February 25, 2002. The amendment was approved on October 23, 2002; final regulations were published on February 18, 2003 and became effective on the dates as indicated below:

Operator permits - effective May 16, 2003: "For a person to be an operator of a vessel fishing for rock shrimp in the South Atlantic EEZ or possessing rock shrimp in or from the South Atlantic EEZ, or to be an operator of a vessel that has a valid permit for South Atlantic rock shrimp, such person must have and carry on board a valid operator permit and one other form of personal identification that includes a picture (driver's license, passport, etc.). At least one person with a valid operator's permit for the South Atlantic rock shrimp fishery must be aboard while the vessel is at sea or offloading."

Limited access endorsement - effective July 15, 2003: "For a person aboard a vessel to fish for or possess rock shrimp in the South Atlantic EEZ off Georgia or off Florida, a limited access endorsement for South Atlantic rock shrimp must be issued to the vessel and must be on board. A vessel is eligible for an initial limited access endorsement if the owner owned a vessel with a Federal permit for South Atlantic rock shrimp on or before December 31, 2000 and landed at least 15,000 pounds of South Atlantic rock shrimp in any one of the calendar years 1996 through 2000 from a vessel he/she owned."

VMS - effective October 14, 2003: Vessels that were issued a limited access endorsement for South Atlantic rock shrimp must have a NOAA Fisheries Service-approved, operating VMS on board when on a trip in the South Atlantic. An operating VMS includes an operating mobile transmitting unit on the vessel and a functioning communication link between the unit and NOAA Fisheries Service as provided by a NOAA Fisheries Service-approved communication service provider.

The rule for Shrimp Amendment 5 was written such that a "Limited Access Endorsement" was required rather than the separate limited access permit identified in Amendment 5. Information included in Amendment 5 estimated that at least 168 vessels would qualify.

Control Date: At the December 2003 Council meeting, the Council set a control date of December 10, 2003 for the penaeid shrimp fishery operating in the South Atlantic EEZ. Publication of this control date (69 FR 10189; March 4, 2004) puts the industry on notice that the Council may develop a limited access program in the future. Should this occur there is no guarantee that vessels entering the fishery after this date will qualify for a limited access endorsement.

Shrimp Amendment 6/SEIS (SAFMC 2004) included the following measures:

(1) transferred authority to make appropriate revisions to the BRD Testing Protocol to NOAA Fisheries Service; (2) specified a reduction in the total weight of finfish of at least 30% for new BRDs to be certified; (3) adopted the ACCSP Release, Discard and Protected Species Module as the preferred methodology to monitor and assess bycatch and, until this module is fully funded, require the use of a variety of sources to assess and monitor bycatch including, observers, logbooks, state cooperation, grants, and federal shrimp permits; (4) required BRDs on all

rock shrimp trips in the South Atlantic; (5) required federal penaeid shrimp permits; (6) revised status determination criteria for penaeid shrimp; and (7) revised status determination criteria for rock shrimp (MSY/OY is the mean total landings for the South Atlantic 1986-2000 [4,912,927 pounds], overfishing is a rate that led to annual landings larger than two standard deviations above MSY [14,687,775 pounds] for two consecutive years, and overfished is a parent stock size less than ½ B_{MSY} for two consecutive years). Final regulations for this amendment were published on December 12, 2005.

1.4 Management Objectives

Objectives identified in the Shrimp FMP and subsequent amendments are as follows:

1. Eliminate fishing mortality on over-wintering white shrimp following severe winter cold kills.
2. Reduce the bycatch of non-target finfish, invertebrates and threatened, protected and endangered species.
3. Coordinate development of measures reducing bycatch with South Atlantic states to enhance enforceability of both state and federal regulations.
4. Enhance compliance of trawl fishermen participating in a transboundary penaeid shrimp fishery through standardization of bycatch reduction strategies.
5. Encourage states with mariculture facilities to carefully monitor these operations, and require safeguards to prevent exotic species from escaping and/or diseases from entering the environment.
6. Reduce or eliminate loss and/or alteration of the habitat on which shrimp depend or degradation of water quality through pollution that would reduce shrimp production.
7. Provide a mechanism to manage rock shrimp under the fishery management plan for the shrimp fishery in the South Atlantic region.
8. Minimize impacts of the rock shrimp fishery on coral, coral reefs and live/hard bottom habitat in the South Atlantic region.
9. Implement permit and reporting requirements needed to ensure necessary data are provided by the rock shrimp industry.
10. Manage the resource to provide for higher sustainable net benefits by taking the first step in reducing the current overcapacity in the rock shrimp fishery.
11. Remove latent permits from the rock shrimp fishery and restrict future entrants so as not to exacerbate the overcapacity problem in the future.
12. Protect the interest of traditional user groups in the rock shrimp fishery. Traditional users also tend to be more familiar with management regulations pertaining to their fishery as opposed to new entrants who enter a fishery and participate infrequently.
13. Decrease fishing mortality on unmarketable small/juvenile rock shrimp with the goal of increasing future yield in the rock shrimp industry from reduced discards of small shrimp.

14. Improve enforcement of current fishery management regulations, particularly with regard to illegal fishing in the *Oculina* Bank HAPC, by requiring vessel monitoring systems on rock shrimp vessels.
15. Protect the interests of vessel owners who are not operators and increase compliance with management regulations by the requirement for operator permits for rock shrimp vessels.

The objective added through this amendment is:

16. Ensure that sufficient effort remains active to sustain the fishery and the infrastructure.

2 Actions and Alternatives

This environmental assessment explores the differences among a number of management alternatives for five proposed changes to the South Atlantic Shrimp FMP. Alternatives are developed to show ways of meeting the purpose and need while addressing a range of issues. For Amendment 7 to the Shrimp FMP, alternatives were developed by an interdisciplinary team from discussions at Council meetings; scoping meetings; and meetings of the Shrimp and Deepwater Shrimp Advisory Panels (APs). Public comments were also used in the development of proposed alternatives in Amendment 7. The Council employs a process that screens all alternatives to a management action conceived during scoping to identify a reasonable range for detailed analysis.

The Council decided to consolidate the requirements of the MSA, RFA, NEPA, and the other applicable laws into an integrated document. For that reason, the evaluation of alternatives and discussion about the effects on the environment are presented in **Section 4.0. Environmental Consequences**. This section includes a detailed comparison among alternatives explaining the Council's choice in the selection of the preferred alternative. The Council, NOAA Fisheries Service, and NOAA General Counsel concluded this meets NEPA's regulatory requirements.

Note: Under **Action 4 Alternative 2**, the name of the endorsement would be changed to "Rock Shrimp Permit (South Atlantic EEZ)." Additionally, this permit would be considered a separate permit from the proposed "Rock Shrimp Permit (Carolinas Zone)," which would allow vessels to fish only within EEZ waters off the coast of the Carolinas. One vessel could not hold both permits; therefore, any participants eligible to have their endorsements reinstated under **Action 3** would receive the proposed "Rock Shrimp Permit (South Atlantic EEZ)." For the purposes of this discussion we will refer to the limited access fishing authorization instrument as the "endorsement."

2.1 Action 1. The 15,000-pound rock shrimp landing requirement.

This proposed action was recommended in order to prevent the potential exclusion of as many as 43 vessels that have not met the landing requirement within 4 years, and an additional 27 vessels that may not meet the 15,000-pound landing requirement in upcoming years. The South Atlantic rock shrimp landing requirement is a two-pronged provision consisting of a time component, or the four-year time span within which 15,000 pounds of rock shrimp must be landed in order to be eligible for renewal, and a pounds-landed requirement, referring to the 15,000-pound requirement. The time component of the provision would remain unchanged. Currently, an inactive endorsement is defined as one that is attached to a vessel having landed less than 15,000 pounds of rock shrimp in a calendar year. If the endorsement is inactive for four consecutive calendar years the endorsement may not be renewed. Furthermore, nonrenewable endorsements are not transferable. The current landing requirement implemented through Shrimp Amendment 5 (SAFMC 2002) has the potential to permanently reduce the number of vessels in the fishery, which may lead to insufficient effort to support the fishery's infrastructure.

Alternative 1 (No-action). Retain the 15,000-pound rock shrimp landing requirement.

Alternative 1 (No-action) could result in a permanent 34% reduction in fishery participation in the short-term and a possible 56% reduction in the long-term which, according to public input and AP members, would result in insufficient effort to support the rock shrimp infrastructure and fishery. Under this alternative the current definition of an inactive endorsement would remain unchanged, and the cap on rock shrimp fishery participation would be permanently reset to a much lower number. Landings taken from the limited access area and outside of the limited access area, if taken within the Council's area of jurisdiction (EEZ), would continue to be used to meet the annual landing condition. Additionally, other fishery participants may be forced to leave the fishery in subsequent years, further lowering the number participants. This alternative would uphold the current requirement implemented through Shrimp Amendment 5 (SAFMC 2002).

Alternative 2 (Preferred). Remove the 15,000-pound rock shrimp landing requirement.

Removing the 15,000-pound rock shrimp landing requirement would make fishery participation possible for all rock shrimp vessels holding a limited access endorsement. As many as 70 vessels that have not or may not meet the requirement in coming years could be affected by the removal of the 15,000-pound landing requirement. An additional 5 vessels could also be affected if this alternative, along with **Alternatives 2 or 3 in Action 3** of this amendment were chosen as preferred alternatives. **Alternative 2** under **Action 1** would effectively nullify the current landing requirement implemented through Shrimp Amendment 5 (SAFMC 2002).

Alternative 3. Change the landing requirement to 7,500 pounds of rock shrimp.

This alternative would reduce the pounds-landed component of the landing requirement from 15,000 pounds to a minimum of 7,500 pounds, while maintaining the current time limit component. This would effectively change the current definition of an inactive endorsement to one that is attached to a vessel having landed less than 7,500 pounds of rock shrimp in a calendar year. Rock shrimp vessels that failed to land at least 7,500 pounds of rock shrimp within one of four consecutive calendar years would be eliminated from the fishery. Rock shrimp fishermen who can demonstrate fishing effort in the form of recorded landings of 7,500 pounds or more, in at least one of four consecutive years, would be allowed to apply for renewal of their rock shrimp limited access endorsement. It is expected that this alternative would affect 40 vessels. Landings taken from the limited access area and outside of the limited access area but within the Council's area of jurisdiction (EEZ) would continue to be used to meet this annual landings condition.

2.1.1 Comparison of Alternatives

Potential biological effects, which may occur as a result of choosing any of the alternatives being considered under this action would be minimal. Retaining the landing requirement could produce minimal beneficial biological effects due to reduced fishing effort, while removing or changing the landing requirement could produce minimal adverse biological effects if fishing effort were to increase. **Alternative 1 (No-action)** would produce direct and indirect adverse social and economic impacts since fishery participation would decrease by 34% this year, and would likely result in a proportionate loss of revenue generated by the rock shrimp fishery affecting the supporting infrastructure and surrounding communities. **Alternative 2** would remove the landing requirement altogether allowing for the highest level of fishery participation of all the alternatives. Allowing all vessels in question the opportunity to continue their participation in the fishery would yield the most beneficial effect on the socioeconomic environment of the three alternatives being considered. **Alternative 3** would allow the continued participation of few vessels relative to the number affected under **Alternative 2**, yielding a much lower beneficial socioeconomic impact, yet still beneficial nonetheless. Administratively, **Alternative 1 (No-action)** would produce little if any increased cost or burden when compared to the status quo, whereas **Alternatives 2 and 3** would both impact the administrative environment in the short term but to no higher a degree than **Alternative 1 (No-action)**. In the long-term, under **Alternative 2**, landings would no longer have to be tracked on an ongoing basis to determine who has reached the 15,000-pound requirement, therefore administrative impacts under **Alternative 2** would be least of all the alternatives considered.

Table 2.1-1. A summarized comparison of the impacts among alternatives for Action 1.

	Alternatives		
	Alternative 1. (No Action). Retain the 15,000-pound rock shrimp landing requirement.	**Alternative 2. (Preferred)**. Remove the 15,000-pound rock shrimp landing requirement.	**Alternative 3.** Change the landing requirement to 7,500 pounds of rock shrimp.
Biological	+	-	-
Economic	-	+ +	+
Social	-	+	+
Administrative	-	+	-

2.1.2 Conclusion

Because the direct and indirect impacts of a possible 34% near-term reduction, and a potential 56% overall long-term reduction in fishery participation would likely be severe enough to threaten the collapse of the rock shrimp fishery infrastructure, **Alternative 1 (No-action)** was not chosen as a preferred, nor was **Alternative 3**, which would produce minimally beneficial effects on the fishery. The negligible biological impact expected under **Alternative 2** along with the potentially beneficial socioeconomic impacts to those fishermen who would not otherwise be able to continue their participation in the fishery, led to the designation of **Alternative 2** as the preferred alternative under this fishery management action.

2.2 Action 2. Endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement by 12/31/07.

To be eligible to renew a limited access endorsement for the South Atlantic rock shrimp fishery, a vessel must land 15,000 pounds of rock shrimp in one of four consecutive years starting from the time its endorsement is issued. A vessel's four-year time period begins at the time the endorsement was obtained; therefore, the four-year time period in which a vessel must meet the landings requirement depends on the year the vessel initially obtained its endorsement. This action would only apply to those vessels that initially obtained an endorsement in 2003.

Alternative 1 (No-action). Do not reinstate lost endorsements.
Endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement by December 31, 2007, would remain null and void. The endorsements would not be reinstated under this alternative, thus upholding the requirement implemented through Amendment 5 (SAFMC 2002).

Alternative 2 (Preferred). Reinstate all endorsements lost due to not meeting the landing requirement of 15,000 pounds of rock shrimp in one of four consecutive calendar years.
Under this alternative all endorsements lost due to not meeting the landing requirement by December 31, 2007, would be reinstated. Forty three (43) vessels could have their endorsements reinstated under **Alternative 2**.

Alternative 3. Reinstate endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement in one of four consecutive calendar years, for those vessels that landed at least 7,500 pounds of rock shrimp during the same time period.
Alternative 3 would reinstate endorsements lost due to not meeting the rock shrimp landings requirement of 15,000 pounds in one of four consecutive calendar years for those vessels that landed at least 7,500 pounds of rock shrimp during one of four consecutive calendar years. Under **Alternative 3** three (3) or possibly four (4) vessels, depending upon which alternative is implemented under **Action 3**, could have their endorsements reinstated. This would eliminate rock shrimp endorsements linked to vessels that landed less than 7,500 pounds within four consecutive calendar years.

2.2.1 Comparison of Alternatives

Under **Alternative 1 (No-action)** no endorsements would be reinstated, thus reducing potential fishery participation and effort, resulting in an indirect beneficial biological effect. **Alternatives 2 and 3** would result in adverse biological effects, however **Alternative 2** would likely result in a higher level of fishery participation than **Alternative 3**. Of all the alternatives considered, **Alternative 2** would be expected to produce the most beneficial direct effects on the socioeconomic environment by reinstating the largest number of endorsements. **Alternative 3** would allow a smaller number of endorsements to be reinstated than **Alternative 2**, but would produce less significant direct administrative effects, along with **Alternative 1 (No-action)**.

Table 2.2-1. A summarized comparison of the impacts among alternatives for Action 2.

	Alternatives		
	Alternative 1 (No-Action). This would not reinstate lost endorsements.	**Alternative 2 (Preferred).** Reinstate all endorsements lost due to not meeting the landing requirement of 15,000 pounds of rock shrimp in one of four consecutive calendar years.	**Alternative 3.** Reinstate endorsements lost due to not meeting the rock shrimp landings requirement of 15,000 pounds in one of four consecutive calendar years, for those vessels that landed at least 7,500 pounds of rock shrimp during one of four consecutive calendar years.
Biological	+	-	-
Economic	-	+ +	+
Social	-	+ +	+
Administrative	+	-	-

2.2.2 Conclusion

Alternative 2 was chosen as the preferred over other alternatives considered because of the increased likelihood it would help maintain fishery participation at an economically sustainable level while producing a very minimal biological effect. Administratively, this alternative would be the most burdensome and incur the highest cost, but those expected costs would not outweigh the benefits of its implementation.

2.3 Action 3. Endorsements lost through failure to renew the rock shrimp limited access endorsement.

Currently, as implemented through Shrimp Amendment 5 (SAFMC 2002), to renew a rock shrimp endorsement, vessel owners must submit a complete application to the Southeast Regional Administrator within one year after the endorsement's expiration

date. Endorsements are considered non-renewable at the end of that year and cannot be transferred. If an endorsement is transferred to another vessel before it expires, the four-year time period for the landings requirement restarts.

This action was developed in order to address confusion regarding the current open access rock shrimp permit and the rock shrimp endorsement needed along with the permit in order to legally fish for rock shrimp in EEZ waters off the coast of Georgia and Florida. It appears that some fishermen, when filling out the application form, did not understand that in order to renew their endorsement along with their permit they must mark the boxes for both the permit and the endorsement. Therefore, some fishery participants submitted applications for only the permit, when they intended to also renew the endorsement.

This proposed action addresses the issue of lost endorsements due to not being renewed in a timely manner because of confusion involving the application form and process. Shrimp Amendment 5 (SAFMC 2002) required a limited access rock shrimp permit while the proposed and final rule required a limited access endorsement. As a result of confusion caused by this discrepancy, a number of endorsements are currently non-renewable under current regulations, some of which are linked to vessels that did meet the 15,000-pound landing requirement. Of the five (5) vessels with non-renewable endorsements, none have met the 15,000-pound requirement.

Alternative 1 (No-action). Do not reinstate lost endorsements.
Under **Alternative 1 (No-action)** current regulations would be upheld and all endorsement lost due to a failure to renew in a timely manner, improperly filling out the renewal form, or misunderstanding the renewal process would not be reinstated. Five (5) vessels could lose their rock shrimp endorsements.

Alternative 2 (Preferred). Reinstate all limited access endorsements for those who renewed their open access permit in the year in which they failed to renew their endorsement. Require rock shrimpers eligible to have their endorsements reinstated to apply for a limited access endorsement within one year after the effective date of the final rule for this amendment. Note: Eligible individuals need to have had an endorsement at one time.
Under this alternative all endorsements lost due to the misunderstanding mentioned above would be reinstated if participants renewed their permit in the year in which they failed to renew their endorsement and they did at one time hold an endorsement. Furthermore, fishery participants eligible to have their endorsements reinstated would be required to apply for a limited access endorsement within one year after the effective date of the final rule.

Alternative 3. Extend the time allowed to renew rock shrimp endorsements to one calendar year after the effective date for this action.
Alternative 3 would give those fishermen who failed to renew their endorsements in a timely manner, improperly filled out the renewal form, or misunderstood the renewal process another chance to submit a complete application form to the Southeast Regional

Administrator. This would provide those vessel owners who were not able to do so, ample time to apply or reapply for their endorsements following the correct process. It is expected that **Alternative 3** would allow as many as five (5) vessel owners the option to gain back their fishery participant status in the limited access program if they wish to do so by submitting a complete application to the Southeast Region Administrator.

2.3.1 Comparison of Alternatives

Alternative 1 (No-action) would eliminate a small number of vessels from the fishery, possibly reducing effort, which may produce a beneficial yet minimal indirect biological impact. **Alternatives 2 and 3** would also result in indirect biological effects to the same minimal degree as **Alternative 1 (No-action)** but would be adverse in nature due to a potential increase in fishing effort. It is expected that beneficial socioeconomic effects of **Alternative 2** would be most significant of all the alternatives, since under **Alternative 3** there is a chance that the same fishery participants may still not submit the application on time, or fill out the form correctly. Under **Alternative 2**, the endorsements would automatically be reinstated. However, fishermen would still be responsible for applying for a new endorsement within one year of the effective date of the final rule.

Alternative 1 (No-action) would result in adverse socioeconomic impacts on the fishery and associated communities through loss of revenue caused by not allowing fishermen to participate in the fishery because of a procedural misunderstanding. Under **Alternative 2** the socioeconomic environment would be beneficially and directly affected if eligible endorsements are reinstated. Approximately five (5) fishery participants could be given the opportunity to once again participate in the fishery, thereby increasing revenue and contributing to the maintenance of the fishery's infrastructure. Under **Alternative 3** the beneficial impact may not be as significant as **Alternative 2** if all fishermen who want to participate in the fishery do not use the proposed extended one year time period to apply for a rock shrimp endorsement.

To address any future confusion resulting from any actions in this amendment, several types of outreach materials in the form of letters, web site content and Fishery Bulletins would be disseminated informing rock shrimp fishery participants of specific changes implemented through this amendment, as well as any important instructions for compliance with such changes. These outreach efforts make up part of the total administrative burden which could result under **Alternative 2**. Other direct administrative effects would include cost and effort associated with determining which fishery participants qualify to have their endorsements reinstated, and mailing out the endorsements themselves. Extending the time allowed to renew rock shrimp endorsements under **Alternative 3** would incur similar direct administrative effects as **Alternative 2**, without the guarantee that each eligible participant who wants their endorsement to be reinstated would submit a completed application in a timely manner.

Table 2.3-1. A summarized comparison of the impacts among alternatives for Action 3.

	Alternatives		
	Alternative 1 (No-Action). Do not reinstate lost endorsements.	**Alternative 2 (Preferred).** Reinstate all endorsements for those who renewed their permit *in the year in which they failed to renew their endorsement.* Require rock shrimpers eligible to have their endorsements reinstated to apply for a limited access endorsement within one year after the effective date of the final rule of for this amendment.	**Alternative 3**. Extend the time allowed to renew rock shrimp endorsements to one calendar year after the effective date for this action.
Biological	+	-	-
Economic	-	++	+
Social	-	+	+
Administrative	+	-	-

2.3.2 Conclusion

Alternative 2 was chosen as the preferred over other alternatives considered because of the increased likelihood it would create an economic benefit to eligible fishermen while producing a very minimal biological effect if any. Administratively, this alternative would be the most burdensome and incur the highest cost, but those expected costs would not outweigh the benefits of its implementation.

2.4 Action 4. Change the names given to the rock shrimp permit and endorsement to minimize confusion

The naming convention used for the South Atlantic rock shrimp fishery authorization instruments established in Amendment 5 (SAFMC 2002), have caused persistent confusion for fishery participants. This confusion has resulted in incorrectly completed application forms, applications not being submitted in a timely manner, and ultimately, the loss of a number of limited access endorsements that are now being considered for reinstatement under **Action 3** of this amendment. Changing the permit names and clarifying the permit application process would be expected to reduce the likelihood that corrective measures such as **Action 3** of this amendment would be needed in the future.

Alternative 1 (No-action). Continue to require an "open access permit" to fish for rock shrimp in the EEZ off the Carolinas and a "limited access endorsement" to fish for rock shrimp in the EEZ off Georgia and Florida.

This alternative would maintain the current regulations where an "open access permit" allows fishing for rock shrimp in the EEZ off the Carolinas and a "limited access endorsement" allows fishing for rock shrimp in the EEZ off the Carolinas as well as Georgia and Florida. In order to obtain a limited access endorsement, one must first obtain the open access permit. It appears that some fishermen, when filling out the application form intending to renew a limited access endorsement, did not understand that in order to renew their endorsement along with their permit they must mark the boxes for both the permit and the endorsement. Therefore, some fishery participants submitted renewal applications for only the permit, when they intended to also renew the endorsement. This alternative has the potential to allow undue confusion among fishermen regarding this issue to persist.

Alternative 2. Create two types of permits for the rock shrimp fishery and specify that a vessel can only have one permit:

A. Rock Shrimp Permit (South Atlantic EEZ) – would allow fishing throughout the South Atlantic EEZ

B. Rock Shrimp Permit (Carolinas Zone) – would allow fishing in the EEZ off North and South Carolina

This alternative would address persistent confusion stemming from the use of the terms "limited" vs. "open" from being incorrectly interpreted in a spatial context. As such "limited access" would indicate a smaller fishing area whereas "open access" would refer to the range of the species in the South Atlantic EEZ. By taking away the terms "limited" and "open," the previously described confusion may be minimized. The two permits would be issued independent of each other, in other words, shrimpers would not need the "Rock Shrimp Permit (Carolinas Zone)" in order to obtain the "Rock Shrimp Permit (South Atlantic EEZ)." Each vessel would either be linked to one or the other, but not both.

2.4.1 Comparison of Alternatives

This action is administrative in nature and would not be expected to affect, adversely or beneficially, the biological environment. Nor, would it be expected to produce any direct economic effects on the fishery, the communities in which it operates, or fishery participants. Changing the name of the endorsement and permit along with making them two distinct permits, only one of which each vessel may have, is likely to benefit the social environment. This benefit would take the form of less misunderstanding amongst fishery participants regarding the permit application, the time period in which they have to renew, and the areas covered by either type of permit. Using the proposed language for the new permits would help to minimize if not eliminate confusion with the old "limited access" and "open access" naming conventions. The proposed permit names contain a description of the exact area covered by each permit, thus eliminating the need for spatial interpretation.

The permit application process would be further simplified by allowing each vessel to only carry one permit type or the other. Fishery participants would no longer be required to have the open access permit in order to obtain the limited access endorsement. They would either be issued the "Rock Shrimp Permit (South Atlantic EEZ)" or the "Rock Shrimp Permit (Carolinas Zone), not both. This choice would be made very clear on the permit application itself, as well as through various types of outreach media such as letters, web site material, and Fishery Bulletins.

As described in detail in **Section 4.0** of this document, **Alternative 2** under **Action 4** would incur significant short-term administrative effects. From NOAA Fisheries Service, The Permit Office, Office of Sustainable Fisheries, and the Office of Law Enforcement would work together to implement a stepwise approach to facilitate the endorsement/permit change-over. Long-term administrative effects under this action would be minimal since the change-over would occur through one mass mailing, and include some follow-up applications if **Alternative 2** under **Action 3** is implemented.

Table 2.4-1. A summarized comparison of the impacts between alternatives for Action 4.

	Alternatives	
Impacts	**Alternative 1 (No Action).** Continue to require an "open access permit" to fish for rock shrimp in the EEZ off the Carolinas and a "limited access endorsement" to fish for rock shrimp in the EEZ off Georgia and Florida.	**Alternative 2.** Create two types of permits for the rock shrimp fishery and specify that a vessel can only have one permit: Rock Shrimp Permit (South Atlantic EEZ) – allows fishing throughout the South Atlantic EEZ Rock Shrimp Permit (Carolinas Zone) – allows fishing in the EEZ off North and South Carolina.
Biological	No effect	No effect
Economic	No effect	No effect
Social	-	+
Administrative	No effect	-

2.4.2 Conclusion

Alternative 1 (No-action) would not change the names of the current rock shrimp permit and endorsement, allowing confusion to persist as well as possible loss of endorsements in the future due to the procedural misunderstandings. **Alternative 2** under this action would be expected to reduce the level of confusion regarding the coverage areas of the permit versus the endorsement, and simplify the permit application process. Any short-term administrative costs or burdens accrued by this action would be outweighed by the benefits of clarity produced through its implementation.

2.5 Action 5. Require all shrimp permit holders to provide economic data.

At this time there is a lack of data regarding costs and profitability associated with South Atlantic shrimp vessel's harvesting activities, and currently there exists no authority under the current Shrimp FMP (SAFMC 1991) implementing an economic data collection program for the South Atlantic shrimp fisheries. NOAA Fisheries Service attempted to collect these data on a voluntary basis in 2005; however, response rates were not sufficient enough to yield statistical estimates with a high level of confidence. To remedy this lack of economic fishery data, **Action 5** of this amendment proposes to amend the FMP to include a requirement for vessels with South Atlantic rock shrimp permits and South Atlantic penaeid shrimp permits to provide economic data annually upon request.

The proposed data collection program would be combined with the current data collection program in place for vessels holding Gulf shrimp moratorium permits. The purpose of combining the two programs would be to avoid any duplication of burden on vessels that hold both Gulf shrimp moratorium permits and one or more South Atlantic shrimp permits/endorsement.

Alternative 1 (No-action). Do not require collection of economic data from any shrimp permit holders.

This alternative would not implement a mandatory data collection program. The current lack of cost and profitability data would persist for the South Atlantic shrimp fisheries.

Alternative 2. Require all South Atlantic shrimp permit holders to provide economic data.

This alternative would amend the Shrimp FMP to include a requirement that all holders of South Atlantic rock shrimp permits and penaeid shrimp permits provide economic data on an annual basis. Such data collection would alleviate critical data gaps for future analyses and would enhance NOAA Fisheries Service's compliance with Executive Order 12866, which requires an assessment of the net economic benefits associated with all federal regulations. The data collected would be expected to enhance the preparation of Regulatory Flexibility Act documentation, which requires an assessment of the impacts of federal regulations on the profitability of small entities. This alternative would affect all South Atlantic rock shrimp and penaeid shrimp permit holders, 400 vessels that are unique to the federal South Atlantic shrimp fisheries, and those effects would be in the form of an annual time and paperwork burden. This alternative would also have Paperwork Reduction Act (PRA) implications, and would therefore require the filling and processing of appropriate paperwork to comply with the Act's requirements.

Alternative 3 (Preferred). Require all South Atlantic shrimp permit holders to provide economic data if selected to do so.

Alternative 3 would require the collection of economic data from a random sample of rock shrimp and penaeid shrimp fishery participants on an annual basis. This alternative would affect an annual random sample of South Atlantic rock shrimp and penaeid shrimp permit holders, and those effects would be in the form of an annual time and paperwork

burden for those chosen to participate. The random sample would be taken from a combined group of Gulf moratorium shrimp permit holders, South Atlantic rock shrimp permit holders, and South Atlantic penaeid shrimp permit holders, 400 of which are unique to the federal South Atlantic shrimp fisheries. **Alternative 3** would also require the creation and maintenance of a data collection and management system for data gathered from the South Atlantic shrimp fisheries, which would significantly affect the administrative environment. This alternative would have PRA implications, and would therefore require the filling and processing of appropriate paperwork to comply with the Act's requirements.

2.5.1 Comparison of Alternatives

This action and its alternatives are administrative in nature and are not expected to have any effect, beneficial or adverse, on the biological environment. Any economic data collected under this action would be used to inform future fishery management decisions. Proposed **Alternative 2 and Preferred Alternative 3** would indirectly benefit the socioeconomic environment by providing data and other scientific information to meet sociocultural and economic objectives for the conservation and management of living marine resources. The economic impacts of this action would not be sufficient to alter fishing behavior, revenues, or profitability. **Alternative 1 (No-action)** would not amend the current FMP to achieve this goal. Since this is an administrative action, the administrative environment would be expected to be significantly affected. Time and personnel would be dedicated to creating the survey instrument, as well as managing and analyzing the data once it is collected. Additionally, the collection of data would require compliance with the PRA, therefore time and effort would be dedicated to processing and filing the necessary PRA paperwork. The full spectrum of administrative effects is detailed in **Section 4.0** of this document.

Table 2.5-1. A summarized comparison of the impacts among alternatives for Action 5.

	Alternatives		
	Alternative 1 (No Action). This would not allow collection of economic data from all endorsement holders.	**Alternative 2.** Require all shrimp permit holders to provide economic data.	**Alternative 3 (Preferred).** Require a sample of shrimp permit holders to provide economic data if selected to do so.
Biological	No effect	No effect	No effect
Economic	-	+	+
Social	-	+	-
Administrative	No effect	-	-

2.5.2 Conclusion

Alternative 3 was chosen as the preferred alternative under this action. The preferred alternative would require the collection of information from a sample of South Atlantic shrimp fishery participants rather than all participants, or no participants. **Alternative 3** would create a smaller administrative burden than **Alternative 2** as well as a smaller time and paperwork burden on the fishermen, and incur lower costs associated with the collection of data while still fulfilling the need for economic data collection. Despite the significant direct and indirect administrative affects that would result under this action, benefits of gathering crucial economic data to fill large data gaps for future analyses outweigh the cost and effort associated with implementing such a collection of information.

3 Affected Environment

In the southeastern United States, the shrimp industry is based mostly on three shallow-water species of the family Penaeidae: the white shrimp, *Litopenaeus setiferus*, the brown shrimp, *Farfantepenaeus aztecus*, and the pink shrimp, *Farfantepenaeus duorarum*. The rock shrimp, *Sicyonia brevirostris* (family Sicyoniidae) and the royal red shrimp, *Pleoticus robustus* (family Solenoceridae) occur in deeper water than the three penaeid species

3.1 Habitat

3.1.1 Distribution

Rock shrimp are distributed worldwide in tropical and temperate waters. The highest abundance occurs off northeast Florida south to Jupiter Inlet. Small quantities of rock shrimp are also found off North Carolina, South Carolina, and Georgia. The largest concentrations are in areas where water depth is 111-180 feet (34-55 m). Although rock shrimp occasionally are landed from EEZ waters off North Carolina, South Carolina, and Georgia, they are not landed in quantities capable of supporting a sustainable commercial fishery comparable to the fishery prosecuted in the EEZ off Florida.

White shrimp range from Fire Island, New York, to St. Lucie Inlet on the Atlantic Coast of Florida, and from the Ochlochonee River on the Gulf Coast of Florida to Ciudad Campeche, Mexico. Along the Atlantic Coast of the U.S., the white shrimp is more common off South Carolina, Georgia and northeast Florida. White shrimp are generally concentrated on the continental shelf where water depths are 89 feet (27 m) or less, although occasionally they are found much deeper (up to 270 feet) (SAFMC 1996b).

Brown shrimp occur from Martha's Vineyard, Massachusetts to the Florida Keys and northward into the Gulf to the Sanibel grounds. The species reappears near Apalachicola Bay and occurs around the Gulf Coast to northwestern Yucatan. Although brown shrimp may occur seasonally along the Mid-Atlantic States, breeding populations apparently do not occur north of North Carolina. The species may occur in commercial quantities in areas where water depth is as great as 361 feet (110 m), but they are most abundant in areas where the water depth is less than 180 feet (55 m) (SAFMC 1996b).

Pink shrimp occur from southern Chesapeake Bay to the Florida Keys and around the coast of the Gulf of Mexico to Yucatan south of Cabo Catoche. Maximum abundance is reached off southwestern Florida and the southeastern Golfo de Campeche. Along the Atlantic coast of the U.S. pink shrimp are of major commercial significance only in North Carolina and the Florida Keys. Pink shrimp are most abundant in areas where water depth is 36-121 feet (11-37 m) although in some areas they may be abundant where water depth is as much as 213 feet (65 m) (SAFMC 1996b).

3.1.2 Essential Fish Habitat (EFH)

For rock shrimp, EFH consists of offshore terrigenous and biogenic sand bottom 18-182 meters (59-597 ft) deep with highest concentrations occurring at 34-55 meters (112-180 ft). This habitat is found from North Carolina through the Florida Keys. EFH includes the shelf current systems near Cape Canaveral, Florida which provide major transport mechanisms affecting planktonic larval rock shrimp (Bumpus 1973). These currents keep larvae on the Florida Shelf and may transport them inshore in spring. In addition, the Gulf Stream is an EFH because it also provides a mechanism to disperse rock shrimp larvae.

The bottom habitat on which rock shrimp thrive is probably limited. Kennedy *et al.* (1977) determined the deep-water limit of rock shrimp was likely due to the decrease of suitable bottom habitat rather than to other physical parameters such as salinity and temperature. Cobb *et al.* (1973) found the inshore distribution of rock shrimp was associated with terrigenous and biogenic sand substrates and only sporadically with mud. Rock shrimp also utilize hard bottom and coral or more specifically *Oculina* coral habitat areas. This habitat was confirmed by research trawls which captured large amounts of rock shrimp in and around the *Oculina* Bank HAPC prior to its designation.

Habitat essential to rock shrimp has not been further characterized beyond the above studies. A list of species associated with rock shrimp benthic habitat was compiled from research trawling efforts (1955-1991) that captured harvestable levels of rock shrimp. In addition, Kennedy *et al.* (1977), during research efforts to sample the major distribution area of rock shrimp off the Florida east coast, compiled a list of crustacean and molluscan taxa associated with rock shrimp benthic habitat.

For penaeid shrimp, EFH includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting water bodies as described in the Habitat Plan (SAFMC 1998). Inshore nursery areas include tidal freshwater, estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal freshwater forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non-vegetated flats. This habitat is found from North Carolina through the Florida Keys.

3.1.3 Habitat Areas of Particular Concern (HAPC)

No EFH-HAPCs have been identified for rock shrimp; however, deep water habitat (e.g. the rock shrimp closed area/proposed expanded *Oculina* Bank HAPC) may serve as nursery habitat and protect the stock by providing a refuge for rock shrimp.

In North Carolina, EFH-HAPCs for penaeid shrimp include estuarine shoreline habitats where juvenile shrimp congregate. Seagrass beds, prevalent in the sounds and bays of North Carolina and Florida, are particularly critical areas. South Carolina and Georgia lack substantial amounts of seagrass beds. Here, the shrimp nursery habitat is the high marsh areas that offer shell hash and mud bottoms. In addition, juvenile shrimp move seasonally out of the marsh into deep holes and creek channels adjoining the marsh system during winter. Therefore, the area of particular

concern for early growth and development encompasses the entire estuarine system from the lower salinity portions of the river systems through the inlet mouths.

3.2 Biological/Ecological Environment

Much of the information in this section is taken from reviews of shrimp biology found in the original Shrimp FMP, subsequent amendments, and additional source references cited therein. The original Shrimp FMP also describes Council concerns and recommendations to protect shrimp habitat. The description below focuses on rock shrimp biology. Action 5 in this amendment affects penaeid shrimp fishermen, but will not affect the biological environment; therefore, penaeid shrimp biology is incorporated by reference to Amendment 6 (SAFMC 2004).

3.2.1 Species Most Impacted By This FMP Amendment

3.2.1.1 Description

Rock shrimp (Figure 3.2-1) look very different from the three penaeid species (Figure 3.2-2). Rock shrimp can be easily separated from penaeid species by their thick, rigid exoskeleton. The body of the rock shrimp is covered with short hair and the abdomen has deep transverse grooves and numerous tubercles.

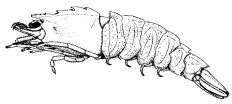
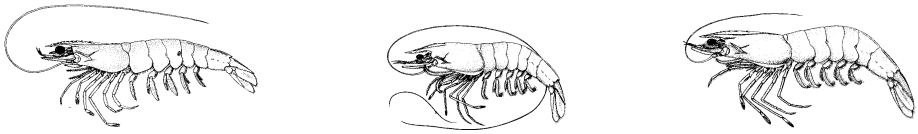


Figure 3.2-1. Illustration of rock shrimp



Pink shrimp White shrimp Brown shrimp

Figure 3.2-2. Illustrations of white, brown and pink shrimp

Juvenile and adult rock shrimp are bottom feeders. Stomach contents analyses indicate rock shrimp feed primarily on small bivalve mollusks and decapod crustaceans (Cobb *et al.* 1973). Kennedy *et al.* (1977) found the relative abundance of crustaceans and mollusks in the stomach contents of rock shrimp corresponded to their availability in the surrounding benthic habitat suggesting opportunistic, not selective, feeding by rock shrimp. Shrimp are preyed on by a wide variety of species at virtually all stages in their life history. Postlarvae are prey for sheepshead, minnows, water boatmen, and insect larvae. Rock shrimp feed at night and likely burrow during the day.

3.2.1.2 Reproduction

Seasonal temperatures initiate sexual maturation. Female rock shrimp attain maturity at about 17-24 mm (0.7-0.9 inches) carapace length (CL), and males reach maturity by 18-24 mm)0.65-0.9 inches) CL. Copulation takes place between hard-shelled individuals. Fertilization occurs as the female simultaneously releases ova and spermatozoa. As with penaeid shrimp species, rock shrimp are highly fecund and fecundity probably increases with size. The rock shrimp spawning season varies, with peak spawning November-January. Individual females may spawn three or more times in one season. Spawning activity seems to occur monthly and coincide with the full moon (Kennedy *et al.* 1977). Eggs hatch within 24 hours.

3.2.1.3 Development, growth, and dispersal

Development from egg to postlarvae lasts approximately one month. Subsequently, development from postlarvae to the smallest mode of recruits lasts two to three months. Rock shrimp grow 2-3 mm CL per month as juveniles and 0.5-0.6 mm CL per month as adults (Kennedy *et al.* 1977). Growth rates depend on factors such as season, water temperature, shrimp density, size and sex. The shelf current systems near Cape Canaveral, Florida influence planktonic larval dispersal (Bumpus 1973). These currents keep larvae on the Florida Shelf and may transport them inshore during spring. Rock shrimp recruit to offshore areas April-August with two or more influxes of recruits entering within one season (Kennedy *et al.* 1977). Maximum lifespan is 20-22 months.

3.2.1.4 Population dynamics

The population size of rock shrimp is believed to be regulated primarily by environmental conditions and available habitat. Rock shrimp have an annual life cycle, during which adults spawn offshore and the larvae are transported to coastal estuaries. Recruitment to the estuaries and eventually to the fishing grounds is extremely dependent on fluctuations of environmental conditions within estuaries. Poor recruitment to the fishery may occur because excessively cold winters or heavy rains may reduce salinities and cause high mortality of post-larvae. Conversely, high recruitment to the fishery may occur when environmental conditions are favorable for postlarval development.

Although shrimp trawling certainly reduces population size in a season, the impact of fishing on subsequent year-class strength is unknown. Natural mortality rates are very high, and coupled with fishing mortality, may remove most of the year-class by the end of a season. Annual variation in catch is presumed to be caused by a combination of prevailing environmental conditions, fishing effort, price and relative abundance of shrimp (SAFMC 1996b); thus fishing probably has little impact on subsequent year-class strength unless the spawning stock has been reduced below a minimum threshold level by environmental conditions. Perhaps the most serious potential threat to the stock is habitat loss due to pollution or physical alteration.

3.2.2 Other Affected Council-Managed Species

3.2.2.1 Description of bycatch in the rock shrimp fishery

The data on bycatch from trips that target rock shrimp are somewhat limited. Previously,

comments from industry representatives at scoping meetings and public hearings for Amendment 1 indicated trips targeting rock shrimp north of Cape Canaveral contained very little bycatch. Industry representatives also stated catch from deeper than 120 feet (36.6 m) was 90% rock shrimp (SAFMC 1996a).

As the rock shrimp fishery developed and vessels began fishing earlier in the year (June/July versus August/September), discards of unmarketable juvenile rock shrimp increased. Members of the Advisory Panel recommended the gear modifications implemented in Amendment 5 (SAFMC 2002).

The most recent information on bycatch in this fishery comes from a preliminary report of a NOAA Fisheries Service observer study conducted during the period September 2001 through September 2006 (Appendix C). The main findings in this report are:

1. Rock shrimp comprised 19% of the catch by weight and 28% by number.
2. Penaeid shrimp comprised 4% of the catch by weight and 3% by number.
3. Finfish comprised 49% of the catch by weight and 30% of the catch by number.

3.2.3 ESA-Listed Species

Section 7(a)(2) requires federal agencies ensure any activity they authorize, fund or carry out is not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of designated critical habitat.

Species under the ESA along with any designated critical habitat(s) in the action area are listed below. A review of the species' biology, population status, distribution and on-going threats is provided in order to evaluate potential effects of the fishery and proposed action(s) on the listed species, as required by Section 7 of the ESA.

List of Species and Designated Critical Habitat

Endangered

Blue whale	*Balaenoptera musculus*
Humpback whale	*Megaptera novaeangliae*
Fin whale	*Balaenoptera physalus*
Northern right whale	*Eubalaena glacialis* (Critical Habitat Designated)
Sei whale	*Balaenoptera borealis*
Sperm whale	*Physeter macrocephalus*
Leatherback sea turtle	*Dermochelys coriacea*
Hawksbill sea turtle	*Eretmochelys imbricata*
Kemp's Ridley turtle	*Lepidochelys kempii*
Green turtle*	*Chelonia mydas*
Smalltooth sawfish**	*Pristis pectinata*

*Green turtles in U.S. waters are listed as threatened except the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between populations away from nesting beaches, green turtles are considered endangered wherever they occur in U.S. Atlantic waters.

** in the U.S. distinct population segment.

Threatened

Loggerhead turtle	*Caretta caretta*	
Elkhorn coral	*Acropora palmata*	(Critical Habitat Proposed)
Staghorn coral	*A. cervicornis*	(Critical Habitat Proposed)

Proposed Species
None

Proposed Critical Habitat
The geographical area occupied by *Acropora* species that is within the jurisdiction of the United States is limited to four counties in the State of Florida (Palm Beach County, Broward County, Miami-Dade County, and Monroe County), Flower Garden Banks National Marine Sanctuary, and the U.S. territories of Puerto Rico, U.S.V.I, and Navassa Island. Within these areas, the physical or biological feature of elkhorn and staghorn corals habitat essential to their conservation is substrate of suitable quality and availability, in water depths from 0 to 30 meters (0 to 98 feet), to support successful larval settlement, recruitment, and reattachment of asexual fragments. Proposed Critical Habitat areas, therefore, comprise all waters in the depths of 30 m and shallower to the MHW or COLREG line off: (1) Palm Beach, Broward, Miami- Dade, and Monroe Counties, including the Marquesas Keys and the Dry Tortugas, Florida; (2) Puerto Rico and associated Islands; (3) St. John/St. Thomas, U.S.V.I.; and (4) St. Croix, U.S.V.I. Within these specific areas, the "Primary Constituent Elements" (PCEs) consist of consolidated hardbottom or dead coral skeleton that are free from fleshy macroalgae cover and sediment cover.

Species Under U.S. Fish and Wildlife Service (USFWS) Jurisdiction:
Endangered

Bermuda Petrel	*Pterodrama cahow*
Roseate Tern***	*Sterna dougallii*

*** North American populations federally listed under the ESA: endangered on Atlantic coast south to NC, threatened elsewhere.

Birds
Bermuda petrel
During the summer, Bermuda petrels occasionally are seen in the warm waters of the Gulf Stream off the North and South Carolina coasts (Alsop III 2001). Sightings off the Carolinas have been of solitary birds. This pelagic species is widely distributed in open ocean environments; however, it is considered rare and occurs in low numbers off the Atlantic coast. Bermuda petrels forage primarily on cephalopods and small fish from the water's surface and are not known to follow boats (Alsop III 2001). Habitat loss, predation, and contaminants are predominant threats. Given the pelagic and rare occurrence of this species off the Carolinas, together with its behavior of not associating with boats, it seems unlikely the continued prosecution of the shrimp fishery in federal waters of the southeast Atlantic will adversely affect the Bermuda petrel. Accordingly, Bermuda petrels are not likely to be adversely affected by the proposed actions.

Roseate tern

Roseate terns are known to wander widely along the Atlantic coast during the summer but mainly occur off the northeast and in parts of the Florida Keys (data from USFWS). They are considered uncommon to rare in other areas of the southeast Atlantic coast (Alsop III 2001). Roseate terns are plunge divers and feed primarily on small schooling fish. In the past, their numbers declined in large part due to hunting for the plume trade. Today, primary threats include territory loss on their island colonies to Herring gulls, human disturbance, and predation by domesticated and feral cats on nesting grounds. Given the uncommon occurrence of this species in the southeast region, it seems unlikely that the continued prosecution of the shrimp fishery in southeast Atlantic federal waters will adversely affect the roseate tern.

Whales

Species of large whales protected by the ESA can be found in or near the South Atlantic. Blue, fin, sei, and sperm whales are found predominantly seaward of the continental shelf where shrimping does not occur. Northern right whales and humpback whales are coastal animals and have been sighted in the nearshore area along the southeast Atlantic, November through March. There have been no reported interactions between large whales and shrimp vessels in the Atlantic. Also shrimp trawlers move slowly (1-2 knots while trawling), which gives the whale or the fishing vessel time to avoid a collision. Based on the above information, the chance of the proposed actions affecting these species is extremely unlikely. The southeastern U.S. Atlantic shrimp trawl fishery is classified as a Category III fishery, meaning the annual mortality and serious injury of a stock resulting from the fishery is less than or equal to one percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (68 FR 135; July 15, 2003).

Designated northern right whale critical habitat

The South Atlantic from the mouth of the Altamaha River, Georgia to Jacksonville, Florida, out 15 nautical miles (nm) and from Jacksonville, Florida to Sebastian Inlet, Florida, out 5 nm, is designated as northern right whale critical habitat (50 FR 28793). The continued prosecution of the shrimp fishery in federal waters will not alter the physical and biological features (water depth, water temperature, and the distribution of right whale cow/calf pairs in relation to the distance from the shoreline to the 40 m isobath [Kraus *et al.* 1993]), which were the basis for determining this habitat to be critical. Therefore, the proposed actions should not adversely modify northern right whale critical habitat.

Turtles

The incidental take and mortality of sea turtles as a result of trawling activities has been documented along the Atlantic Ocean seaboard. Federal regulations under the ESA require most shrimp trawlers to have a NOAA Fisheries Service approved turtle excluder device (TED) installed in each net rigged for fishing to provide for the escape of sea turtles. To be approved by NOAA Fisheries, a TED design must exclude at least 97% of sea turtles during experimental testing (68 FR 8456; February 21, 2003).

The use of TEDs appears to have had a significant beneficial impact on the survival and recovery of at least some sea turtle species (68 FR 8456; February 21, 2003). However, information from Epperly and Teas (2002) demonstrated these devices, as originally designed, were not adequately protecting all species and size classes of turtles. Leatherback sea turtles were too large to escape through the TED openings. According to a Biological Opinion completed in December 2002 (NOAA Fisheries Service 2002), as many as 2.5% of the loggerhead turtles in the Atlantic also were too large to exit through the TEDs (68 FR 8456; February 21, 2003). Consequently, NOAA Fisheries Service amended the regulations in February 2003 to 1) modify the dimensions of approved TEDs so they are effective at excluding leatherbacks and large loggerhead and green turtles, and 2) modify trynet and bait shrimp exemptions to the TED requirements to decrease lethal take of sea turtles.

In the 2002 Biological Opinion, NOAA Fisheries Service determined "shrimp trawling in the southeastern United States under the proposed revisions to the sea turtle conservation regulations and as managed by the fishery management plans for shrimp in the South Atlantic and Gulf of Mexico is not likely to jeopardize the continued existence of endangered green, leatherback, hawksbill, and Kemp's ridley sea turtles, and threatened loggerhead sea turtles" (NOAA Fisheries 2002).

Fish

Smalltooth sawfish

The smalltooth sawfish was listed as endangered in April 2003 (68 FR 15674). Its historic range in the western Atlantic extended from New Jersey to Brazil, including the Gulf of Mexico and Caribbean islands. Available information indicates some large (>13 ft [>4 m]), mature smalltooth sawfish historically migrated northward along the Atlantic coast in late spring, to the coastal waters of Georgia, South Carolina, North Carolina and Virginia (Adams and Wilson 1995) and occasionally as far north as New Jersey (Bigelow and Schroeder 1953). Data from the Sawfish Reporting Database indicate the current distribution of smalltooth sawfish extends from the central Florida Panhandle to northern Georgia; they are most frequently reported in Florida waters between Naples and Florida Bay (Simpfedorfer 2003). Within the rest of the Council's jurisdiction, far fewer smalltooth sawfish are reported. These individuals are mostly larger animals sighted along the beaches and at offshore reefs. Observations may be biased by the greater fishing effort in the Gulf of Mexico versus in the Atlantic.

Although smalltooth sawfish are vulnerable to shrimp trawls, no smalltooth sawfish have been taken by the South Atlantic shrimp fishery. The South Atlantic shrimp fishery operates mainly in waters north of where smalltooth sawfish are much less likely to be present.

Species of concern

NOAA Fisheries Service has created a list of Species of Concern as a publicly available list identifying other species of concern. No federal mandate protects species of concern under the ESA although voluntary protection of these species is urged. To date, no incidental capture of any of these species has been reported in the shrimp fishery operated in the southeast U.S. Federal waters.

List of Marine Species of Concern in the Southeastern U. S.

Dusky shark	*Carcharhinus obscurus*
Sand tiger shark	*Odontaspis taurus*
Night tiger shark	*Carcharhinus signatus*
Atlantic sturgeon	*Acipenser oxyrhynchus oxyrhynchus*
Mangrove rivulus	*Rivulus mamoratus*
Opposum pipefish	*Microphis barchyurus lineatus*
Key silverside	*Menidia conchorum*
Goliath grouper	*Epinephelus itajara*
Speckled hind	*Epinephelus drummondhayi*
Warsaw grouper	*Epinephelus nigritus*
Nassau grouper	*Epinephelus striatus*
Atlantic white marlin	*Tetrapturus albidus*
Ivory Tree Coral	*Oculina varicosa*

3.3 Administrative Environment

3.3.1 The Fishery Management Process and Applicable Laws

3.3.1.1 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 U.S. Exclusive Economic Zone (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 U.S. EEZ.

Responsibility for Federal fishery management decision-making is divided among the U.S. 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 collecting and providing the data necessary for the councils to prepare fishery management plans and 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 **Section 8.0**. In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

The South Atlantic Fishery Management Council is responsible for conservation and management of fishery resources in Federal waters of the U.S. South Atlantic. These waters extend from 3 to 200 miles offshore from the seaward boundary of the States of North Carolina, South Carolina, Georgia, and east Florida to Key West. The Council has thirteen voting members: one from NOAA Fisheries Service; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the South Atlantic Council there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard, State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The South Atlantic Council has adopted procedures whereby the non-voting members serving on the Council Committees have full voting rights at the Committee level but not at the full Council level. Council members serve three-year terms and are recommended by State Governors and appointed by the Secretary of Commerce from lists of nominees submitted by State governors. Appointed members may serve a maximum of three consecutive terms.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing personnel matters, are open to the public. The Council uses a

Scientific and Statistical Committee to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking.

3.3.1.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environment and Natural Resources. The Marine Resources Division of the South Carolina Department of Natural Resources regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. 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 South Atlantic states are also involved through the Atlantic States Marine Fisheries Commission (ASMFC) in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of consistent state regulations to conserve coastal species. The ASFMC also is represented at the Council level, but does not have voting authority at the Council level.

NOAA Fisheries Service' 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 (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.3.2 Enforcement

Both the National Oceanic and Atmospheric Administration (NOAA) Fisheries Office for Enforcement (NOAA/OLE) and the United States Coast Guard (USCG) have the authority and the responsibility to enforce South Atlantic Council regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at-sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at-sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the states in the Southeast Region (North Carolina), which granted authority to state officers to enforce the laws for which NOAA/OLE has jurisdiction. In recent years, the level of involvement by the states has increased through Joint Enforcement Agreements, whereby states conduct patrols that focus on Federal priorities and, in some circumstances, prosecute resultant violators through the state when a state violation has occurred.

NOAA General Counsel issued a revised Southeast Region Magnuson-Stevens Act Penalty Schedule in June 2003, which addresses all Magnuson-Stevens Act violations in the Southeast Region. In general, this Penalty Schedule increases the amount of civil administrative penalties that a violator may be subject to up to the current statutory maximum of $120,000 per violation.

3.4 Human Environment

3.4.1 Description of the Fishery

Given the distance from shore, depth of water, and gear necessary to harvest rock shrimp, there is no recreational fishery. The rock shrimp commercial fishery has existed off the east coast of Florida for approximately thirty years once extending from Jacksonville to Cape Canaveral. The relatively recent beginning for this shrimp fishery, compared to other southeast shrimp fisheries can be attributed to the lack of a viable market for the crustacean once considered "trash." Rock shrimp found a niche in the local fresh market and restaurant trade during the early 1970s, and became a regional delicacy. The increase in participants and market opportunities for smaller rock shrimp brought about a subsequent change in harvesting patterns as the fishing grounds extended south as far as St. Lucie County (SAFMC 1996a). Limited sporadic harvest has also occurred off Georgia, North Carolina and South Carolina. A limited access program was established in 2003 for vessels harvesting, in possession of and landing rock shrimp in Georgia and Florida. Expanding markets created growth within the industry that in turn has changed the composition of the rock shrimp fishery including the harvesting and the intermediate sectors (SAFMC 1996a).

In the south Atlantic region, essentially the only user group exploiting the rock shrimp resource is commercial trawlers. Rock shrimp harvested by commercial vessels is the only one of six species of *Sicyonia* reported for the south Atlantic coast that attains a commercial size (Keiser 1976). When the rock shrimp industry began, few vessels participated on a full-time basis with some vessels making a few trips a year when the white and brown shrimping ended, or as a bycatch of the penaeid shrimp fishery (Dennis 1992). During the period 1986 to 1994 there was an increase in effort in terms of the number of vessels participating (SAFMC 1996a).

Rock shrimp have been harvested along Florida's east coast from Cape Canaveral to as far north as Jacksonville. At one time, this fishery extended into south Georgia (statements at Public hearings for Shrimp Amendment 5). The increase in participants and market opportunities for smaller rock shrimp brought about a subsequent change in harvesting patterns as vessels began fishing as far south as St. Lucie County. This shift in effort to the south reflected new participation in the fishery as the majority of those harvesting these new areas were from the Gulf region. A control date for this fishery of April 4, 1994 was set to put the industry on notice that the Council could at some future date develop a limited access program for this fishery (SAFMC 1996a).

Season and Harvest Area

The peak rock shrimping season generally occurs from July through October (SAFMC 2002). Historically, the fishery did not begin until August or September (SAFMC 1996a). To a degree, the amount and timing of effort in the rock shrimp fishery are dependent on the success of the white and brown shrimp fisheries.

During development of Shrimp Amendment 1, the Rock Shrimp Producers Association submitted information to the Council indicating that the harvest area extended between just north of New Smyrna Beach to Stuart between 36.6 m (120 ft) and 47.5 m (156 feet) and between 61 m (200 ft) and 73 m (240 feet) (SAFMC, 1996a). The fishable grounds are hard sand to shell hash bottoms, which run north and south with a width as narrow as one mile. There was an effort shift to the south of Cape Canaveral which exposed the known concentrations of *Oculina* coral and the Oculina Bank HAPC to bottom trawls. Trawling was prohibited in the HAPC (a 4 x 23 nm strip bounded by latitude 27°30' N. and 27°53' N. and longitude 79°56' W. and 80°00' W.) in 1982 as one of the measures under the Coral Fishery Management Plan (GMFMC and SAFMC 1982). In addition, Amendment 1 to the Snapper Grouper Fishery Management Plan prohibited the retention of snapper grouper species caught by roller rig trawls and their use on live/hard bottom habitat north of 28° 35' N. latitude (SAFMC 1988). Furthermore Amendment 1 to the Shrimp Plan (SAFMC, 1996a) prohibited trawling in the area east of 80° 00' W. longitude between 27° 30' N. latitude and 28° 30' N. latitude shoreward of the 183 m (600 ft) contour.

In recent years, fishing activity has been concentrated off the Atlantic coast of Florida and particularly near Cape Canaveral (Sea Grant Louisiana 2006; SAFMC 1999). Some sources describe the coast between Jacksonville and St. Lucie Inlet as being of particular importance (Hill 2005b)

Vessels and Gear

There are two types of vessels in the rock shrimp fishery: ice or fresh boats and freezer boats. Most new rock shrimp trawlers are 23-24 m (75-80 ft) in length and are rigged to tow two to four nets simultaneously. The double-rigged shrimp trawler has two outrigger booms from whose ends the cable from the winch drum is run through a block to the two nets Testimony at Amendment 1 (SAFMC 1996a) hearings indicated that a standard freezer trawler was around 22 m (73 ft) and would pull four 12 m (40 ft) nets.

Some vessels use twin trawls, which are essentially two trawls on a single set of doors, joined together at the head and foot ropes to a neutral door connected to a third bridle leg. Thus, instead of towing two 21 m (70 ft) nets the vessel tows four 12 m (40 ft) nets. This rig has some advantages in ease of handling and increased efficiency.

Essentially the only gear used in the rock shrimp fishery is the trawl which consists of: (1) a cone-shaped bag in which the shrimp are gathered into the tail or cod end; (2) wings on each side of the net for herding shrimp into the bag; (3) trawl doors at the extreme end of each wing for holding the wings apart and holding the mouth of the net open; and (4) two lines attached to the trawl doors and fastened to the vessel. A ground line extends from door to door on the bottom of the wings and mouth of the net while a float line is similarly extended at the top of the wings and mouth of the net. A flat net is more often used when fishing for rock shrimp since they burrow into the bottom to escape the trawl. This net has a wider horizontal spread than other designs and is believed more effective (SAFMC 1996a). The minimum mesh size for the cod end of a rock shrimp trawl net in the South Atlantic EEZ off Georgia and Florida is 4.8 cm (1-7/8 inches), stretched mesh.

This minimum mesh size is required in at least the last 40 meshes forward of the cod end drawstring (tie off strings), and smaller mesh bag liners are not allowed. A vessel that has a trawl net on board that does not meet these requirements may not possess rock shrimp in or from the South Atlantic EEZ off Georgia and Florida.

As of January 12, 2007, on a vessel that fishes for or possesses rock shrimp in the South Atlantic EEZ, each trawl net or try net that is rigged for fishing must have a certified Bycatch Reduction Device (BRD) installed. Turtle Excluder Devices (TEDs) are also required in the rock shrimp fishery.

The tow length varies depending on many factors including the concentration of shrimp. Large boats fishing offshore waters make much longer drags lasting several hours. Testimony at public hearings for Shrimp Amendment 1 indicated that vessels may drag up to 30 to 35 miles over a number of tows in one night fishing for rock shrimp (SAFMC 1996a).

3.4.2 Economic Environment

This section describes the economic environment of the South Atlantic rock and penaeid shrimp fisheries. The section is primarily divided into three sub-sections. First, these fisheries are described generally where information is presented at a highly aggregated level. This information provides a larger context to the more detailed and disaggregated information that follows. In the second sub-section, the federal permit requirements that affect participants in these fisheries are described. This information is critical as it determines which entities are likely to be impacted by the management actions considered in this Amendment, and thereby in turn determines what information is necessary to determine the impacts of the actions and the alternatives being considered under each. A detailed description of the entities potentially impacted by the actions in this Amendment is presented in the third sub-section. This final sub-section is further broken down into descriptions of the harvesting (i.e. vessels), dealer/wholesaler, and processing sectors of the industry, respectively. The greatest level of attention and detail is given to the harvesting sector, and particularly the harvesting sector of the rock shrimp fishery since the actions considered in this Amendment primarily deal with this group of entities. For this group of vessels, additional descriptive information is provided based on the current status of their permits as well as their recent operational characteristics (for e.g. whether or not the vessel has been commercially active in general and specifically within the South Atlantic rock shrimp fishery). Such information is needed to identify the specific vessels that will be potentially impacted by the actions considered in this Amendment, as well as the nature and magnitude of those impacts.

3.4.2.1 General Description of and Recent Trends in the South Atlantic Rock and Penaeid Shrimp Fisheries

As Amendments 1(SAFMC 1996a), 5 (SAFMC 2002), and 6 (SAFMC 2004) to the South Atlantic Shrimp Fisheries Management Plan (FMP) describe in detail, the South Atlantic rock shrimp fishery is quite volatile, demonstrating significant ups and downs in terms of landings, revenues, and vessel participation from one year to the next. These

Amendments describe the nature of the fishery from its inception through 2002. Amendment 6 also provides considerable information on the nature and history of the South Atlantic penaeid shrimp fishery. The information from those Amendments is incorporated herein by reference. The purpose of the information provided in this section is to update this historical information and specifically focuses on the years 2003 through 2006, though information specific to the rock shrimp fishery and its participants has been updated through 2007. *However, all landings related information for 2007 should be considered preliminary.* These years have been selected since data on earlier years has been provided in previous Amendments. The provisions in Amendment 5 became effective in 2003, particularly the limited access endorsement program for the rock shrimp fishery, and 2006 is the most recent year for which complete landings data are available for the penaeid shrimp fishery. However, given the nature of certain regulations governing the limited access component of the rock shrimp fishery, landings data through 2007 for this component of the fishery and its participants are needed to properly assess the impacts of the actions under consideration in this Amendment.

Landings data can be analyzed from different perspectives. For example, it is common for landings to be compiled according to the port or state of landing. This is in fact how commercial fisheries landings data are commonly reported on the NOAA Fisheries Service website. Information at this level is important when there is a need to address the importance of a particular species or group of species to a specific port, community, or state. Table 3.4-1 reports all shrimp (penaeid, shrimp, and other minor shrimp species) landings and revenues during the years 2003 through 2006 in the South Atlantic States (i.e. North Carolina, South Carolina, Georgia, and the east coast of Florida, not including Monroe County). These landings may come from both South Atlantic and non-South Atlantic waters (e.g. Gulf of Mexico waters). Landings data of this nature are used to assess trends in the fishery as a whole over recent years.

According to this information, total shrimp landings in the South Atlantic were fairly stable in 2003 and 2004, and in fact nearly identical to reported landings in 2001 and 2002. However, the data also indicate that the decline in shrimp prices that began and was most significant in 2001 continued during 2003 and 2004. Between 2001 and 2004, the aggregate price of shrimp in the South Atlantic declined by approximately one-third in nominal terms. In real terms (i.e. after accounting for inflation), the decline was even greater. And although prices apparently increased slightly in 2005, landings decreased precipitously, specifically by nearly 40%. In fact, landings and revenues in the South Atlantic shrimp fishery in 2005 were at their lowest level since 1978, or nearly three decades ago. Although landings recovered somewhat in 2006, close to the levels seen in 2001-2004, prices fell again to approximately the same level experienced in 2003 and were thus very low by historical standards. However, preliminary landings data for 2007 suggest that, while production in 2007 may still be approximately the same as in 2006, and thus low by historical standards, prices may have increased back to a level comparable to those seen in 2001, which would represent an increase of nearly 20% over 2006 prices.

Considerable caution must be used in the use and interpretation of aggregate shrimp prices such as those reported in Table 3.4-1. Such prices do not take into account variations in the size composition of the landings and it is well established that larger shrimp command higher market prices, even though the magnitude of the price premium attached to larger shrimp has shrunk considerably in the past several years. So, for example, the aggregate price of shrimp could increase from one year to the next, not necessarily because the price of shrimp has increased, but simply because larger size shrimp have made up a larger proportion of the total landings. A complete analysis of trends in South Atlantic shrimp prices by standardized size counts/categories has not yet been conducted in part because such data have not been consistently collected in all States over the past several years[1].

Table 3.4-1. Shrimp Landings and Revenue in South Atlantic States, 2003-2006 (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD).

Year	Landings (Heads-on pounds)	Revenue (Nominal)	Average Price per Pound
2003	24,011,340	$41,175,716	$1.71
2004	25,990,290	$42,757,771	$1.65
2005	15,747,918	$29,391,036	$1.87
2006	21,724,377	$37,740,648	$1.74

However, such an analysis can and has been conducted for shrimp prices in the Gulf. For the most part, the price trends in the South Atlantic data are comparable to those found in the Gulf. For example, as in the South Atlantic, the decline in shrimp prices began in 2001 and generally continued through most of 2004. However, the largest price decline took place in 2002 as opposed to 2001. Further, Gulf shrimp prices began to increase in the latter part of 2004 and this increase continued through much of 2005. However, Gulf shrimp prices began to decline in the last quarter of 2005 after Hurricanes Katrina and Rita and this decline continued through 2006. In fact, Gulf shrimp prices in 2006 reached their lowest levels in decades, somewhat contrary to what is suggested by the aggregate South Atlantic shrimp data, which suggests the low point was experienced in 2004. Furthermore, Gulf shrimp prices appear to have declined much more between 2001 and 2006, by approximately 50%, compared to prices in the South Atlantic. However, similar to the preliminary South Atlantic data, preliminary data from the Gulf suggests that prices rose in 2007, particularly for the 30-count size and larger shrimp. However, the increase in the Gulf was only about 5%, and thus considerably less than what is suggested by the preliminary South Atlantic data.

[1] Florida's trip ticket data is the primary source of the problem, where it has not been uncommon for dealers to report their shrimp size data in terms such as "small," "medium," "large," and "jumbo." There is no known method to convert such categories into standard size count categories, in part because it is highly unlikely that a common interpretation of these terms is being applied across all reporting dealers. However, it should be duly noted that the shrimp size count information in Florida's trip ticket data has improved and become more consistent in 2006 and 2007, and thus an attempt to re-analyze all of the South Atlantic shrimp price data will be attempted in the near future.

Table 3.4-2 provides a break-down of the South Atlantic shrimp landings data according to state of landing between 2003 and 2006. These data provide additional insight into how the fishery has changed in recent years, such as the fact that trends in production and prices have not been the same across all states. In 2003, production between the four states was relatively equal. However, since that time, east Florida has consistently been the dominant state of production in the fishery, and in fact almost equaled the production of the other three states combined in 2004. Production has consistently declined in each year in both Georgia and South Carolina. In North Carolina, production also decreased between 2003 and 2005, but then rebounded considerably in 2006, nearly back to the level experienced in 2003. Conversely, landings on the east coast of Florida have fluctuated considerably from year to year, increasing significantly in 2004, but falling even more precipitously in 2005, and then rebounding again in 2006. Thus, although the declines in South Carolina and Georgia have been steady during these years, the decline in North Carolina and particularly east Florida led to the nearly record low level of total production in 2005. Preliminary data for 2007 suggests that landings in South Carolina and particularly Georgia have continued to decline and landings in east Florida have continued their up and down pattern in recent years by falling below their 2006 level. Conversely, the ability of the fishery as a whole to maintain its overall level of production from 2006 to 2007 appears to be due to a significant increase in landings in North Carolina, possibly back to levels experienced in 2000 and 2002. Thus, contrary to the past three years, North Carolina will be the primary leader in shrimp production for 2007. However, unlike in 2000 and 2002, the relatively high level of production in North Carolina during 2007 appears to be due to a significant increase in white shrimp landings, as opposed to the more historically predominant brown shrimp. Reasons for this somewhat surprising result are currently under investigation, as is its potential relationship to the historically low levels of pink shrimp production in that state.

Table 3.4-2. Total Shrimp Landings and Revenue in South Atlantic States by state, 2003-2006 (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD).

Year	State	Landings (Heads-on pounds)	Revenue (Nominal)	Average Price per Pound
2003	Florida East	6,231,956	$11,832,752	$1.90
2004	Florida East	11,357,169	$15,955,615	$1.40
2005	Florida East	4,940,298	$10,038,438	$2.03
2006	Florida East	8,527,276	$15,115,434	$1.77
2003	Georgia	5,478,740	$9,676,197	$1.77
2004	Georgia	4,978,825	$9,954,480	$2.00
2005	Georgia	4,493,325	$8,371,931	$1.86
2006	Georgia	3,810,588	$7,002,796	$1.84
2003	North Carolina	6,167,393	$10,930,644	$1.77
2004	North Carolina	4,880,849	$9,462,867	$1.94
2005	North Carolina	2,357,536	$4,409,143	$1.87
2006	North Carolina	5,736,664	$9,141,456	$1.59
2003	South Carolina	6,133,251	$8,736,123	$1.42
2004	South Carolina	4,773,447	$7,384,809	$1.55
2005	South Carolina	3,956,759	$6,571,524	$1.66
2006	South Carolina	3,649,849	$6,480,962	$1.78

Somewhat surprisingly, the trends in prices are also slightly different across the four States. For example, the aggregate price of shrimp has steadily increased in South Carolina, which is inconsistent with other noted price trends. As noted earlier, this trend could be due to larger shrimp composing a larger proportion of the total shrimp landed in that State, though other factors could also be at play. And while prices increased in 2004 in not only South Carolina, but North Carolina and Georgia as well, prices decreased significantly in east Florida. This price decline is clearly driving the price decrease in that year for the fishery as a whole. As discussed later, the price decline in east Florida was driven by a decline in the price of pink shrimp specifically. And while shrimp prices in east Florida rebounded significantly in 2005, they decreased slightly in Georgia and North Carolina. With the exception of South Carolina, shrimp prices decreased in all other states in 2006. Preliminary data suggest that prices increased in 2007 across all states.

Table 3.4-3 provides a break-down of the South Atlantic shrimp landings according to species, excluding rock shrimp which are examined separately, between 2003 and 2006. So-called “marine” shrimp is a conglomerate of landings where the species of shrimp landed is not identified by the reporting dealer or it is a mix of species (i.e. in effect, the

species is unknown). Therefore, interpretations of that set of data would not be particularly useful. And though consistently present, royal red shrimp are a minor species within the overall fishery. As has generally been the case in recent history, white shrimp has been the primary species of harvest between 2003 and 2006. Preliminary data suggest that its predominance in the total landings will be even greater in 2007, though from the state of North Carolina rather than South Carolina and Georgia, as has usually been the case in the past. Primarily due to production in east Florida, pink shrimp landings have been relatively stable during this time period, though increased somewhat significantly in 2006. However, preliminary data suggest a steep decline in pink shrimp production in 2007. Though brown shrimp landings were relatively close to white shrimp landings in 2003, they have fallen dramatically over the past four years, with much of that decline occurring in 2004. In fact, brown shrimp production in 2006 was less than one-third of its level in 2003. Preliminary data suggest that landings may have rebounded somewhat in 2007.

Table 3.4-3. Shrimp Landings and Revenue in South Atlantic states by Species, 2003-2006 (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD).

Year	Species	Landings (Heads-on pounds)	Revenue (Nominal)	Average Price per Pound
2003	SHRIMP, BROWN	9,478,261	$14,339,865	$1.51
2004	SHRIMP, BROWN	5,415,156	$9,227,991	$1.70
2005	SHRIMP, BROWN	4,436,744	$7,244,469	$1.63
2006	SHRIMP, BROWN	3,046,798	$5,010,256	$1.64
2003	SHRIMP, MARINE	30,998	$79,650	$2.57
2004	SHRIMP, MARINE	86,925	$219,768	$2.53
2005	SHRIMP, MARINE	348,506	$634,513	$1.82
2006	SHRIMP, MARINE	266,067	$408,815	$1.54
2003	SHRIMP, PINK	443,019	$940,413	$2.12
2004	SHRIMP, PINK	648,730	$1,028,943	$1.59
2005	SHRIMP, PINK	484,567	$560,176	$1.16
2006	SHRIMP, PINK	927,521	$907,585	$0.98
2003	SHRIMP, ROYAL RED	270,605	$410,747	$1.52
2004	SHRIMP, ROYAL RED	69,466	$139,168	$2.00
2005	SHRIMP, ROYAL RED	126,982	$211,752	$1.67
2006	SHRIMP, ROYAL RED	148,979	$282,271	$1.89
2003	SHRIMP, WHITE	11,032,356	$21,259,090	$1.93
2004	SHRIMP, WHITE	13,814,718	$27,725,627	$2.01
2005	SHRIMP, WHITE	10,223,292	$20,616,288	$2.02
2006	SHRIMP, WHITE	14,383,934	$26,960,659	$1.87

The prices of the primary species (white and brown) tended to move in the same direction between 2003 and 2006. For example, the prices of both white and brown shrimp

increased slightly between 2003 and 2004, were relatively stable in 2005, while both fell in 2006. Conversely, the price of pink shrimp fell dramatically, by over 50%, between 2003 and 2006. This decline is more precipitous than trends in other shrimp price data during this time, and thus some of the decline may be due to changes in the size composition of pink shrimp landings (i.e. smaller shrimp may be making up a larger proportion of the landings in more recent years). Further research and improvements in size data are needed to test this hypothesis.

Since rock shrimp are the primary species of interest with respect to actions under consideration within this Amendment, landings and revenue information for this species is presented separately. In Table 3.4-4, similar to information in Table 3.4-3, data regarding rock shrimp landings and revenues in the South Atlantic states are presented, though preliminary data for 2007 is also included. However, from a management perspective, the landings of greatest interest are those coming from a particular body of water (e.g. South Atlantic waters under the Council's jurisdiction) or a particular group of vessels (e.g. vessels that possess a particular type of permit or endorsement issued under one of the Council's FMPs). Thus, in the current case, it is more appropriate to examine rock shrimp landings harvested from South Atlantic waters and rock shrimp landings by vessels with South Atlantic limited access rock shrimp endorsements. The former is presented in Table 3.4-5 for the years 2003 through 2007. These data and subsequently discussed landings and revenue information represent a compilation of Florida trip ticket data, Gulf shrimp landings data, other South Atlantic states' trip ticket data and Standard Atlantic Fisheries Information Systems (SAFIS) data, the latter two of which are maintained by the Atlantic Coastal Cooperative Statistics Program (ACCSP).

Table 3.4-4. Rock Shrimp Landings and Revenue in South Atlantic States, 2003-2007 (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD and Southeast Fisheries Science Center, Fisheries Statistics Division Miami, FL).

Year	Landings (Heads-on pounds)	Revenue (Nominal)[2]
2003	2,756,101	$4,145,951
2004	5,955,295	$4,416,274
2005	127,827	$123,838
2006	2,951,078	$4,171,062
2007*	233,712	$434,938

*2007 data are preliminary

[2] Nominal values are those that have not been adjusted for inflation.

Table 3.4-5. South Atlantic Rock Shrimp Landings, Revenue, and Participation, 2003-2007[3].

Year	Number of Harvesting Vessels	Landings (Heads-on pounds)	Revenue (Nominal)	Average Price per Pound	Average Landings per Vessel	Average Revenue per Vessel	Number of Trips	Average Landings per Trip	Average Revenue per Trip
2003	97	2,980,623	$4,489,905	$1.51	30,728	$46,288	360	8,280	$12,472
2004	85	6,591,583	$5,012,147	$0.76	77,548	$58,966	300	21,972	$16,707
2005	21	109,281	$99,611	$0.91	5,204	$4,743	29	3,768	$3,435
2006	44	3,018,322	$4,264,576	$1.41	68,598	$96,922	142	21,256	$30,032
2007*	26	240,550	$441,277	$1.83	9,252	$16,972	78	3,084	$5,657

The information in Tables 3.4-4 and 3.4-5 illustrate that the South Atlantic rock shrimp fishery has continued its historically cyclical nature in recent years. Recall that landings in 2002 were at their lowest level in over two decades (i.e. since 1980). In 2003, landings increased significantly, comparable to landings seen between 1997 and 1999. And in 2004, landings increased further, back to levels similar to those experienced in 2000 and 2001 even though the number of participating vessels decreased from 97 to 85 vessels. However, in 2005, landings plunged to their lowest level since South Atlantic rock shrimp landings were first tracked back in 1978 and the number of participating vessels similarly plunged to only 21 vessels. And although landings, revenues, and even prices rebounded in 2006, vessel participation in 2006 (44 vessels) was considerably less than in 2003 or during the previous decade. The fact that landings and revenues per trip and per vessel were relatively high in 2006, even compared to previous "good years," suggests that factors outside the fishery played a role in limiting participation. In 2007, production and the number of harvesting vessels fell back to levels just slightly above their historic lows in 2005. Using the MSY/OY figure of approximately 4.912 million pounds for this fishery as a reference point, landings were above this reference point in 2004, below it in 2003 and 2006, and significantly below this value in 2005 and 2007.

Thus, it would appear that the fishery's cyclical nature has intensified in the past four years. It is highly likely that the instability of various economic factors has exacerbated the fishery's biological volatility. Although a definitive explanation cannot be provided at this time, it is likely that the extremely low level of landings in 2005 were not only a function of biological factors (e.g. relatively low abundance), but also economic factors (e.g. historically low rock shrimp prices, particularly relative to other potential target species, and high fuel prices, given that rock shrimp are harvested in more distant waters relative to penaeid species) and possibly natural disasters (e.g. the impact of Hurricane Katrina on vessels from ports in the Gulf of Mexico, particularly in Alabama). For example, rock shrimp prices fell dramatically in 2004, by 50%, relative to 2003. Rock shrimp prices basically remained at this historically low level in 2005, likely discouraging potential participants from engaging in the fishery. And although the number of trips is only a very rough estimate of effort, and thus landings per trip are

[3] With the exception of 150 pounds in 2003 and 22 pounds in 2004, all reported landings of rock shrimp from South Atlantic waters could be ascribed to a specific vessel, which reflects a marked improvement in the quality of the data in this respect since the analysis for Amendment 5 was conducted.

similarly only a rough estimate of abundance, landings per trip were also very low in 2005 and similarly provided a significant disincentive for other vessels to prosecute the fishery that year. And though rock shrimp prices were considerably higher in 2007 than in 2005, so too were fuel prices. In a more distant water fishery such as rock shrimp, the higher fuel expenses likely offset any incentive to participate in the fishery generated by the higher price for rock shrimp. And, as in 2005, the landings per trip were very low, and in fact slightly lower than in 2005. The combination of these two factors likely explains the low level of production in 2007.

Except in 2005, the landings and revenue figures in Table 3.4-5 are slightly larger than those in Table 3.4-4, which would indicate that some of the rock shrimp harvested from South Atlantic waters are being landed in Gulf of Mexico ports. Information in Amendment 5 (SAFMC 2002) suggests that participation in the fishery by vessels with homeports in the Gulf of Mexico increased during the 1990s through at least 2000. In combination with data from the NOAA Fisheries Service website, information in Amendment 5 also suggests that the "leakage" of rock shrimp landings from South Atlantic waters to Gulf ports was considerably larger in previous years, particularly in 1999 and 2000, relative to the 2003-2007 time period. And though the subject requires more research, it appears likely that market forces, particularly fuel prices, have caused it to be far less economically viable in recent years for vessels to harvest rock shrimp from South Atlantic waters, particularly off the east coast of Florida, and then transport and land them in Gulf ports, with the exception of Key West, which basically serves as a "dividing point" between South Atlantic and Gulf waters and, to a lesser extent, the Ft. Myers/Ft. Myers Beach area.

3.4.2.2 Federal Permit Requirements in the South Atlantic Rock and Penaeid Shrimp Fisheries

Federal permit requirements in the South Atlantic rock shrimp fishery were initially implemented under Amendment 1 to the South Atlantic Shrimp FMP (SAFMC 1996a). Specifically, the regulations that implemented Amendment 1 state that "for a person aboard a vessel to fish for rock shrimp in the South Atlantic EEZ or possess rock shrimp in or from the South Atlantic EEZ, a commercial vessel permit for rock shrimp must be issued to the vessel and must be on board." Since available information suggests that the rock shrimp fishery in the South Atlantic is prosecuted exclusively within federal waters, this requirement implies that rock shrimp in the South Atlantic can only be harvested by vessels with a federal South Atlantic rock shrimp permit. At the time of its implementation, and currently, this permit is "open access" in nature. That is, the Council did not impose any restrictions on the number of permits that could be issued or the nature of the vessels to which the permits could be issued. Therefore, in effect, a permit would basically be issued to any vessel whose owner applied for one. Amendment 1 also required permits for rock shrimp dealers. Specifically, the regulations indicate that "for a dealer to receive rock shrimp harvested from the South Atlantic EEZ, a dealer permit for rock shrimp must be issued to the dealer." Both the vessel and dealer permit requirements went into effect in November 1996. The dealer permit requirement has remained unchanged and is still in effect at this time, a fact that will become

important in the section that describes the dealer/wholesaler sector in the South Atlantic rock shrimp fishery.

As has often been the case in open access fisheries, the number of open access rock shrimp permits exceeded expectations within a few years following the implementation of the vessel permit requirement. Participation in the fishery increased as did potential and expected participation in the future. As noted in Amendment 5 (SAFMC 2002), although the maximum number of active vessels (i.e. vessels with landings in a particular year) reached an apex of approximately 153 vessels in 1996, the number of permits and thus potential participants commonly averaged around 400 vessels in the late 1990s and 2000. As such, considerable concern existed with respect to "latent capacity" in the fishery and its ability to expand effort to levels that would be both biologically and economically unsustainable. The Council determined that the fishery could only sustain, biologically and economically, a maximum of 150 vessels. And as a result of this determination, a limited access program was implemented under Amendment 5 for that portion of the fishery in the EEZ off of east Florida and Georgia, an area which covers the fishery's primary fishing grounds (i.e. the majority of the landings come from this area).

Amendment 5 consistently discusses the implementation of a limited access "permit," and it may be the case that the Council intended to implement a new "stand-alone" permit for the harvest of rock shrimp in the EZZ off of east Florida and Georgia. However, the implementing regulations state that "effective July 15, 2003, for a person aboard a vessel to fish for rock shrimp in the South Atlantic EEZ off Georgia or off Florida or possess rock shrimp in or from the South Atlantic EEZ off Georgia or off Florida, a limited access endorsement for South Atlantic rock shrimp must be issued to the vessel and must be on board" (emphasis added). This distinction has apparently been the source of some confusion for certain fishery participants and in fact is the reason for one of the actions under consideration within this Amendment. The issue may sound like mere semantics; however, the distinction is important for the following reason. First, it must be kept in mind that the new requirement did not replace the existing requirement for vessels harvesting South Atlantic rock shrimp to possess an open access permit. Second, an endorsement is basically an instrument that is "attached" to a permit. That is, in order to have the endorsement, a vessel must have the permit as well since the endorsement is "attached" to the permit. In this case, that permit would be the originally required open access permit. Thus, vessels harvesting rock shrimp from federal waters off of east Florida and Georgia must have both the limited access endorsement and the open access permit. The former cannot be issued or legally used for harvesting purposes without the latter. Similarly, possession of only the open access permit does not allow for the legal harvest of rock shrimp from the EEZ off of east Florida or Georgia. However, the open access permit requirement still applies to vessels that harvest rock shrimp from federal waters off of North and South Carolina.

Another important aspect of the rock shrimp limited access endorsement is that vessel owners must regularly renew their endorsements in order for the endorsements to be considered "active." A vessel's endorsement must be active in order for it to be used for

harvesting purposes or to be transferred to another vessel. The latter point is important since these endorsements are fully transferable. The issue of transferability is important for other reasons discussed later in this section. Specifically, the regulations state that "the Regional Administrator will not reissue a limited access endorsement for South Atlantic rock shrimp if the endorsement is revoked or if the RA does not receive a complete application for renewal of the endorsement within 1 year after the endorsement's expiration date." Thus, after an endorsement's expiration date, the endorsement can still be renewed for up to one year after that date. During this time, the endorsement is considered to be "renewable," though it cannot be transferred nor is it legal for the vessel with the endorsement to harvest rock shrimp from federal waters off of east Florida or Georgia. If an endorsement has not been renewed by the end of the one-year time period after the expiration date, the endorsement will be "terminated." A terminated endorsement is "non-renewable" and non-transferable and thus, in effect, is permanently retired from the fishery. Thus, the terms "terminated" and "non-renewable" are synonymous and may be used interchangeably. Though the open access permits must also be active in order for vessels to legally harvest rock shrimp from federal waters off of North and South Carolina, and can expire, no limitation exists with respect to when they can be renewed or obtained and thus they are never "terminated" per se. By definition, since they are open access permits, any vessel owner can obtain a permit at any time.

In addition to the creation of the limited access program, the Council also wanted to ensure that, after the program's implementation, the fishery remained economically viable, benefits of the program accrued to "serious" participants in the fishery, and the issue of latent permits/capacity did not resurface. At the time the Council deliberated over the actions in Amendment 5, the rock shrimp fishery was still relatively healthy from an economic perspective and that many owners of non-qualifying vessels wanted to participate in the fishery. As such, the Amendment also included a "use it or lose it" requirement. Specifically, vessels with endorsements would have to harvest at least 15,000 pounds of South Atlantic rock shrimp in at least one out of every four calendar year time period. The Council concluded this provision was necessary to ensure a more stable supply of rock shrimp for consumers, but also believed that the poundage level was sufficiently low and the period of time sufficiently long to allow vessels to participate in other fisheries that may be economically preferable in the short-term without forcing them to forego such opportunities simply to maintain their endorsement and for vessel owners to replace lost or retired vessels.

Specifically, the implementing regulations state that "a limited access endorsement for South Atlantic rock shrimp that is inactive for a period of 4 consecutive calendar years will not be renewed. For the purpose of this paragraph, 'inactive' means that the vessel with the endorsement has not landed at least 15,000 lb (6,804 kg) of rock shrimp from the South Atlantic EEZ in a calendar year." Although the regulations refer to an "inactive" endorsement and the Amendment refers to an "inactive" permit, that terminology is not carried forward throughout the remainder of this section or in the impacts analysis as it would likely only create additional confusion in conjunction with the terminology used by the Southeast Region's Permits Office as discussed above. Rather, the analysis will

simply discuss whether a vessel has met this requirement or any other landings requirement that the Council may be considering and the likely impacts of such.

The combination of the landings requirement, the effective date of the limited access endorsement, and the fully transferable nature of the endorsements has created some additional issues. At the time Amendment 5 was implemented, analyses indicated that approximately 168 vessels were expected to qualify for South Atlantic limited access rock shrimp endorsements. However, after all appeals were heard and determinations were made by NOAA Fisheries Service, South Atlantic limited access rock shrimp endorsements were in fact issued to 155 vessels, thus effectively capping participation in the fishery at this level. Recalling that the Council believed that the fishery could support no more than 150 active vessels, the implementation of the Amendment led to a fishery with almost exactly the desired number of vessels. Thus, it would be logical to conclude that the Council would not consider additional, significant vessel/endorsement attrition from the fishery to be desirable. As previously noted, these endorsements are fully transferable, meaning that they can be transferred to another owner of that vessel, another vessel owned by the same owner, or an entirely different vessel and owner. As a result, the universe of vessels holding these endorsements has changed over time. In turn, when a vessel initially obtained its endorsement, and thus the period of time each vessel with a current endorsement has held that endorsement, differs across vessels. This fact is critical with respect to the current 15,000-pound landings requirement.

Specifically, for vessels that initially received their endorsements in 2003, given that the requirement to possess the endorsements in order to operate in the fishery was not effective until July 15, 2003, NOAA Fisheries Service made an internal policy decision, reflected in a Fishery Bulletin sent to all endorsement holders in September 2003, to not start the four year "clock" with respect to vessels attaining the minimum landings requirement until January 1, 2004. In general, this adjustment would be expected to work to the benefit of the initial endorsement recipients since they would not be forced to count the last 5½ months of 2003 (i.e. a partial calendar year) as one of their "calendar years." Thus, vessels initially obtaining their endorsements in 2003 would have calendar years 2004 through 2007 to meet the 15,000-pound landings requirement in a single calendar year. On the other hand, this decision would presumably not preclude a vessel owner from counting landings from 2003 towards meeting the requirement, at least with respect to whether the requirement was met during the 2003-2006 time period. However, even if the vessel did meet the requirement in 2003, but did not in any subsequent year through 2007, then it would not have met the requirement for the four-year time period running from 2004 through 2007 and thus would lose its endorsement under the current regulations. The primary point is that, although a vessel may meet this requirement in its first 4-year cycle, the 4-year time period is recurring from year to year and the requirement must be met in every four year time period. In a fishery experiencing an economic downturn, the impact of this requirement on fleet size could be dramatic over several years.

However, NOAA General Counsel has determined that the regulations allow for each vessel's four year "clock" to start at the time it initially obtained the endorsement, as

opposed to when the endorsement was first issued to its initial recipient. Thus, all current vessels with endorsements are not operating on the same "clock." As such, the four year time period in which a vessel must meet the landings requirement depends on the year the vessel initially obtained its endorsement. To be consistent with the previously noted policy decision in which the four year timeframe for vessels obtaining their endorsements in 2003 was not started until January 1, 2004, it is assumed that the same logic would be applied to vessels obtaining their endorsements in subsequent years. For example, if a vessel initially obtained its endorsement in August 2005, then its four year clock for meeting the landings requirement need not begin until January 1, 2006, and thus this vessel would have calendar years 2006 through 2009 to meet the current landings requirement. However, since the regulations do not explicitly preclude a vessel owner from doing so, it is assumed that, if it is to the vessel owner's advantage, the year in which the endorsement was initially obtained can be counted as one of the four years within which the 15,000-pound landings requirement must be met.

Finally, the Council required federal permits for trawler vessels harvesting penaeid shrimp from federal waters in the South Atlantic under Amendment 6 (SAFMC 2004). Specifically, the regulations state "for a person aboard a trawler to fish for penaeid shrimp in the South Atlantic EEZ or possess penaeid shrimp in or from the South Atlantic EEZ, a valid commercial vessel permit for South Atlantic penaeid shrimp must have been issued to the vessel and must be on board." This requirement became effective in April 2006 and therefore has only been in effect for approximately two years. These permits are "open access" in nature and thus any vessel owner can obtain one at any time and there are no restrictions with respect to how many can be issued. Thus, like the open access rock shrimp permit, these permits can expire, but they can be renewed or a new one obtained at any time and never "terminate." It is worth noting that, at this time, no federal dealer permit requirement exists for the South Atlantic penaeid shrimp fishery.

3.4.2.3 Number of Federal Permits and Potentially Affected Entities

In order to analyze the impacts of the actions being considered in this Amendment, an analysis of data pertaining to the previously discussed permits and endorsements from both the current PIMS and historical Rbase permits databases was undertaken. With respect to the open access rock shrimp and penaeid shrimp permits, these data were valid and accurate as of March 31, 2008, while data pertaining to the limited access rock shrimp endorsements were valid and accurate as of April 1, 2008. The two different dates were selected to provide the most useful and accurate information possible. Specifically, permits always expire at the end of a particular month. And thus, the number of permits always decreases, particularly open access permits, on the first day of each month. Since vessel owners tend to renew their permits as the month progresses, the number of permits returns to its typical level at the end of each month. Thus, the number of open access permits at the end of the most recent month was used to ensure that they would not be systematically underestimated. Similarly, the status of the limited access rock shrimp endorsements typically changes on the first of each month and the endorsements' status is critical to the impacts analysis. Thus, the decision was made to use the most current information possible with respect to the status of these endorsements in terms of how many are active, renewable, or terminated/nonrenewable.

Based on the available data, it was determined that there are 266 open access rock shrimp (RS) permits, 620 penaeid shrimp permits (SPA) and, as already noted, 155 limited access rock shrimp endorsements (RSE). The distribution of these permits across communities is presented in the description of fishing communities. The number of permits cannot simply be summed in order to determine the number of vessels possessing such permits/endorsements because many vessels possess two or all three of these permits/endorsements. The total number of vessels that possess one or more of these permits/endorsements is 694 and thus this is the maximum number of vessels that could be potentially impacted by the actions considered in this Amendment. For reasons explained later, it is also important to note that, of these 694 vessels, approximately 293 also possess Gulf shrimp moratorium permits and therefore only about 400 of these vessels are "unique" to the South Atlantic shrimp fisheries.

Of course, all vessels with active RSEs also possess open access RS permits. And it would be expected that the vast majority of vessels with active or renewable RSEs would also have an SPA permit since it is common for penaeid shrimp to be incidentally harvested on trips that primarily target rock shrimp. Conversely, for vessels that do not have an active or renewable RSE, a minority probably possess an RS permit only since rock shrimp are rarely harvested on penaeid shrimp trips in federal waters off of North and South Carolina. However, few vessels that possess an RS permit but not an RSE would likely not have an SPA permit since it would be nearly impossible for a vessel to only harvest rock shrimp in federal waters off of North and South Carolina without also harvesting penaeid shrimp. The data support these hypotheses. Specifically, of the 155 vessels with RSEs, 104 also possess an SPA. Of the 516 vessels that possess an SPA but not an RSE, only 121 possess an RS permit. Of the 620 vessels with an SPA permit, only 223 have an RS permit. And of the 266 vessels with RS permits, 223 also possess a SPA.

Table 3.4-6 presents information regarding the number of RSEs that are currently active, renewable, and terminated. This table will be referenced frequently given that it contains considerable information critical to the impacts analysis. Based on the information in columns 3 and 4, of the 155 RSEs that have been issued, 105 are active, 20 are renewable (i.e. 125 are active or renewable), and 30 have been terminated. Thus, at this time and unless the Council takes additional action to alter the status of some or all of the terminated RSEs, the maximum number of vessels allowed to operate in the limited access component of the fishery (i.e. the "cap") has already been reduced from 155 to 125 vessels. This change represents a nearly 20% reduction in the maximum fleet size, and this maximum fleet size is approximately 17% below the Council's desired fleet size. And if the vessels currently possessing renewable RSEs do not renew them in a timely manner, the maximum fleet size could further decrease.

One other piece of information is important with respect to the limited access endorsements. In the preliminary analysis that was conducted for this Amendment, it was estimated that the market value of these endorsements was approximately $10,000. However, this estimate was based only on information during the first two years of the limited access program. Since that time, data indicate that the market value of these

endorsements has been steadily declining. Given the economic downturn in the rock and penaeid shrimp fisheries, such a result is to be expected since the market value of the endorsements should reflect industry participants' expectations of future profitability in the industry. As their expectations become more pessimistic (i.e. expected profitability declines), the market value of the endorsements will decrease. Over the past five years, the average selling price of these endorsements has fallen to $5,000, and in fact this was highest selling price of an endorsement over the past year. Thus, the market value of these endorsements is estimated to be $5,000, and that may be an overestimate.

Finally, with respect to rock shrimp dealer permits, the number of permits at any given point in time has varied between 40 and 50 over the past five years. During calendar years 2006 and 2007, 46 different dealers possessed one of these permits at one point or another. And, as will be discussed in the next section, only a fraction of these dealers are typically involved in the fishery in any given year or even across a several year time period. However, contrary to vessels with permits and/or endorsements, none of the actions being considered in this Amendment would directly impact dealers with rock shrimp permits or directly alter the number of such permits that can be issued. The only dealers expected to be indirectly impacted by the actions in this Amendment are those that have been or are expected to participate in the fishery.

Table 3.4-6. Distribution of South Atlantic Rock Shrimp Endorsements (RSE).

\Year Obtained	Number of Vessels	Currently Active or Renewable[4]	Currently Terminated	Currently Active or Renewable Meets 15K	Currently Active or Renewable Does Not Yet Meet 15K	Currently Active or Renewable Meets 7500	Currently Active or Renewable Does Not Yet Meet 7500	Currently Terminated Meets 15K	Currently Terminated Does Not Yet Meet 15K	Currently Terminated Meets 7500	Currently Terminated Does Not Yet Meet 7500
2003	107	83 (66,17)	24	40	43	43	40	3	21	4	20
2004	14	9 (8,1)	5	5	4	5	4	2	3	2	3
2005	13	12 (12,0)	1	5	7	5	7	0	1	0	1
2006	9	9 (7,2)	0	5	4	5	4	0	0	0	0
2007	11	11 (11,0)	0	0	11	0	11	0	0	0	0
2008	1	1 (1,0)	0	0	1	0	1	0	0	0	0
Total	155	125 (105, 20)	30	55	70	58	67	5	25	6	24

[4] The number of active endorsements and the number of renewable endorsements are the first and second numbers in the parenthetical respectively.

3.4.2.4 Description of Potentially Affected Entities

In this section, a detailed description of potentially affected entities is provided. These entities are broken down according to whether they are involved in the harvesting sector (i.e. vessels), dealer sector, or processing sector. Since entities in the harvesting sector are the most likely to be affected by actions considered in this Amendment, particularly vessels with RSEs, the greatest level of detail and attention is given to these entities.

Entities in the harvesting sector are characterized according to their landings activities and associated revenue across various fisheries during the 2003 through 2007 time period. These vessels are also described according to their physical and certain operational characteristics. Vessels are described in the aggregate according to the types of permits or endorsements they possess. However, these descriptions are broken down further according to the status of their endorsements (for vessels that possess RSEs), whether they were active in commercial fisheries, and specifically whether they were active in the South Atlantic rock shrimp fishery. Again, these breakdowns are necessary to more accurately assess the potential impacts of particular actions considered in this Amendment on particular groups or "types" of vessels.

Harvesting Sector

Although vessels with RS and SPA permits will be briefly characterized in this section, the focus is on vessels with RSEs since the majority of the actions considered in this Amendment are likely to directly impact all or some of these vessels. In fact, these actions will likely determine the size, structure and composition of the South Atlantic rock shrimp fishery for years to come. Because of one particular action considered in this Amendment, all 694 vessels will be briefly examined as a single fleet.

Because of the focus on vessels with RSEs, it is necessary to refer again to certain information contained in Table 3.4-6. First, as already indicated, the total number of vessels initially receiving limited access endorsements was 155, and this fact is reflected in the table. These 155 vessels represent the total universe of vessels considered throughout much of the impacts analysis. Some vessels have obtained their endorsements via transfers in the years after the initial endorsements were issued. So although many endorsements were initially obtained in 2003, others were not. Column 2 of Table 3.4-6 presents a breakdown of the number of vessels initially obtaining their endorsements in each year. Specifically, of the 155 current vessels with endorsements, 107 were initially obtained in 2003, while the other 48 were initially obtained in subsequent years (2004 through 2008). These 155 vessels can be partially characterized based on their physical and operational characteristics as well as their commercial harvesting activities in and outside of the South Atlantic rock shrimp fishery during the 2003 through 2007 time period, both across the entire time period and from year to year. In some cases, these characteristics remained fairly constant and thus changes from year to year are not examined. In other cases, the changes from year to year are significant and thus become the focus of the analysis.

Since it is possible that some actions may directly or indirectly affect all vessels with RSEs, the physical and operational characteristics of all vessels with RSEs are presented in Tables 3.4-7 and 3.4-8. These data indicate that this fleet, though having some heterogeneity, is fairly homogeneous (i.e. the means of these characteristics are fairly large relative to the standard deviations). The average or typical vessel in this fleet is approximately 20 years old, nearly 73 feet in length, gross tonnage of 132 tons, with a fuel capacity of approximately 16,000 gallons and a hold capacity of more than 63,000 pounds of shrimp. The average vessel typically uses four nets of an average length between 55 and 60 feet, and uses between three and four crew on each trip. More than 90% of these vessels are "large" while less than 9% are "small." The vast majority (more than 87%) has on-board freezing capacity and more than two-thirds have steel hulls. The remaining vessels are nearly equally split between fiberglass and wood hulls.

It is also possible that only commercially active vessels (i.e. those with landings from a commercial fishery) may be impacted. Statistics regarding commercially active vessels are provided in Tables 3.4-9 through 3.4-12. Of the 155 vessels currently possessing RSEs, 145 were commercially active at some point between 2003 and 2007, though not all were active in every year, and thus 10 vessels with RSEs were not commercially active during these years. All of the commercially inactive "vessels" were in fact state registered boats. Thus, as would be expected, the statistics in Tables 3.4-9 and 3.4-10 indicate that the commercially active vessels with RSEs are relatively more homogeneous, newer, larger, and more powerful on average relative to all vessels with RSEs. In other words, the vessels with endorsements that have dropped out of commercial fishing in recent years have tended to be those that are older, smaller, and less powerful.

In Tables 3.4-11 and 3.4-12, and all other tables reporting the distribution of vessels' landings and revenues, all revenues are gross revenues rather than net revenues and reported in nominal terms. Also, revenues have been broken down into the following categories: South Atlantic rock shrimp (SRS), Gulf shrimp, Gulf non-shrimp, South Atlantic penaeid shrimp, South Atlantic non-shrimp, and Northeast non-shrimp. According to information in Table 3.4-11, the commercially active vessels averaged nearly $284,000 in total revenue per year. Their dependence on South Atlantic rock shrimp revenues was relatively low as they only accounted for 7% of total revenues on average during this time. These vessels were most dependent on Gulf shrimp revenues during these years, as they accounted for nearly 46% of their total revenues on average. Revenues from South Atlantic penaeid shrimp landings and Northeast non-shrimp landings were also important, with each representing approximately 22% of their total revenues on average. The vast majority of the Northeast non-shrimp revenues came from Atlantic sea scallop landings.

Table 3.4-7. Physical Characteristics and Selected Statistics for All Vessels with Limited Access Rock Shrimp Endorsements[5].

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
# vessels	124	120	122	154	155	155	133	144	142
Minimum	1	2	30	5	12	5	5	51	10
Maximum	5	4	80	42	93	1,720	48,000	205	160,000
Total	429	464	6,912	3,133	11,233	86,571	2,126,333	19,036	9,015,260
Mean	3.5	3.9	56.7	20.3	72.5	558.5	15,987	132.2	63,488
St. Dev.	0.7	0.4	11.0	9.9	16.8	226.9	9,545	27.4	32,541

Table 3.4-8. Distribution of Additional Physical Characteristics for All Vessels Limited Access Rock Shrimp Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	68.2	Freezer	87.4	Large	91.6
Fiberglass	16.2	Ice	12.6	Small	8.4
Wood	14.9				
Aluminum	.6				

[5] The 2006 Vessel Operating Units File (VOUF) was the source of data for crew size, number of nets, and net size. The Permits database is the source of data for all other characteristics. Characteristics data was not available for every permitted vessel for a variety of reasons (e.g. tonnage data is not available for state registered boats, vessel owners do not always provide the requested data on their application form, etc.).

Table 3.4-9. Physical Characteristics and Selected Statistics for All Commercially Active Vessels (2003-2007) with Limited Access Rock Shrimp Endorsements[6].

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	2	30	5	17	125	1,500	51	800
Maximum	5	4	80	42	93	1,720	48,000	205	160,000
Mean	3.5	3.9	57.1	19.9	76.8	593.9	16,850	132.6	66,034
St. Dev.	0.7	0.4	11.0	9.8	7.6	208.6	9,005	26.4	32,067

Table 3.4-10. Distribution of Additional Physical Characteristics for All Commercially Active Vessels (2003-2007) Limited Access Rock Shrimp Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	74.3	Freezer	91.7	Large	99
Wood	14.1	Ice	8.3	Small	1
Fiberglass	11.6				

Table 3.4-11. Landings and Revenue Statistics, All Commercially Active RSE Vessels, 2003-2007 Combined

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	11,952,623	$13,147,673	$84,720,681	$39,374,596	$91,555	$919,919	$40,157,376	$52,522,269	$178,411,801	N/A	N/A
Average / Vessel / Year	19,003	$20,903	$134,691	$62,599	$146	$1,463	$63,843	$83,501	$283,644	7	34

[6] In this table, and others presenting statistics over the entire 2003-2007 time period, as opposed to each year individually, vessels active in a greater number of years during that time period are inherently given a higher weight in the calculation of the means and standard deviations since as each observation represents a combination of vessel and year and thus they will represent a greater proportion of the observations relative to vessels that were active in fewer years.

Table 3.4-12. Landings and Revenue Statistics by Landing Year, All Commercially Active RSE Vessels, 2003-2007[7]

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2003	# vessels	129	129	129	129	129	129	129	129	129	129	129
2003	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$6,026	0.0	0.0
2003	Maximum	161,242	$252,686	$385,842	$294,047	$13,157	$90,778	$34,240	$376,455	$560,772	81.5	100.0
2003	Total	2,589,183	$3,861,674	$17,700,476	$4,830,079	$25,968	$240,066	$35,811	$8,691,753	$26,694,074	N/A	N/A
2003	Average	20,071	$29,935	$137,213	$37,442	$201	$1,861	$278	$67,378	$206,931	11.8	33.5
2003	St. Dev.	31,038	$48,041	$105,296	$59,430	$1,294	$8,733	$3,015	$83,073	$109,467	17.2	36.9
2004	# vessels	122	122	122	122	122	122	122	122	122	122	122
2004	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$3,871	0.0	0.0
2004	Maximum	665,787	$469,639	$504,594	$1,768,168	$30,955	$117,122	$282,098	$1,768,168	$1,769,743	74.1	100.0
2004	Total	6,042,620	$4,532,819	$15,427,750	$10,492,766	$37,084	$246,651	$304,599	$15,025,585	$31,041,669	N/A	N/A
2004	Average	49,530	$37,154	$126,457	$86,006	$304	$2,022	$2,497	$123,161	$254,440	12.1	46.1
2004	St. Dev.	115,576	$83,606	$117,938	$182,631	$2,828	$10,822	$25,546	$203,176	$195,402	20.1	40.9
2005	# vessels	132	132	132	132	132	132	132	132	132	132	132
2005	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$2,297	0.0	0.0
2005	Maximum	43,960	$32,449	$515,783	$760,206	$3,622	$14,560	$1,515,311	$761,827	$1,515,311	7.9	100.0
2005	Total	106,249	$97,159	$16,820,792	$6,064,837	$4,887	$86,596	$14,971,424	$6,161,996	$38,045,695	N/A	N/A
2005	Average	805	$736	$127,430	$45,946	$37	$656	$113,420	$46,682	$288,225	0.2	23.2
2005	St. Dev.	4,222	$3,425	$139,011	$104,665	$321	$1,949	$288,342	$105,975	$261,438	1.0	38.5

[7] SRS landings and revenues in this table will not be equivalent to those in Table 3.4-2 because of those accrued by vessels that did but no longer possess an endorsement, in addition to minor amounts that could not be ascribed to a specific vessel or to a vessel that lacked an endorsement.

Table 3.4-12. Cont'd.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2006	# vessels	124	124	124	124	124	124	124	124	124	124	124
2006	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$7,680	0.0	0.0
2006	Maximum	312,347	$493,382	$591,472	$494,619	$8,713	$16,322	$1,598,681	$925,697	$1,598,681	100.0	100.0
2006	Total	2,978,356	$4,219,206	$18,226,435	$7,637,531	$11,995	$144,934	$13,167,715	$11,856,737	$43,407,816	N/A	N/A
2006	Average	24,019	$34,026	$146,987	$61,593	$97	$1,169	$106,191	$95,619	$350,063	11.4	33.7
2006	St. Dev.	54,516	$79,094	$178,171	$108,267	$788	$2,648	$287,549	$166,472	$268,864	20.7	41.9
2007	# vessels	122	122	122	122	122	122	122	122	122	122	122
2007	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$7,630	0.0	0.0
2007	Maximum	32,365	$61,656	$762,413	$675,326	$6,502	$18,786	$1,394,112	$682,867	$1,394,112	39.3	100.0
2007	Total	236,215	$436,815	$16,545,228	$10,349,383	$11,621	$201,672	$11,677,827	$10,786,198	$39,222,546	N/A	N/A
2007	Average	1,936	$3,580	$135,617	$84,831	$95	$1,653	$95,720	$88,411	$321,496	1.7	35.1
2007	St. Dev.	6,012	$11,083	$174,471	$148,096	$634	$3,511	$268,014	$153,758	$252,007	5.9	45.4

Thus, although South Atlantic rock shrimp landings were not unimportant to these vessels' operations, they were considerably more dependent on other fisheries. However, the nature of that dependence has changed considerably during these five years. That is, the distribution of revenues across fisheries varied considerably from one year to the next and certain patterns emerged over time. For example, in 2003, these vessels were highly dependent on the Gulf shrimp fishery with nearly two-thirds of their total revenues coming from this fishery. The vast majority of their other revenues came from the South Atlantic penaeid and rock shrimp fisheries. In 2004, dependence on the Gulf shrimp fishery lessened considerably, with less than 50% of their total revenues coming from that fishery and more than 30% coming from the South Atlantic penaeid shrimp fishery. Dependence on revenues from the South Atlantic rock shrimp fishery remained about the same between these two years at around 11-12%. However, these vessels' operations changed dramatically in 2005. As previously noted, South Atlantic rock shrimp landings were very low in 2005 and, as a result, accounted for only 0.2% of these vessels' total revenues. Landings from the South Atlantic penaeid shrimp fishery were still relatively important, though far less so than in 2004, accounting for nearly 16% of their total revenues. And although revenues from the Gulf shrimp fishery were still relatively important, accounting for approximately 44% of their total revenues in 2004, landings from Northeast non-shrimp fisheries were almost as important accounting for nearly 40% of total revenues on average. The vast majority of these revenues were the result of landings from the sea scallop fishery. The Northeast sea scallop fishery has seen a significant recovery both biologically and economically in recent years. Sea scallop landings and prices were particularly high in 2005.

In 2006, revenues from the Gulf shrimp, South Atlantic penaeid shrimp, and South Atlantic rock shrimp fisheries increased in absolute terms relative to their 2005 levels, while those from the Northeast non-shrimp fisheries fell slightly. But, in 2007, with the significant decline in the rock shrimp fishery, as took place in 2005, they apparently shifted more effort into the South Atlantic penaeid shrimp fishery, while revenues from Gulf shrimp and Northeast non-shrimp fisheries declined slightly. Thus, by 2007, these vessels' operational changes resulted in them being most dependent on revenues from the Gulf shrimp fishery, followed by Northeast non-shrimp fisheries, the South Atlantic penaeid shrimp fishery, with each accounting for no less than 26% of these vessels' total revenues. In effect, these vessels changed their operations in such a way that, as a fleet, their landings and revenue "portfolio" has become more diversified over time. In an economic environment that has become increasingly uncertain in recent years, particularly in the Southeast's shrimp fisheries, this is exactly the approach these vessels' owners should have engaged in to spread risk and thereby protect their investments. Furthermore, at least in the short-term, their strategy appears to have worked remarkably well at least in terms of gross revenues, which increased on a per vessel basis by from 2003 to 2006, average total revenues increased each year from approximately $203,000 in 2003 to $350,000 in 2006, or by approximately 70% on average. Although these vessels' total revenues decreased slightly in 2007 to approximately $321,000 on average, they were still quite high relative to 2003 through 2005. However, without

accompanying cost information, it is not possible to determine how these vessels' costs and therefore profitability have changed during this time.

Another distinction among vessels with endorsements can be made between those with and without South Atlantic rock shrimp landings. Of greatest interest with respect to potential impacts from management actions are those with such landings. Statistics regarding these particular vessels are presented in Tables 3.4-13 through 3.4-17. With respect to most physical and operational characteristics, this group of vessels differs little from those who have been active in any commercial fishery. During the 2003 through 2007 time period, the only noticeable difference is that a higher proportion of vessels that were specifically active in the rock shrimp fishery tend to have steel hulls and have on-board freezing capacity, and a lower proportion have wood hulls and use ice for storage purposes. However, based on information in Table 3.4-15, a somewhat surprising trend can be seen over this time period with respect to the physical characteristics of the vessels participating in the rock shrimp fishery. Specifically, from 2003 through 2005, the fishery was trending towards newer, larger, and more powerful vessels using larger nets. But this trend reversed in 2006 and 2007, and vessels participating in the fishery are becoming slightly older, smaller, less powerful, and using smaller nets. Though a definitive conclusion cannot be offered without additional data, particularly cost data, it is hypothesized that this change is related to the ever increasing price of diesel fuel and the fact that newer, larger, more powerful vessels that use larger nets also tend to be less fuel efficient. As such, it may be particularly unprofitable for these types of vessels to operate in or travel to a more distant, offshore fishery such as rock shrimp, particularly when other, possibly more lucrative fisheries requiring less fuel use may be available to them.

Somewhat coincidentally, according to information in Table 3.4-16, the average total revenue of RSE vessels with rock shrimp landings is almost identical to the average for all commercially active vessels. However, the distribution of those revenues, and thus their dependence on particular fisheries, is quite different. Specifically, these vessels are most dependent on revenues from the South Atlantic penaeid fishery, accounting for 38% of total revenues on average, followed by Gulf shrimp at 35% of total revenues, and South Atlantic rock shrimp at nearly 22%. Revenues from Northeast non-shrimp fisheries such as the sea scallop fishery are not at all important to this group of vessels.

But, as with all commercially active vessels with endorsements, this group of vessels has seen its average total revenues generally increase after 2003. The changes have been somewhat less dramatic, with total revenues only increasing from nearly $246,000 to nearly $323,000 per vessel on average between 2003 and 2005, or slightly more than 31%, and then decreasing slightly in 2006 and 2007, but still remaining above $300,000 on average. These vessels' dependence on revenues from South Atlantic rock shrimp have basically followed the same pattern during these years compared to all commercially active vessels with endorsements. And also similarly, these vessels were most dependent on revenues from the Gulf shrimp fishery in 2003 and 2004. However, in 2005, rather than shifting their effort into Northeast non-shrimp fisheries, these vessels shifted their effort into the South Atlantic penaeid fishery. And in 2006, revenues from the South Atlantic penaeid and rock shrimp fisheries comprised nearly 74% of these

vessels' total revenues. And in 2007, when rock shrimp landings declined significantly, these vessels' became almost completely dependent on revenues from the South Atlantic penaeid fishery, which accounted for nearly 82% of their total revenues on average. Along with the information on physical characteristics, this information suggests that the only vessels that have continued to operate in the rock shrimp fishery over the past two years are "local" vessels, i.e. those that also operate in the South Atlantic penaeid fishery. Most or all of the newer, larger, more powerful vessels that, at least at one time, came from the Gulf have opted to operate in the Gulf shrimp fishery, which had a particularly abundant year in 2006 and would allow them to economize their fuel expenses, or have shifted into the Northeast sea scallop fishery, which has seen high prices and relatively high abundance in recent years.

As previously discussed, some of these vessels' endorsements are currently active (i.e. they have not expired), some have expired but are still renewable (i.e. they are still within the allowed one year time frame to renew their endorsement after expiration), while others have expired but are currently terminated/nonrenewable (i.e. they did not renew their endorsements within one year after expiration). Thus, it is potentially important to examine how vessels may differ according to the current status of their endorsements.

Table 3.4-13. Physical Characteristics and Selected Statistics for Vessels with Limited Access Rock Shrimp Endorsements and SRS Landings between 2003 and 2007.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	2	30	5	17	125	3,200	67	800
Maximum	5	4	80	42	93	1,720	48,000	205	160,000
Mean	3.6	3.9	56.1	19.7	76.9	601.5	16,598	132.7	68,842
St. Dev.	0.6	0.3	10.7	9.9	8.0	183.7	8,123	23.0	28,828

Table 3.4-14. Distribution of Additional Physical Characteristics for Vessels (2003-2007) Limited Access Rock Shrimp Endorsements and SRS Landings between 2003 and 2007[8].

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	79.6	Freezer	96.6	Large	99.5
Fiberglass	13.0	Ice	3.4	Small	.5
Wood	7.4				

[8] Though these characteristics were mostly consistent between 2003 and 2007, some noticeable changes took place in 2007. Specifically, representation of steel hulled vessels with on-board freezing capacity in the fishery declined by approximately 10%, while vessels with fiberglass or wood hulls and no such capacity increased concomitantly. These changes are consistent with those noted in Table , though information in that table suggests changes began in 2006. The reasons for this change are not apparent at this time, though higher fuel costs associated with operating larger, more powerful vessels may have played a role.

Table 3.4-15. Average Physical Characteristics by Year for Vessels with Limited Access Rock Shrimp Endorsements and SRS Landings between 2003 and 2007.

Year	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
2003	3.6	3.9	57.0	20.7	76.7	605.2	17,171	131.3	71,173
2004	3.6	3.9	57.5	18.9	77.1	594.9	17,169	132.3	71,255
2005	3.7	4.0	59.1	18.5	78.7	638.4	18,059	139.5	69,194
2006	3.6	3.9	53.9	19.2	76.2	588.9	15,585	134.0	64,412
2007	3.7	3.9	51.4	20.6	76.5	601.3	14,181	130.5	63,600

Table 3.4-16. Landings and Revenue Statistics, RSE Vessels with SRS landings, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	11,952,623	$13,147,673	$21,376,657	$23,493,361	$68,702	$681,503	$2,471,022	$36,641,034	$61,238,918	N/A	N/A
Average / Vessel / Year	55,336	$60,869	$98,966	$108,766	$318	$3,155	$11,440	$169,634	$283,514	21.5	57.5

Table 3.4-17. Landings and Revenue Statistics by Landing Year, RSE Vessels with SRS landings, 2003-2007[9]

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2003	# vessels	74	74	74	74	74	74	74	74	74	74	74
2003	Minimum	81	$190	$0	$0	$0	$0	$0	$190	$37,209	0.1	0.1
2003	Maximum	161,242	$252,686	$364,472	$294,047	$13,157	$90,778	$671	$376,455	$560,772	81.5	100.0
2003	Total	2,589,183	$3,861,674	$10,361,889	$3,736,988	$19,335	$213,136	$765	$7,598,662	$18,193,788	N/A	N/A
2003	Average	34,989	$52,185	$140,026	$50,500	$261	$2,880	$10	$102,685	$245,862	20.6	43.5
2003	St. Dev.	34,060	$53,570	$102,965	$66,605	$1,543	$11,267	$79	$88,236	$100,067	18.4	32.9
2004	# vessels	58	58	58	58	58	58	58	58	58	58	58
2004	Minimum	67	$50	$0	$0	$0	$0	$0	$91	$21,279	0.0	0.1
2004	Maximum	665,787	$469,639	$308,163	$387,347	$30,955	$117,122	$1,622	$704,369	$725,024	74.1	100.0
2004	Total	6,042,620	$4,532,819	$7,237,284	$4,758,580	$35,721	$208,137	$1,622	$9,291,399	$16,774,162	N/A	N/A
2004	Average	104,183	$78,152	$124,781	$82,044	$616	$3,589	$28	$160,197	$289,210	25.5	54.5
2004	St. Dev.	150,208	$107,601	$101,235	$91,666	$4,095	$15,519	$213	$150,330	$134,717	22.5	33.2
2005	# vessels	18	18	18	18	18	18	18	18	18	18	18
2005	Minimum	191	$201	$0	$0	$0	$0	$0	$243	$147,145	0.1	0.1
2005	Maximum	43,960	$32,449	$395,019	$760,206	$3,622	$14,560	$384,521	$761,827	$765,096	7.9	99.9
2005	Total	106,249	$97,159	$1,555,428	$3,043,027	$3,670	$48,094	$1,062,122	$3,140,186	$5,809,501	N/A	N/A
2005	Average	5,903	$5,398	$86,413	$169,057	$204	$2,672	$59,007	$174,455	$322,750	1.7	50.1
2005	St. Dev.	10,271	$7,986	$112,086	$190,522	$853	$4,300	$126,138	$192,328	$163,588	2.2	41.9

[9] The number of vessels in this table will not be equivalent to those in Table 3.4-2 because landings by vessels that no longer possess or never possessed an endorsement vessel are not included in this table.

Table 3.4-17. Cont'd.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2006	# vessels	43	43	43	43	43	43	43	43	43	43	43
2006	Minimum	364	$455	$0	$0	$0	$0	$0	$455	$19,000	0.4	0.4
2006	Maximum	312,347	$493,382	$259,741	$494,619	$8,713	$16,322	$206,357	$925,697	$925,952	100.0	100.0
2006	Total	2,978,356	$4,219,206	$1,715,116	$6,174,709	$9,759	$116,026	$1,165,856	$10,393,915	$13,400,672	N/A	N/A
2006	Average	69,264	$98,121	$39,886	$143,598	$227	$2,698	$27,113	$241,719	$311,644	32.8	73.7
2006	St. Dev.	74,130	$109,004	$67,596	$137,436	$1,328	$3,666	$52,698	$206,894	$205,670	23.1	28.1
2007	# vessels	23	23	23	23	23	23	23	23	23	23	23
2007	Minimum	186	$353	$0	$0	$0	$0	$0	$1,563	$62,920	0.1	1.4
2007	Maximum	32,365	$61,656	$315,349	$675,326	$155	$18,786	$240,658	$682,867	$683,114	39.3	100.0
2007	Total	236,215	$436,815	$506,940	$5,780,057	$217	$96,110	$240,658	$6,216,872	$7,060,796	N/A	N/A
2007	Average	10,270	$18,992	$22,041	$251,307	$9	$4,179	$10,463	$270,299	$306,991	9.2	85.8
2007	St. Dev.	10,456	$19,226	$68,885	$206,900	$34	$4,685	$50,181	$212,817	$202,664	10.9	29.5

With respect to the 125 vessels with currently active or renewable endorsements, statistics regarding their physical, operational, landings, and revenue characteristics are in Tables 3.4-18 through 3.4-23. The data indicate that 117 of these 125 vessels participated in some type of commercial fishing activity during these five years, while the other 8 vessels were not engaged in commercial fishing. Again, all 8 vessels that were not active in commercial fishing are state registered boats. In general, the physical and operating characteristics are "between" those noted for all vessels with rock shrimp endorsements and those that were commercially active, though not significantly different from either. Also, total landings and revenues, the distribution of landings and revenues, and the trends in this distribution between 2003 and 2007 for vessels with active or renewable rock shrimp endorsements are very similar to those noted for all commercially active vessels with endorsements, both across all years and from year to year. The only difference is that the vessels with active or renewable rock shrimp endorsements are slightly more dependent on revenues from the various shrimp fisheries in the Southeast region and slightly less dependent on revenues from Northeast non-shrimp fisheries (i.e. sea scallops) relative to all commercially active vessels with rock shrimp endorsements. This finding suggests that it may be the vessels with terminated endorsements that have become the most highly involved in the Northeast's sea scallop fishery.

Table 3.4-18. Physical Characteristics and Selected Statistics for Vessels with Active or Renewable Limited Access Rock Shrimp Endorsements.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Number of vessels	108	104	106	125	125	125	119	117	116
Minimum	1	2	30	5	14	15	5	67	50
Maximum	5	4	80	38	93	1,720	48,000	205	160,000
Total	383	404	6,091	2,386	9,223	72,963	1,968,123	15,757	7,695,750
Mean	3.5	3.9	57.5	19.1	73.8	583.7	16,539	134.7	66,343
Standard Dev	0.7	0.4	10.3	9.9	16.2	234.9	9,621	26.2	33,462

Table 3.4-19. Distribution of Additional Physical Characteristics for Vessels with Active or Renewable Limited Access Rock Shrimp Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	72.8	Freezer	87.5	Large	93.6
Fiberglass	13.6	Ice	12.5	Small	6.4
Wood	13.6				

Table 3.4-20. Physical Characteristics and Selected Statistics for Commercially Active Vessels (2003-2007) with Active or Renewable Limited Access Rock Shrimp Endorsements.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	2	30	5	62	125	3,200	67	800
Maximum	5	4	80	38	93	1,720	48,000	205	160,000
Mean	3.6	3.9	57.6	18.9	77.5	611.6	17,273	134.1	67,978
Standard Dev	0.7	0.4	10.5	9.9	7.2	215.0	9,071	25.8	32,589

Table 3.4-21. Distribution of Additional Physical Characteristics for Commercially Active Vessels (2003-2007) with Active or Renewable Limited Access Rock Shrimp Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	77.8	Freezer	91.5	Large	100
Wood	13.0	Ice	8.5	Small	0
Fiberglass	9.1				

Table 3.4-22. Landings and Revenue Statistics, Vessels with Active or Renewable RSEs, 2003-2007 Combined

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	11,114,782	$12,266,454	$76,737,920	$33,924,711	$81,682	$889,854	$29,528,225	$46,191,165	$153,428,845	N/A	N/A
Average / Vessel / Year	20,698	$22,843	$142,901	$63,175	$152	$1,657	$54,987	$86,017	$285,715	8	34

Table 3.4-23. Landings and Revenue Statistics by Landing Year, Vessels with Active or Renewable RSEs, 2003-2007.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2003	# vessels	107	107	107	107	107	107	107	107	107	107	107
2003	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$6,026	0.0	0.0
2003	Maximum	161,242	$252,686	$385,842	$294,047	$13,157	$90,778	$34,240	$376,455	$560,772	81.5	100.0
2003	Total	2,244,574	$3,408,871	$15,447,789	$3,914,541	$22,597	$237,415	$34,910	$7,323,412	$23,066,123	N/A	N/A
2003	Average	20,977	$31,859	$144,372	$36,584	$211	$2,219	$326	$68,443	$215,571	12.1	31.3
2003	St. Dev	32,718	$51,111	$106,490	$58,301	$1,413	$9,556	$3,310	$86,794	$110,997	18.2	35.9
2004	# vessels	103	103	103	103	103	103	103	103	103	103	103
2004	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$4,463	0.0	0.0
2004	Maximum	665,787	$469,639	$504,594	$512,952	$30,955	$117,122	$282,098	$704,369	$725,024	74.1	100.0
2004	Total	5,635,841	$4,233,144	$13,627,620	$7,765,211	$37,084	$237,506	$301,998	$11,998,355	$26,202,563	N/A	N/A
2004	Average	54,717	$41,098	$132,307	$75,390	$360	$2,306	$2,932	$116,489	$254,394	13.1	45.4
2004	St. Dev	123,460	$89,446	$121,242	$100,553	$3,076	$11,747	$27,801	$142,068	$141,200	21.1	40.2
2005	# vessels	111	111	111	111	111	111	111	111	111	111	111
2005	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$2,297	0.0	0.0
2005	Maximum	43,960	$32,449	$515,783	$501,701	$3,622	$14,560	$1,515,311	$501,701	$1,515,311	7.9	100.0
2005	Total	99,964	$90,892	$15,280,090	$4,864,468	$4,887	$84,026	$11,883,338	$4,955,360	$32,207,701	N/A	N/A
2005	Average	901	$819	$137,658	$43,824	$44	$757	$107,057	$44,643	$290,159	0.3	22.2
2005	St. Dev	4,578	$3,705	$141,872	$88,272	$350	$2,107	$276,068	$89,936	$245,499	1.0	37.1

Table 3.4-23. Cont'd.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2006	# vessels	107	107	107	107	107	107	107	107	107	107	107
2006	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$45,450	0.0	0.0
2006	Maximum	312,347	$493,382	$591,472	$494,619	$8,713	$16,322	$1,505,452	$925,697	$1,505,452	76.7	100.0
2006	Total	2,898,188	$4,096,732	$16,939,810	$7,349,595	$11,995	$137,357	$9,107,973	$11,446,327	$37,643,461	N/A	N/A
2006	Average	27,086	$38,287	$158,316	$68,688	$112	$1,284	$85,121	$106,975	$351,808	11.7	34.5
2006	St. Dev	57,801	$83,841	$183,533	$113,913	$848	$2,793	$246,530	$175,517	$239,896	19.5	41.5
2007	# vessels	109	109	109	109	109	109	109	109	109	109	109
2007	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$7,630	0.0	0.0
2007	Maximum	32,365	$61,656	$762,413	$675,326	$2,504	$18,786	$1,394,112	$682,867	$1,394,112	39.3	100.0
2007	Total	236,215	$436,815	$15,442,611	$10,030,897	$5,119	$193,549	$8,200,006	$10,467,712	$34,308,998	N/A	N/A
2007	Average	2,167	$4,007	$141,675	$92,027	$47	$1,776	$75,229	$96,034	$314,761	1.9	37.5
2007	St. Dev	6,324	$11,658	$179,416	$153,812	$258	$3,657	$238,454	$159,728	$238,040	6.2	45.9

Regarding the 30 vessels with terminated endorsements, statistics regarding their physical, operational, landings, and revenue characteristics are in Tables 3.4-24 through 3.4-29. This group of vessels is quite different from the other groups of vessels previously discussed. First, with respect to physical and operational characteristics, vessels with terminated endorsements are, on average, older, smaller, and less powerful relative to those with active or renewable endorsements. They also tend to use fewer crew and smaller nets on average. Further, although nearly the same proportion have on-board freezing capacity, a much smaller proportion of these vessels are steel-hulled, and thus a much higher proportion have either fiberglass or wood hulls. These differences hold regardless of whether the comparison is between all vessels with terminated as opposed to active or renewable endorsements or only those that are commercially active. However, it is still the case that, on average, commercially active vessels with terminated endorsements tend to be somewhat newer, larger, and more powerful on average compared to all vessels with terminated endorsements.

According to the data, 28 of the 30 vessels with terminated endorsements have been involved in commercial fishing at some point during the past five years. Therefore, the proportion of vessels with terminated endorsements active in commercial fishing is almost identical to that for those with active or renewable endorsements. However, based on the information in Tables 3.4-28 and 3.4-29, the nature of that activity has been quite different. Specifically, relative to the vessels with active or renewable endorsements, these vessels' total revenues were significantly less in 2003, about the same in 2004 through 2006, but higher in 2007. To provide some perspective on the magnitude of this change, on average, these vessels' total revenue per year increased by 129% between 2003 and 2007, which is even more striking than the increase in total revenues for the vessels with active or renewable endorsements. Furthermore, during this time period, these vessels were considerably more dependent on revenues from Northeast non-shrimp fisheries (approximately 42% of total revenues compared to 19% for active and renewable endorsement holders), considerably less dependent on revenues from the Gulf shrimp (approximately 32% compared to 50% for active and renewable endorsement holders), and equally dependent on the South Atlantic penaeid fishery (approximately 22% of total revenues for both groups), and much less dependent on revenues from the South Atlantic rock shrimp fishery (approximately 4% of total revenues as compared to 8% for those with active or renewable endorsements). However, these differences between the two groups of vessels did not always exist.

In 2003, the distribution of revenues from the various fisheries between these two groups of vessels was very similar in that they were most dependent on Gulf shrimp landings, followed by South Atlantic penaeid shrimp, and South Atlantic rock shrimp landings respectively. However, changes in the distribution of landings and revenues thereafter for vessels with terminated endorsements do not mirror those seen for vessels with active or renewable endorsements. For example, in 2004, although dependence on revenues from the South Atlantic penaeid shrimp fishery increased, as with vessels with active or renewable endorsements, the vessels with terminated endorsements remained relatively dependent on revenues from Gulf shrimp landings while dependence on revenues from

South Atlantic rock shrimp landings declined, contrary to the vessels with active or renewable endorsements. In 2005, these vessels' operations changed dramatically such that nearly 53% of their revenues came from Northeast non-shrimp fisheries, only 26% came from Gulf shrimp landings, and approximately 21% coming from South Atlantic penaeid shrimp landings. In 2006 and 2007, their dependence on Northeast non-shrimp landings became even more pronounced, representing approximately 70% of their total revenues, with Gulf shrimp and South Atlantic penaeid shrimp landings accounting for only 22% and 5-6% of their total revenues respectively. After 2004, these vessels had little or no landings of South Atlantic rock shrimp. In effect, relative to vessels with active or renewable endorsements, vessels with terminated endorsements changed from being primarily dependent on revenues from the Gulf shrimp fishery in 2003 and 2004 to being primarily dependent on revenues from the Northeast sea scallop fishery in 2005 and particularly 2006 and 2007. That is, rather than diversifying their landings and revenue portfolio during this time period, they simply changed the fishery in which they specialize. Moreover, these vessels basically divested themselves of the South Atlantic rock shrimp fishery after 2004.

Table 3.4-24. Physical Characteristics and Selected Statistics for Vessels with Terminated Limited Access Rock Shrimp Endorsements.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Number of vessels	16	16	16	29	30	30	14	27	26
Minimum	2	2	30	5	12	5	10	51	10
Maximum	4	4	80	42	83	720	28,000	190	100,000
Total	46	60	821	747	2,009	13,608	158,210	3,279	1,319,510
Mean	2.9	3.8	51.3	25.8	67.0	453.6	11,301	121.4	50,750
Standard Dev	0.7	0.6	13.8	7.9	18.4	153.3	7,644	30.0	24,805

Table 3.4-25. Distribution of Additional Physical Characteristics for Vessels with Terminated Limited Access Rock Shrimp Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	48.3	Freezer	86.7	Large	83.3
Fiberglass	27.6	Ice	13.3	Small	16.7
Wood	20.7				
Aluminum	3.4				

Table 3.4-26. Physical Characteristics and Selected Statistics for Commercially Active Vessels (2003-2007) with Terminated Limited Access Rock Shrimp Endorsements.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	2	2	30	6	17	325	1,500	51	6,000
Maximum	4	4	80	42	83	720	28,000	190	100,000
Mean	3.0	3.8	53.0	25.7	72.6	490.6	12,728	123.7	53,905
St. Dev.	0.7	0.6	14.3	6.8	9.0	123.4	7,196	28.6	25,604

Table 3.4-27. Distribution of Additional Physical Characteristics for Commercially Active Vessels (2003-2007) with Terminated Limited Access Rock Shrimp Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	53.3	Freezer	93.2	Large	93.5
Wood	26.1	Ice	6.8	Small	6.5
Fiberglass	20.6				

Table 3.4-28. Landings and Revenue Statistics, Vessels with Terminated RSEs, 2003-2007 Combined

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	837,841	$881,219	$7,982,761	$5,449,886	$9,873	$30,066	$10,629,151	$6,331,105	$24,982,955	N/A	N/A
Average / Vessel / Year	9,107	$9,578	$86,769	$59,238	$107	$327	$115,534	$68,816	$271,554	4	25

Table 3.4-29. Landings and Revenue Statistics by Landing Year, Vessels with Terminated RSEs, 2003-2007.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2003	# vessels	22	22	22	22	22	22	22	22	22	22	22
2003	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$16,575	0.0	0.0
2003	Maximum	66,682	$101,705	$277,303	$229,343	$1,395	$1,243	$807	$236,293	$396,316	43.7	100.0
2003	Total	344,609	$452,803	$2,252,687	$915,538	$3,371	$2,651	$901	$1,368,341	$3,627,951	N/A	N/A
2003	Average	15,664	$20,582	$102,395	$41,615	$153	$120	$41	$62,197	$164,907	10.5	44.0
2003	St. Dev	21,076	$27,760	$93,844	$65,944	$370	$335	$172	$63,289	$92,846	12.2	40.6
2004	# vessels	19	19	19	19	19	19	19	19	19	19	19
2004	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$3,871	0.0	0.0
2004	Maximum	173,749	$107,024	$267,438	$1,768,168	$0	$6,696	$1,575	$1,768,168	$1,769,743	37.8	100.0
2004	Total	406,779	$299,675	$1,800,130	$2,727,556	$0	$9,145	$2,600	$3,027,231	$4,839,106	N/A	N/A
2004	Average	21,409	$15,772	$94,744	$143,556	$0	$481	$137	$159,328	$254,690	6.7	49.7
2004	St. Dev	49,321	$32,862	$94,580	$403,456	$0	$1,543	$420	$401,857	$379,064	12.5	45.7
2005	# vessels	21	21	21	21	21	21	21	21	21	21	21
2005	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$8,418	0.0	0.0
2005	Maximum	4,811	$4,646	$325,736	$760,206	$0	$1,434	$1,182,625	$761,827	$1,182,625	2.1	99.9
2005	Total	6,285	$6,267	$1,540,702	$1,200,369	$0	$2,570	$3,088,087	$1,206,636	$5,837,994	N/A	N/A
2005	Average	299	$298	$73,367	$57,160	$0	$122	$147,052	$57,459	$278,000	0.1	28.2
2005	St. Dev	1,083	$1,057	$110,550	$169,534	$0	$326	$352,121	$170,087	$340,703	0.5	45.8

Table 3.4-29. Cont'd.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2006	# vessels	17	17	17	17	17	17	17	17	17	17	17
2006	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$7,680	0.0	0.0
2006	Maximum	64,968	$103,474	$373,145	$150,902	$0	$4,028	$1,598,681	$150,902	$1,598,681	100.0	100.0
2006	Total	80,168	$122,474	$1,286,625	$287,937	$0	$7,577	$4,059,743	$410,411	$5,764,356	N/A	N/A
2006	Average	4,716	$7,204	$75,684	$16,937	$0	$446	$238,808	$24,142	$339,080	2.4	28.2
2006	St. Dev	15,957	$25,231	$120,913	$41,102	$0	$1,252	$459,710	$51,584	$417,484	27.5	45.1
2007	# vessels	13	13	13	13	13	13	13	13	13	13	13
2007	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$55,277	0.0	0.0
2007	Maximum	0	$0	$395,954	$197,014	$6,502	$5,555	$1,019,171	$197,014	$1,019,171	0.0	98.7
2007	Total	0	$0	$1,102,617	$318,486	$6,502	$8,122	$3,477,821	$318,486	$4,913,548	N/A	N/A
2007	Average	0	$0	$84,817	$24,499	$500	$625	$267,525	$24,499	$377,965	0.0	14.9
2007	St. Dev	0	$0	$118,735	$61,757	$1,803	$1,642	$420,441	$61,757	$355,710	0.0	36.5

Though not the primary focus of the actions considered in this Amendment, information pertaining to vessels with open access South Atlantic rock shrimp permits is presented in Tables 3.4-30 through 3.4-35 and information pertaining to vessels with South Atlantic penaeid shrimp permits is presented in Tables 3.4-36 through 3.4-41. Table 3.4-42 presents an overall picture of landings and revenue for all vessels with South Atlantic shrimp permits/endorsements across the 2003 through 2007 time period.

Compared to vessels with limited access rock shrimp endorsements, vessels with open access rock shrimp permits tend to be somewhat smaller and less powerful on average. Proportionally fewer have steel hulls and a much lower percentage have on-board freezing capacity. Given that vessels with endorsements are a significant subset of vessels with open access permits, this result implies that vessels with open access permits that do not have endorsements are probably quite a bit smaller, less powerful, and less technologically advanced than those that do have endorsements. As with the other vessel groups that have been discussed, those vessels with open access rock shrimp permits that have been commercially active are somewhat larger and more powerful compared to all vessels that possess such permits. Of the 266 vessels with these permits, 245 (92%) have been commercially active in fishing at one point in time or another between 2003 and 2007, though not all of these vessels were active in each year, varying between 198 in 2004 to 225 in 2007.

With respect to their landings and revenues, vessels with open access rock shrimp permits are actually quite similar to vessels with terminated rock shrimp endorsements. For example, their average total revenues between 2003 and 2007 are nearly identical, at approximately $272,000. Further, from 2003 through 2007, they were most dependent on revenues from Northeast non-shrimp fisheries, followed by Gulf shrimp, and South Atlantic penaeid shrimp. Their involvement in the South Atlantic rock shrimp fishery during this time has been very limited, particularly during the past three years. Furthermore, as with the vessels with terminated endorsements, their dependence on revenues from the Northeast non-shrimp fisheries has grown over time, though not quite to the same extent given that only between 48 and 55% of their revenues came from these fisheries between 2005 and 2007. That is, revenues from the Gulf shrimp and South Atlantic penaeid shrimp fisheries are still important to these vessels.

Compared to the other vessel groups previously discussed, vessels with South Atlantic penaeid shrimp permits are the most dissimilar. Specifically, compared to vessels with rock shrimp endorsements or permits, vessels with penaeid shrimp permits are considerably older, smaller, less powerful, and less technologically advanced, though their gear and number of crew are comparable. A much higher proportion of these vessels rely on ice for storage purposes and a much higher proportion have fiberglass and particularly wood hulls. Also, the differences among all vessels with such permits and those that are commercially active are minimal at best, again contrary to vessels with rock shrimp permits or endorsements. Of the 620 vessels with penaeid shrimp permits, 585 (94%) have been involved in commercial fishing at some point during the past five

years. Though again, not all of these vessels were commercially fishing in each year, ranging from 491 in 2003 to 512 in both 2004 and 2006.

In terms of landings and revenues, on average, these vessels' total revenues between 2003 and 2007 were considerably lower (approximately $179,000) than for vessels with rock shrimp permits or endorsements. Somewhat surprisingly, like the commercially active vessels with endorsements, these vessels were most dependent on revenues from the Gulf shrimp fishery (36%), followed by revenues from Northeast non-shrimp fisheries (29%), and the South Atlantic penaeid shrimp fishery (26%). An additional 7% of their revenues came from South Atlantic non-shrimp fisheries. Another similarity is that their average total revenues steadily increased from $124,000 in 2003 to $221,000 in 2006, or by approximately 78%. Their average total revenues decreased somewhat in 2007 due to a decline in revenues from the Gulf shrimp fishery and South Atlantic non-shrimp fisheries. Also similar to what was seen for the vessels with rock shrimp permits or endorsements, these vessels became much more dependent on revenues from the Northeast non-shrimp fisheries, though not to the same extent as vessels with rock shrimp permits or endorsements. Still, revenues from Northeast non-shrimp fisheries accounted for between 36% and 39% of these vessels' total revenues on average in 2006 and 2007, while revenues from the Gulf shrimp and South Atlantic penaeid shrimp each accounted for around 30% of total revenues. Thus, even within this group of vessels, diversification across the fleet as a whole has taken place, with some vessels specializing in Northeast non-shrimp fisheries, others in the Gulf shrimp fishery, and others in the South Atlantic penaeid shrimp fishery. This fact is reflected by the information in Table 3.4-42 which indicates that, across all South Atlantic shrimp permit holders, revenues from the Gulf shrimp, Northeast non-shrimp, and South Atlantic penaeid shrimp fisheries have accounted for 36%, 31% and 24% of total revenues on average between 2003 and 2007, respectively.

Table 3.4-30. Physical Characteristics and Selected Statistics for Vessels with Open Access Rock Shrimp Permits.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Number of vessels	202	147	157	265	266	266	238	238	237
Minimum	1	1	16	2	14	15	5	8	50
Maximum	7	4	130	50	96	1,720	48,000	232	160,000
Total	690	563	9,167	5,580	18,059	144,447	3,110,403	27,760	13,395,250
Mean	3.4	3.8	58.4	21.1	67.9	543.0	13,069	116.6	56,520
St. Dev	0.9	0.6	13.8	11.2	18.8	233.2	10,182	42.9	37,642

Table 3.4-31. Distribution of Additional Physical Characteristics for Vessels with Open Access Rock Shrimp Permits.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	57.9	Freezer	59.4	Large	78.6
Fiberglass	22.9	Ice	39.5	Small	21.4
Wood	19.2	Live Well	1.1		

Table 3.4-32. Physical Characteristics and Selected Statistics for Commercially Active Vessels (2003-2007) with Open Access Rock Shrimp Permits.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	1	21	2	23	125	30	8	800
Maximum	7	4	130	50	96	1,720	48,000	232	160,000
Mean	3.4	3.8	58.7	21.5	71.7	566.0	13,924	119.5	58,592
St. Dev	0.9	0.6	13.0	11.0	14.4	219.2	9,855	39.4	35,874

Table 3.4-33. Distribution of Additional Physical Characteristics for Commercially Active Vessels (2003-2007) with Open Access Rock Shrimp Permits.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	62.7	Freezer	64.7	Large	86.1
Wood	20.2	Ice	35.1	Small	13.9
Fiberglass	17.2	Live Well	.2		

Table 3.4-34. Landings and Revenue Statistics, All Commercially Active Open Access SRS Vessels, 2003-2007 Combined

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	10,401,633	$11,390,318	$104,102,673	$47,671,815	$1,417,101	$9,436,764	$114,543,571	$59,062,133	$288,562,241	N/A	N/A
Average / Vessel / Year	9,804	$10,735	$98,117	$44,931	$1,336	$8,894	$107,958	$55,666	$271,972	3.8	29.4

Table 3.4-35. Landings and Revenue Statistics by Landing Year, All Commercially Active Open Access SRS Vessels, 2003-2007.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2003	# vessels	203	203	203	203	203	203	203	203	203	203	203
2003	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$91	0.0	0.0
2003	Maximum	161,242	$252,686	$385,842	$294,047	$68,439	$306,600	$84,201	$376,455	$560,772	79.5	100.0
2003	Total	2,040,421	$3,039,599	$22,387,725	$5,444,129	$202,999	$2,331,623	$193,115	$8,483,728	$33,599,190	N/A	N/A
2003	Average	10,051	$14,973	$110,284	$26,818	$1,000	$11,486	$951	$41,792	$165,513	5.9	27.3
2003	St. Dev	23,010	$34,762	$107,443	$48,035	$5,872	$39,482	$8,192	$64,826	$111,397	13.0	37.3

Table 3.4-35. Cont'd.

2004	# vessels	198	198	198	198	198	198	198	198	198	198	198
2004	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$490	0.0	0.0
2004	Maximum	665,787	$469,639	$504,594	$512,952	$99,510	$385,283	$1,715,493	$704,369	$1,861,321	74.1	100.0
2004	Total	5,325,685	$4,008,793	$18,834,968	$11,373,225	$307,607	$2,690,911	$5,162,016	$15,382,018	$42,378,010	N/A	N/A
2004	Average	26,897	$20,246	$95,126	$57,441	$1,554	$13,590	$26,071	$77,687	$214,030	6.9	38.0
2004	St. Dev	85,179	$62,281	$114,676	$88,420	$9,213	$47,354	$166,827	$113,705	$205,401	16.1	41.2
2005	# vessels	217	217	217	217	217	217	217	217	217	217	217
2005	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$165	0.0	0.0
2005	Maximum	43,960	$32,449	$632,262	$372,749	$118,590	$283,475	$2,940,904	$405,198	$3,081,622	7.9	100.0
2005	Total	105,212	$95,897	$20,702,702	$6,744,140	$249,876	$1,947,415	$37,081,809	$6,840,037	$66,821,839	N/A	N/A
2005	Average	485	$442	$95,404	$31,079	$1,152	$8,974	$170,884	$31,521	$307,935	0.1	21.5
2005	St. Dev	3,311	$2,690	$137,028	$66,344	$8,760	$34,997	$426,823	$67,611	$406,412	0.8	37.7
2006	# vessels	218	218	218	218	218	218	218	218	218	218	218
2006	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$45	0.0	0.0
2006	Maximum	312,347	$493,382	$591,472	$494,619	$125,247	$260,706	$3,674,195	$925,697	$3,686,083	76.7	100.0
2006	Total	2,696,877	$3,816,504	$22,370,751	$10,196,642	$315,192	$2,267,451	$35,713,040	$14,013,146	$74,679,580	N/A	N/A
2006	Average	12,371	$17,507	$102,618	$46,774	$1,446	$10,401	$163,821	$64,280	$342,567	5.8	27.8
2006	St. Dev	39,150	$56,740	$157,645	$92,494	$10,843	$37,720	$455,077	$129,904	$433,040	15.0	39.9
2007	# vessels	225	225	225	225	225	225	225	225	225	225	225
2007	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$137	0.0	0.0
2007	Maximum	32,365	$61,656	$762,413	$625,093	$132,221	$18,786	$1,400,839	$682,867	$1,400,839	39.3	100.0
2007	Total	233,438	$429,525	$19,801,637	$13,913,679	$341,427	$199,364	$36,393,591	$14,343,204	$71,083,622	N/A	N/A
2007	Average	1,038	$1,909	$88,007	$61,839	$1,517	$886	$161,749	$63,748	$315,927	0.9	33.2
2007	St. Dev	4,523	$8,335	$150,655	$113,600	$10,618	$2,627	$356,599	$117,949	$325,840	4.4	44.9

Table 3.4-36. Physical Characteristics and Selected Statistics for Vessels with Penaeid Shrimp Permits.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
# of vessels	441	339	286	619	620	618	564	582	546
Minimum	1	1	11	2	14	70	30	6	10
Maximum	7	4	130	87	131	1,720	41,000	232	160,000
Total	1,361	1,169	14,935	16,633	38,623	278,846	4,397,072	51,965	19,917,910
Mean	3.1	3.4	52.2	26.9	62.3	451.2	7,796	89.3	36,480
St. Dev	0.9	1.0	14.5	11.2	15.9	190.7	7,911	43.8	33,417

Table 3.4-37. Distribution of Additional Physical Characteristics for Vessels with Penaeid Shrimp Permits.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Wood	35.8	Ice	61.2	Large	64
Steel	33.9	Freezer	38.0	Small	36
Fiberglass	30.2	Live Well	.8		
Aluminum	.2				

Table 3.4-38. Physical Characteristics and Selected Statistics for Commercially Active Vessels (2003-2007) with Penaeid Shrimp Permits.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	1	11	2	23	85	55	6	500
Maximum	7	4	130	87	131	1,720	41,000	232	160,000
Mean	3.1	3.5	52.6	27.1	64.4	462.1	8,226	92.0	38,029
St. Dev.	0.9	1.0	13.9	11.0	14.0	186.8	7,890	42.5	33,044

Table 3.4-39. Distribution of Additional Physical Characteristics for Commercially Active Vessels (2003-2007) with Penaeid Shrimp Permits.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Wood	38.2	Ice	58.4	Large	68.9
Steel	35.2	Freezer	41.1	Small	31.1
Fiberglass	25.8	Live Well	.4		
Aluminum	.2				

Table 3.4-40. Landings and Revenue Statistics, All Commercially Active Penaeid Shrimp Vessels, 2003-2007 Combined

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	10,296,413	$11,275,523	$160,823,771	$115,518,193	$730,479	$32,817,677	$130,250,455	$126,793,716	$451,416,099	N/A	N/A
Average / Vessel / Year	4,075	$4,462	$63,638	$45,714	$289	$12,987	$51,544	$50,176	$178,637	1.6	48.1

Table 3.4-41. Landings and Revenue Statistics by Landing Year, All Commercially Active Penaeid Shrimp Vessels, 2003-2007.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2003	# vessels	491	491	491	491	491	491	491	491	491	491	491
2003	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$42	0.0	0.0
2003	Maximum	161,242	$252,686	$513,483	$350,927	$30,814	$591,837	$84,201	$376,455	$591,837	79.5	100.0
2003	Total	2,064,808	$3,041,584	$34,475,639	$16,324,873	$183,461	$6,900,384	$193,115	$19,366,457	$61,119,056	N/A	N/A
2003	Average	4,205	$6,195	$70,216	$33,248	$374	$14,054	$393	$39,443	$124,479	2.5	44.2
2003	St. Dev.	15,890	$23,884	$99,942	$51,792	$2,506	$52,230	$5,281	$59,238	$104,884	9.0	45.1
2004	# vessels	512	512	512	512	512	512	512	512	512	512	512
2004	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$11	0.0	0.0
2004	Maximum	665,787	$469,639	$526,518	$512,952	$35,554	$741,110	$1,715,493	$704,369	$1,861,321	74.1	100.0
2004	Total	5,241,387	$3,943,766	$31,025,983	$25,514,900	$149,470	$8,811,281	$6,356,381	$29,458,666	$75,801,780	N/A	N/A
2004	Average	10,237	$7,703	$60,597	$49,834	$292	$17,210	$12,415	$57,536	$148,050	2.7	52.6
2004	St. Dev.	54,388	$39,777	$102,469	$68,704	$2,509	$66,381	$105,694	$83,140	$157,412	10.5	45.8
2005	# vessels	509	509	509	509	509	509	509	509	509	509	509
2005	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$456	0.0	0.0
2005	Maximum	43,960	$32,449	$653,671	$372,749	$18,574	$796,414	$2,940,904	$405,198	$3,081,622	7.9	100.0
2005	Total	104,425	$95,346	$31,673,357	$19,281,930	$72,969	$7,870,856	$44,329,636	$19,377,276	$103,324,095	N/A	N/A
2005	Average	205	$187	$62,227	$37,882	$143	$15,463	$87,092	$38,069	$202,994	0.1	42.4
2005	St.Dev.	2,172	$1,768	$112,819	$61,881	$1,357	$62,135	$287,055	$62,442	$293,202	0.5	47.4
2006	# vessels	512	512	512	512	512	512	512	512	512	512	512
2006	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$96	0.0	0.0
2006	Maximum	312,347	$493,382	$722,203	$494,619	$89,513	$836,402	$3,674,195	$925,697	$3,686,083	76.7	100.0
2006	Total	2,649,795	$3,758,403	$34,481,455	$25,122,699	$135,486	$8,944,590	$40,474,673	$28,881,102	$112,917,306	N/A	N/A
2006	Average	5,175	$7,341	$67,346	$49,068	$265	$17,470	$79,052	$56,408	$220,542	2.4	47.3
2006	St.Dev.	26,172	$37,912	$136,928	$76,681	$4,070	$67,034	$300,176	$97,263	$313,852	10.1	46.6

Table 3.4-41. Cont'd.

Year	Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
2007	# vessels	503	503	503	503	503	503	503	503	503	503	503
2007	Minimum	0	$0	$0	$0	$0	$0	$0	$0	$82	0.0	0.0
2007	Maximum	32,365	$61,656	$762,413	$625,093	$64,950	$18,786	$1,400,839	$682,867	$1,400,839	39.3	100.0
2007	Total	235,998	$436,424	$29,167,337	$29,273,791	$189,094	$290,567	$38,896,649	$29,710,215	$98,253,862	N/A	N/A
2007	Average	469	$868	$57,986	$58,198	$376	$578	$77,329	$59,066	$195,336	0.4	53.7
2007	St. Dev.	3,066	$5,654	$126,773	$90,628	$3,851	$2,053	$245,772	$93,129	$245,255	3.0	47.9

Table 3.4-42. Landings and Revenue Statistics, All Commercially Active RSE, Open Access RS, and Penaeid Shrimp Vessels, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	12,204,716	$13,381,159	$188,031,300	$123,348,395	$1,597,708	$34,524,455	$159,151,536	$136,729,554	$520,034,553	N/A	N/A
Average / Vessel / Year	4,339	$4,757	$66,844	$43,849	$568	$12,273	$56,577	$48,606	$184,868	1.8	45.3

To the extent possible, landings, revenues, and prices have been described in the aggregate and according to particular groups of vessels with various types of South Atlantic shrimp permits or endorsements. Limited historical information on vessel costs and profitability was discussed in Amendment 6 (SAFMC 2004) and is incorporated herein by reference. However, the only relatively recent information on costs and profitability was limited to shrimp trawlers in South Carolina. Given the reduced importance of the South Carolina fleet within the overall fishery and the fact that very few South Carolina vessels participate in the limited access rock shrimp fishery, those data are not only outdated but undoubtedly not representative of the vessels potentially impacted by the actions in this Amendment. An attempt was made to voluntarily collect information on South Atlantic shrimp vessels' costs and net revenues in 2005. This project was only partially successful in its attempts to collect the desired data (i.e. the achieved sample size was considerably smaller than the desired sample size). It was determined that the collected information was likely not representative of the fishery as a whole or specifically of vessels participating in the federal component of the fishery. However, some information on how vessels' costs have likely been changing during the past several years is presented below, as are insights into why domestic shrimp prices declined, almost continually, from 2001 through 2006.

According to available information, the shrimp fisheries in the Southeast region had a banner year in 2000. However, economic conditions took an abrupt turn in the latter half of 2001. Current evidence indicates that as shrimp imports surged in that year, macroeconomic conditions deteriorated, and when the post-September 11, 2001 era began, the industry was hit by sharply declining prices and higher insurance premiums. The deteriorating trend apparently continued through 2002 and 2003, exacerbated by increases in fuel prices that began in the latter part of 2002 and continued through 2003. According to average price data reported by the Bureau of Labor Statistics (BLS), from 2002 to 2003, fuel prices increased between 21% and 29%, depending on the selected fuel price index. Regardless of which index is used, fuel prices increased significantly which, in turn, significantly increased shrimp vessels' operating costs.

However, rapidly declining prices appear to have been the primary source of the recent deterioration in the industry's economic condition. Revenues decreased even more as a result of relatively lower landings in 2001 and 2002 relative to 2000. According to Haby *et al.* (2003), increases in shrimp imports have been the primary cause of the recent decline in U.S. shrimp prices. A complete discussion of the factors contributing to the increase in imports can be found in Haby *et al.* (2003). In general, recent surges in imports have been caused by increases in the production of foreign, farm-raised shrimp. More specifically, increased competition from shrimp imports has been due to three primary factors: 1) changes in product form due to relatively lower wages in the exporting countries, 2) shifts in production to larger count sizes, and 3) tariff and exchange rate conditions which have been favorable to shrimp imports into the U.S. With respect to the first factor, lower wage rates have allowed major shrimp exporters (e.g. Thailand) to increase production of more convenient and higher value product forms, such as hand-peeled raw and cooked shrimp. With respect to the second factor,

changes in farming technology and species have allowed production of foreign product to shift towards larger, more valuable sizes. As a result of these factors, imports are more directly competing with the product traditionally harvested by the domestic industry, thereby reducing the latter's historical comparative advantage with respect to these product forms and sizes. Finally, with respect to the third factor, the lack of duties on shrimp imports into the U.S., the presence of relatively significant duties on shrimp imports into the European Union (E.U.), and the recent strength of the U.S. dollar relative to foreign currencies have created favorable conditions for countries exporting products to the U.S.

As Haby *et. al.* (2003) note, the increase in imports caused the domestic industry's share of the U.S. shrimp market to decrease from 44.6% to 14.8% between 1980 and 2001. While the growth in imports was relatively steady throughout most of this time period (for e.g., 4% to 5% in the late 1990s), shrimp imports surged by 16% in 2001. Since 2001, which is the last year accounted for in their analysis, shrimp imports have continued to rise. Although the increase in 2002 was a modest 7.2%, relative to the increase in 2001, a significant increase of 19.1% occurred in 2003 according to the most recently available data. These increases led to further erosion in the domestic industry's market share and additional price declines.

Available information at the time indicated that domestic shrimp prices had continued to decline in 2003, which would lead to the expectation that vessels may not have been able to cover their variable costs. If vessels cannot cover their variable costs, they will be forced to cease operations (i.e. exit the fishery) until conditions change. Many changes have continued to occur that would likely affect the economic status of the Gulf shrimp harvesting sector. Most of these changes would be expected to adversely affect the industry's economic status. For example, fuel prices have risen significantly since 2002. Probably the best proxy to use for fuel prices paid by commercial shrimpers (or commercial fishermen in general) is the diesel fuel price paid by farmers, statistics for which are generated by the USDA. This price is more appropriate than the diesel fuel price "paid on the street," which is typically generated by the BLS, because it removes fuel excise taxes, which neither commercial fishermen nor farmers pay. The diesel fuel price per gallon paid by farmers changed as follows in each year from 2002 and 2006: $.96, $1.24, $1.31, $1.97 and $2.28, respectively. This represents a price increase of nearly 138% between 2002 and 2006, with the largest increases occurring in 2003, 2005, and 2006. Preliminary data for 2007 indicates that fuel prices increased further to as much as $2.43 per gallon on average. Early data in 2008 indicates that diesel fuel prices may be as much as a $1 higher at the present, which could cause the fuel costs associated with operating in the commercial shrimp fishery to be nearly prohibitive unless shrimp prices were to increase proportionally, which recent history suggest is unlikely.

To provide some context, it is helpful to think of how these fuel price increases translate into increases in a typical vessel's fuel expenses. With respect to the cost of filling up a shrimp vessel, the average fuel capacity of a commercial active vessel with a limited access rock shrimp endorsement is approximately 17,000 gallons (see Table 3.4-9). Thus, between 2002 and 2007, the cost of filling up an "average" active rock shrimp

vessel rose from approximately $16,300 to more than $41,300. Thus, the cost of filling up a typical rock shrimp vessel with fuel has increased nearly 153% between 2002 and 2007.

As previously noted, shrimp prices increased somewhat in late 2004 and through much of 2005. These price gains were likely due to the impact of duties imposed on imported shrimp and the relative stabilization in the volume of imports coming into the U.S. In 2004, shrimp imports increased by only 1% over their 2003 level. And in 2005, shrimp imports increased by only 2.5% over their level in 2004. However, shrimp imports once more surged into the U.S. market beginning in late 2005 and through 2006, and this is more than likely the primary cause of the general price decreases for domestic shrimp during that year. Specifically, shrimp imports were approximately 11.6% higher in 2006 than they were in 2005[10]. Preliminary data do seem to suggest that prices have increased in 2007, particularly for the 30-count and larger size categories, based on data from the Gulf shrimp fishery. In general, though depending on the size category, prices appear to have returned to their levels in 2005 and possibly 2004. Not coincidentally, preliminary 2007 data also appear to indicate that imports have not only stabilized, but may have actually decreased by as much as 5% in 2007.

Rock Shrimp Dealers[11]

As previously noted, between 40 and 50 dealers have typically held rock shrimp dealer permits at any given point in time during recent years and 46 dealers held one at one time or another during 2006 and 2007. Thus, it is not unexpected that 36 dealers purchased South Atlantic rock shrimp between 2003 and 2007. Some dealers apparently have obtained these permits on the off-chance that one or more of the vessels they typically buy shrimp from harvest South Atlantic rock shrimp. Further, not all of these dealers were active in each year and most were in fact active in only one or two years during this time. However, a careful review of the landings and permit data has revealed some disturbing information. Specifically, of the 36 dealers that have purchased South Atlantic rock shrimp in the past five years, only 21 of them had the legally required federal South Atlantic rock shrimp dealer permit (i.e. 15 dealers did not have the required permit). For some of these dealers, the alleged amount of South Atlantic rock shrimp illegally purchased was relatively minor. In other cases, the amount was more substantial. As can be seen in Table 3.4-43, in the aggregate, these non-permitted dealers are not the most significant dealers in the fishery with respect to landings and revenue. And during 2004, 2005, and 2007, the amount of rock shrimp alleged to have been illegally purchased was relatively trivial or non-existent. However, the problem was more widespread in 2003 and 2006 when more than 7% and approximately 6% of the landings were apparently purchased by dealers that lacked the required permit. These amounts cannot be considered trivial and the problem should be addressed in some manner.

[10] See http://www.st.nmfs.gov/st1/market_news/doc45.txt

[11] Penaeid shrimp dealers will not be directly or even indirectly affected by any actions currently being considered in this Amendment and thus are not described in this section.

Table 3.4-43. South Atlantic Rock Shrimp Landings and Revenue, Federally Permitted and Non-Federally Permitted Rock Shrimp Dealers, 2003-2007.

Year	Landings (Permitted)	Revenue (Permitted)	Landings (Non-Permitted)	Revenue (Non-Permitted)	Landings (All)	Revenue (All)
2003	2,755,465	$4,169,465	225,159	$320,443	2,980,623	$4,489,905
2004	6,588,574	$5,009,071	3,009	$3,080	6,591,583	$5,012,147
2005	109,281	$99,612	0	$0	109,281	$99,611
2006	2,840,711	$3,964,522	177,610	$300,058	3,018,322	$4,264,576
2007*	236,468	$428,169	4,081	$13,108	240,550	$441,277

*2007 data are preliminary

Although these allegedly illegal purchases may have repercussions for the non-permitted dealers, and possibly even for their permitted competitors, these sales may also have impacts on the vessels from which the rock shrimp were purchased. Specifically, if the rock shrimp were in fact illegally purchased, in general, they cannot count towards those vessels' catch histories and, moreover, they cannot be counted towards meeting the current 15,000-pound landings requirement. As such, it is quite possible that some vessels may not meet the landings requirement, not because they had insufficient landings, but because some or all of those landings were sold through dealers without the federal permit. Although the allegedly illegal purchases of rock shrimp in 2003 may not be critical in this regard, those made in 2006 certainly could be. This subject is discussed further in the impacts analysis.

Notwithstanding this important issue, it is still necessary to characterize the detailed landings and sales activities of all dealers participating in the fishery regardless of whether they were or currently are permitted to purchase South Atlantic rock shrimp. For current purposes, it is most important to examine changes in the number of dealers in the fishery and their purchasing activities in recent years. In turn, this information will yield insights into the relative importance of the fishery to these dealers and how they have adapted to changes in the harvesting sector.

According to information presented in Table 3.4-44, the number of dealers active in the South Atlantic rock shrimp fishery was fairly stable from 2003 to 2004 (23 and 22 dealers, respectively), fell dramatically in 2005 to a level not seen in recent history (7 dealers), increased somewhat in 2006 (14 dealers), and then decreased again in 2007 to a level slightly above the historic low in 2005 (10 dealers). As would be expected, this trend in the number of participating dealers closely mirrors that of the number of participating vessels.

Table 3.4-44. Distribution of Landings and Revenue for Active South Atlantic Rock Shrimp Dealers, 2003-2007.

Year	Statistic	SA rock shrimp landings	SA rock shrimp Revenue	Gulf non-shrimp landings	Gulf non-shrimp Revenue	Gulf shrimp landings	Gulf shrimp Revenue	SA non-shrimp landings	SA non-shrimp Revenue	SA other shrimp landings	SA other shrimp Revenue	Total Revenue	SA rock shrimp as % of Revenue
2003	# Dealers	23	23	23	23	23	23	23	23	23	23	23	23
2003	Minimum	25	$45	0	$0	0	$0	0	$0	0	$0	$5,723	0.0
2003	Maximum	1,451,706	$2,002,549	261,503	$460,587	2,218,709	$4,624,105	1,116,327	$458,956	1,260,265	$2,819,440	$5,547,911	85.1
2003	Total	2,980,624	$4,489,908	321,813	$609,212	6,301,097	$11,315,550	1,633,834	$753,259	4,451,577	$8,783,514	$25,951,443	N/A
2003	Average	129,592	$195,213	13,992	$26,487	273,961	$491,980	71,036	$32,750	193,547	$381,892	$1,128,324	23.1
2003	St. Dev	303,301	$425,011	54,335	$96,893	571,787	$1,084,021	239,744	$97,681	287,038	$607,794	$1,486,748	26.2
2004	# Dealers	22	22	22	22	22	22	22	22	22	22	22	22
2004	Minimum	1	$1	0	$0	0	$0	0	$0	710	$1,669	$23,240	0.0
2004	Maximum	3,100,851	$2,114,596	475,048	$920,459	1,688,681	$3,898,364	3,239,165	$3,796,349	2,155,369	$4,575,481	$5,516,648	71.1
2004	Total	6,591,583	$5,012,151	983,545	$1,962,105	7,292,414	$12,819,876	4,290,724	$5,275,928	5,350,387	$11,294,844	$36,364,904	N/A
2004	Average	299,617	$227,825	44,707	$89,187	331,473	$582,722	195,033	$239,815	243,199	$513,402	$1,652,950	18.2
2004	St. Dev.	704,867	$496,557	121,748	$242,044	521,696	$989,536	692,626	$817,183	447,414	$959,817	$1,631,107	25.5
2005	# Dealers	7	7	7	7	7	7	7	7	7	7	7	7
2005	Minimum	369	$277	0	$0	0	$0	0	$0	11,862	$22,980	$805,341	0.0
2005	Maximum	59,795	$47,808	316,727	$622,730	668,784	$1,068,502	912,771	$1,046,985	1,473,040	$3,479,982	$4,540,954	3.5
2005	Total	109,281	$99,612	321,520	$629,696	1,368,939	$2,299,239	1,017,678	$1,161,760	2,828,736	$6,261,433	$10,451,740	N/A
2005	Average	15,612	$14,230	45,931	$89,957	195,563	$328,463	145,383	$165,966	404,105	$894,490	$1,493,106	1.1
2005	St. Dev.	20,559	$16,497	119,423	$234,945	263,936	$429,147	339,674	$389,939	510,708	$1,200,060	$1,357,096	1.3
2006	# Dealers	14	14	14	14	14	14	14	14	14	14	14	14
2006	Minimum	105	$263	0	$0	0	$0	0	$0	0	$0	$52,864	0.0
2006	Maximum	876,284	$1,232,689	2,134,487	$5,636,798	3,164,586	$6,831,619	759,661	$1,724,774	1,962,679	$4,284,836	$7,617,680	97.7
2006	Total	3,018,321	$4,264,580	2,532,597	$6,469,548	5,668,772	$10,933,947	1,673,665	$2,992,110	3,674,707	$7,787,785	$32,447,970	N/A
2006	Average	215,594	$304,613	180,900	$462,111	404,912	$780,996	119,548	$213,722	262,479	$556,270	$2,317,712	23.2
2006	St. Dev.	322,913	$445,540	572,154	$1,505,685	904,750	$1,874,201	267,547	$518,384	511,513	$1,126,532	$2,645,485	29.9

Table 3.4-44. Cont'd.

Year	Statistic	SA rock shrimp landings	SA rock shrimp Revenue	Gulf non-shrimp landings	Gulf non-shrimp Revenue	Gulf shrimp landings	Gulf shrimp Revenue	SA non-shrimp landings	SA non-shrimp Revenue	SA other shrimp landings	SA other shrimp Revenue	Total Revenue	SA rock shrimp as % of Revenue
2007	# Dealers	10	10	10	10	10	10	10	10	10	10	10	10
2007	Minimum	46	$69	0	$0	0	$0	0	$0	0	$0	$286,657	0.0
2007	Maximum	89,427	$171,990	1,304,467	$4,172,221	629,392	$1,087,291	4,365,021	$5,320,863	2,741,196	$6,014,590	$8,247,955	20.3
2007	Total	240,549	$441,277	1,314,298	$4,183,907	1,051,040	$1,755,289	6,230,962	$10,147,144	4,339,538	$9,647,916	$26,175,533	N/A
2007	Average	24,055	$44,128	131,430	$418,391	105,104	$175,529	623,096	$1,014,714	433,954	$964,792	$2,617,553	3.4
2007	St. Dev	35,545	$66,629	412,171	$1,318,964	203,232	$347,925	1,362,541	$1,813,492	838,027	$1,838,139	$3,233,212	6.1

Also as expected, these dealers' dependence on South Atlantic rock shrimp purchases also closely mirrors the dependence of vessels, or more specifically vessels with RSEs that had South Atlantic rock shrimp landings in particular, on South Atlantic rock shrimp revenues. Landings and revenues are broken down into the following categories: South Atlantic rock shrimp, Gulf shrimp, Gulf non-shrimp, South Atlantic non-shrimp, and other South Atlantic shrimp (primarily penaeids). For example, in 2003, South Atlantic rock shrimp purchases accounted for nearly one-quarter of these dealers' total purchases, and thus they were fairly dependent on these purchases at the time. In 2004, the average South Atlantic rock shrimp landings per dealer increased fairly significantly. However, because of the significant decrease in rock shrimp prices, and because purchases of penaeid shrimp and other types of seafood increased even more, causing their total revenues to increase on average, their dependence on rock shrimp purchases decreased slightly in that year. And in 2005, given the steep decline in rock shrimp landings, their total revenues decreased, but not significantly as their purchases of Gulf shrimp and South Atlantic penaeid shrimp increased fairly significant and thus mostly compensated for the lack of rock shrimp. And in 2006, their dependence on rock shrimp increased again, basically back to the same level seen in 2003. However, though fewer in number, the dealers participating in the rock shrimp fishery were actually better off on average in 2006 than those in 2003. In addition to the recovery in rock shrimp landings and sales, with the exception of South Atlantic penaeid shrimp landings and sales, landings and sales in all other species categories increased, thereby leading to a significant increase in total revenues. Again, somewhat similar to the trend in the rock shrimp harvesting sector, participating dealers' dependence on rock shrimp declined precipitously in 2007, as did their dependence on Gulf shrimp sales. However, once more, their total revenues increased on average, due to significant increases in South Atlantic penaeid shrimp sales and particularly revenues from non-shrimp landings from the South Atlantic.

So, as in the harvesting sector, even for the dealers that remain involved in the South Atlantic rock shrimp fishery, they have adjusted their "portfolio" of seafood purchases in order to stay in business. However, one major difference is the source of this diversification. Unlike vessels, which are mobile and can travel in order to diversify their landings (e.g. vessels that have shifted into the Northeast scallop fishery), dealers are based on land and must diversify into other local fisheries. Of course, their ability to adjust does not mean that other dealers no longer involved in the rock shrimp fishery have been able to adjust as well. In fact, it is quite likely that some dealers that used to be involved in the fishery are no longer in business, though a definitive conclusion on this subject will require additional research. Further, the ability of these dealers to adjust their purchases of seafood may not satisfy the desires of certain companies (e.g. processors, institutional buyers, restaurants, etc.) that want to purchase rock shrimp and would prefer a steady supply of the product from year to year.

Rock Shrimp Processors

At present, data on shrimp processors in the Southeast region (i.e. South Atlantic and Gulf) are only available through 2006 since these data are typically not available until the September following each calendar year. Based on a review of these data from 2003

through 2006, no rock shrimp were processed by any processors in the South Atlantic. The processing of rock shrimp appears to be specialized and only handled by a select number of processors primarily located in the Panhandle area of Florida. Processing of rock shrimp by forms in this particular area has likely been driven by the presence of a seasonal fishery for rock shrimp in the Gulf in the areas off of the Panhandle and Big Bend area on the west coast of Florida. Since no shrimp processors in the South Atlantic are involved in the processing of rock shrimp, it is assumed that the processing of South Atlantic rock shrimp takes place in the Gulf[12]. Given existing data constraints, it is not possible to directly determine how much of the rock shrimp processed by these firms comes from the South Atlantic as opposed to the Gulf. However, the data suggest that not all rock shrimp harvested from either region is processed. Thus, the following information focuses on firms that process rock shrimp and, in order to provide some context, also provides some information on the current and historical status of the Gulf shrimp processing sector in general.

Statistics describing rock shrimp processors are provided in Table 3.4-45[13]. The number of firms involved in rock shrimp processing has remained fairly constant in most recent years, with 7 firms participating in the industry in 2003 and 6 firms participating thereafter. Of the 7 processors in 2003, 6 were small processors (i.e. those with less than $5 million in processed value) and 1 was large (i.e. more than $20 million in processed value). One small processor stopped processing rock shrimp in 2004 and had exited the shrimp processing industry completely by 2006. Also by 2006, one of the small processors had become a medium sized processor (i.e. between $5 million and $20 million in processed value).

Though processed rock shrimp poundage and value has been somewhat up and down during these years, the general trend appears to be downward. This fact is more clearly illustrated by the decreased dependence of these processors on rock shrimp as opposed to penaeid shrimp. On average, rock shrimp accounted for 24% of these processors' total processed value, but only accounted for 11%, or less than half, by 2006. Contrariwise, these firms' total processed poundage and value has trended upwards during this time. As explained below, this trend is reflective of consolidation in the Gulf shrimp processing sector, as well as relatively high shrimp abundance in the Gulf in 2006. Within this

As would be expected, the trends in poundage and prices fairly closely mirror those in the harvesting sector. For example, as with landings, processed poundage increased slightly from 2003 to 2004, fell significantly in 2005, and then recovered somewhat in 2006. Similarly, as with the ex-vessel price to harvesters, the processed value per pound decreased significantly from 2003 to 2004 ($4.99/lb to $3.94/lb), though the proportional

[12] Uncertainty exists with respect to the accuracy of this assumption, not only because existing data collection systems do not track the movement of shrimp from dealers to processors, but also because the collection of processing data in the South Atlantic and Gulf is voluntary in nature. Therefore, it is possible that the processing data used in this analysis is incomplete.

[13] Minimum and maximum values have been suppressed to protect confidential data. Given the relatively small number of firms in this industry and the considerable difference between the single large producer and other producers, it would be relatively easy for industry competitors to determine the larger producer's production and total value.

decrease in the processed price was less than the decrease in the ex-vessel price, but then subsequently recovered to $4.93/lb in 2005. However, the processed price fell in 2006 to $4.17/lb contrary to the ex-vessel price. Although it is typical for the processed price to exceed the ex-vessel price, the differential in the case of rock shrimp is clearly larger than the differential typically seen between processed and ex-vessel prices for penaeid shrimp. Again, this illustrates the fact that the processing of rock shrimp is a highly specialized activity that apparently adds a considerable amount of value added to the final product.

Table 3.4-45. Production, Value, and Employment in the Rock Shrimp Processing Sector, 2003-2006.

Statistic	Year	Rock Shrimp Processed Pounds	Rock Shrimp Processed Value	Total Processed Pounds	Total Processed Value	Rock Shrimp as % of Processed Value	Employment
# Processors	2003	7	7	7	7	7	7
Total	2003	864,890	$4,315,693	10,882,946	$36,120,191	N/A	94
Average	2003	123,556	$616,528	1,554,707	$5,160,027	24	13
St. Dev.	2003	123,792	$662,766	2,897,567	$9,639,042	24	17
# Processors	2004	6	6	6	6	6	6
Total	2004	945,298	$3,723,049	10,846,992	$34,561,211	N/A	100
Average	2004	157,550	$620,508	1,807,832	$5,760,202	24	17
St. Dev.	2004	165,176	$626,371	2,985,340	$9,634,283	23	18
# Processors	2005	6	6	6	6	6	6
Total	2005	536,000	$2,647,050	12,506,272	$44,871,010	N/A	93
Average	2005	89,333	$441,175	2,084,379	$7,478,502	16	16
St. Dev.	2005	87,243	$462,389	3,283,621	$10,998,624	28	18
# Processors	2006	6	6	6	6	6	6
Total	2006	633,110	$2,640,466	14,259,655	$46,960,169	N/A	91
Average	2006	105,518	$440,078	2,376,609	$7,826,695	11	15
St. Dev.	2006	140,601	$644,020	3,531,637	$11,871,521	20	18

With respect to the Gulf shrimp processing sector in general, currently available information indicates that the number of Gulf shrimp processors decreased from 74 to 55 between 2002 and 2006, which reflects additional consolidation in the Gulf shrimp processing sector from what had taken place in previous years. The data also indicate that the surviving firms have expanded their production (i.e. average production per firm has increased, thereby causing an increase in the number of large processors), which has helped to maintain the value of their production in the face of generally declining prices (i.e. processed value per firm has remained relatively stable)[14]. Also, in general, the firms that have exited the industry in the last few years are the smaller processors. In 2006, eight processors left the industry (five small and three medium/large). Rather

[14] Even though ex-vessel prices decreased significantly in 2006, prices at the processor level were surprisingly unchanged from 2005, a finding that deserves further investigation.

interestingly though, three new processors entered the industry and, in effect, "picked up the slack." The entry of these new processing firms was timely given the significant increase in the volume of processed shrimp in 2006, which was driven by the significant increase in domestic landings and led to an increase in the processed value per firm.

The data also indicate that a majority of these firms are highly dependent on the processing of food shrimp. Unfortunately, it is not been historically possible to determine with certainty how much of the shrimp being processed is domestic as opposed to imported by using the NOAA Fisheries Service's processor data. However, by cross-referencing multiple data sources, Keithly *et al.* (2005) attempted to approximate this figure[15]. According to their findings, use of imports by domestic processors increased steadily through the 1980s and for example, in 1986, accounted for about one-third of production. Between 1992 and 1994, which was apparently the peak period, domestic and imported product accounted for nearly equal proportions of total processed shrimp products in the Southeast region. Even though, as noted previously, imports have continued to increase since then, Southeast shrimp processing activities have not increased proportionately as a result.

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

A more recent study by Keithly *et al.* (2006) supports many of the conclusions and hypotheses offered in Keithly *et al.* (2005), and also helps to explain the changes that have occurred in this sector between 2002 and 2004, as noted above. In the recent study, Keithly *et al.* (2006) conducted a survey of shrimp processors in order to better estimate their marketing margins and their dependency on domestic as opposed to imported product. The survey information was combined with data from the NOAA Fisheries Service's processor database for analysis. A critical finding of this study is that shrimp processors' marketing margins have continued to decrease in recent years because the

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

price of processed shrimp has been declining at a faster rate than the price of raw product. The decrease in the price of processed shrimp has been caused by increased imports of value-added product that directly compete with the domestic processors' product. The price decline has caused marketing margins to decrease, which in turn has forced firms to either exit the industry or increase their production. In general, smaller processors have exited while medium to larger sized processors have expanded, probably due to differences in their respective access to financial capital (i.e. smaller firms likely have less access to financial capital than their larger counterparts).

In addition, the study found that, in recent years, domestic processors have used a very limited amount of imported, raw product and instead are heavily dependent on domestically harvested product, contrary to popular belief. As such, the health of the processing sector is heavily dependent on domestic harvesting production. Keithly *et al.* (2006) note that the remaining firms' ability to maintain operations is dependent on their ability to expand, assuming processed shrimp prices continue to decline, which would be the case if imports of value-added product continue to increase. Therefore, if domestic harvesting production decreases, processors will be constrained in their ability to expand production, and additional consolidation of the industry will be likely. The decrease in Gulf shrimp landings in 2005 may have exacerbated the decline in the economic health of the Gulf shrimp processing sector. On the other hand, as previously noted, domestic landings rebounded significantly in 2006, which in turn likely helped to stabilize the processing sector and in fact encouraged three new firms to join the industry. Various reports also indicate that the processing sector was significantly impacted by Hurricane Katrina, either directly as a result of wind/storm surge damage or indirectly as a result of population shifts/displacement which in turn created labor shortages. Processors located in Biloxi, D'iberville, and Ocean Springs, Mississippi as well as in New Orleans and Violet, Louisiana were particularly hard hit (IAI, 2007). However, the data suggest that most of these processors were back in operation, at least to some level, in 2006.

3.4.3 Social and Cultural Environment

The following is a list of those communities potentially impacted by management alternatives identified in Shrimp Amendment 7, specifically focused on rock shrimp. A description of potentially impacted communities engaged in shrimp fishing (regardless of species) is in Appendix B. Appendix B contains a more extensive list because it identifies those communities engaged in shrimp fishing, processing and/or dealing[16].

This section focuses on rock shrimp as it relates to specific communities. It should be noted that rock shrimp is primarily a South Atlantic fishery; however, some fishermen, dealers and processors from the Gulf of Mexico sub-region take part in this fishery and rely on its existence as a means of generating income and providing employment opportunities. The communities listed below were selected based on having at least five (5) open access rock shrimp permits or five (5) limited access rock shrimp endorsements. The list is as follows:

[16] A community is defined as "a group of individuals where either type of group experiences common conditions of environmental exposure or effect". (CEQ, 1997. p.25).

Alabama:

- **Bayou LaBatre**
- Fairhope
- Irvington
- **Theodore**

Florida:

- **Cape Canaveral**
- **Fernandina/ F. Beach**
- **Jacksonville/J. Beach**
- **Key West**
- **Newport Richey**

Georgia:

- **Brunswick**

North Carolina

- Hollyridge
- Lowland
- New Bern
- **Sneads Ferry**
- **Wanchese**

Virginia:

- Newport News
- Seaford

Descriptions are provided in this section for the communities indicated in **Bold** above. All of these communities have experienced change over the last decade, be it related to (1) forces affecting the local fishery, thus affecting the larger community; (2) forces of change which have altered the composition of the larger community, from human influences such as coastal development and gentrification, to natural forces such as hurricanes, and (3) macro-level economic forces affecting employment and the cost of living (such as higher gas prices and housing devaluation).

Shrimp Amendment 7 assesses whether a reduction in the fleet, based on reaching a fixed pound/catch criteria, will positively or negatively impact the fleet, and thus potentially impact the larger community. There appears to be a real concern that a reduction in fleet size may negatively impact certain places that rely on rock shrimp as an important component of the local commercial fishing activities. With what is perceived to be a healthy biomass and an activity deemed to be an increasingly productive economic endeavor, the ultimate concern relates to whether there will be enough rock shrimp caught and landed to support the infrastructure of the fishery. It should be noted that impacts must be seen as relative concepts, meaning that a place such as Jacksonville,

Florida, may catch a larger quantity of rock shrimp than other communities, yet in relation to other local economic activities may be less important in comparison (economic) with other communities that catch less but rely on the fishery more.

3.4.3.1 North Carolina Communities

Sneads Ferry Community Description

The white rubber boots worn by commercial fishermen in this community are commonly referred to as "Sneads Ferry Sneakers." Such an icon named after the community suggests the importance of commercial fishing associated with the area. Sneads Ferry is a small town with very little of the large-scale development evident elsewhere on the North Carolina coast. However, there appears to be a movement of retirees from places like Atlantic Beach because it is more affordable (according to some individuals). Many houses in the community have fishing vessels docked in front of the house or on the lawn. Sneads Ferry's geographic location is an advantage for fishermen, because the channel leads directly to the sound without having to travel through many creeks; offering larger boats more accessibility. As one local commented, at least half of the people in the community have something to do with the fishing industry. Others local residents suggest that Sneads Ferry is now made up of at least 20% of residents who are either servicemen or who work on the nearby military base. While engaged in other forms of employment, some of these individuals also shrimp at night or on the weekends, to make extra money or for "filling a fridge" for future parties. This is a source of resentment, because these people are no longer or never have been full-time fishermen, and have more disposable income with which to purchase better equipment or simply have better standards of living.

Sneads Ferry has seen steady population growth with a decrease in unemployment from 4.10% in 1990 to 1.20% in 2000 (Table 3.4-46). The community celebrates the Shrimp Festival each second weekend in August. One fish house owner who has been working in Sneads Ferry for 12 years has 15 boats that sell to him and dock at his place of business. These fishermen are not limited to shrimp fishing and engage in everything from net fishing, crabbing and clamming. He commented that he doesn't see much of a future in fishing because younger people are not getting involved. This same individual commented that a lot of new people are moving in from other places and he considers it only a matter of years before his place sells. The fish house next door to his is for sale and he is just waiting for the right price, and he will sell, too. Most of the captains and crew live within two miles of his fish house and there does not seem to be a problem finding crew; primarily because they have worked in the industry for so long and most have been with the same captains for quite some time. He also commented that most of the fishermen in town are shrimpers and net fishermen who go out daily which allows them to be home at night and have a more stable life[17].

Shrimp is Sneads Ferry's number one species caught. In 2006, 1,000,582 pounds of shrimp valued at $1,664,041 were caught (Table 3.4-47 and Figure 3.4-1). Sneads Ferry had 25 vessels with federal permits in 2001 (Jepson *et al.* 2006). There were over 340

[17] Interviews conducted by Ana Pitchon, May 2002.

state commercial fishing vessel registrations for Sneads Ferry and among those there were 228 standard commercial fishing licenses. The community also had 2 recreational sell licenses and there was some seafood employment in other areas with 16 persons employed in fish and seafood and 2 in marinas (Jepson *et al*. 2006).

Table 3.4-46. Sneads Ferry, NC, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial census).

Sneads Ferry, NC	**1990**	**2000**	**2006**
Population	2,031	2,248	
Median Education Attainment	High School Graduate	High School Graduate	
White	1,826	2,045	
Black or African American	159	115	
American Indian & Alaska Native	9	12	
Asian, Native Hawaiian & Other Pacific Islander	14	23	
Some Other Race	23	16	
Hispanic or Latino (or any race)	38	38	
Total Housing Units	1,084	1,331	
Vacant	257	371	
Median Gross Rent	$403	$452	
Median Housing Value	$65,300	$110,000	$130,500
Median Household Income	$20,108	$34,509	$42,200
Per Capita Income	$10,016	$16,355	
Unemployment %	4.10%	1.20%	
Employment by Industry (Top 5)			
Retail Trade	24.20%	11.10%	
Fisheries, agriculture, forestry	16.60%	8.40%	
Education, health and social services	15.50%	12.40%	
Business & repair services	10%	DO	
Finance, insurance, real estate	6.70%	14.10%	
Accommodation & food services, art, entertainment	DO	13.10%	
DO= Dropped Out			

Table 3.4-47. Top five species by pounds caught in Sneads Ferry, NC, from 2006 data (Source : Accumulated Landings System (ALS) Database).

SPECIES	DEALERS	FISH RANK	POUNDS	TRIPS	VALUE
SHRIMP	18	1	1,000,582	1,473	$1,664,041
SEA BASSES	5	2	229,815	492	$424,003
BLUE CRABS	5	3	129,575	497	$101,591
SEA MULLET	10	4	104,192	493	$102,541
HARD CLAMS	5	5	100,702	6,621	$710,958

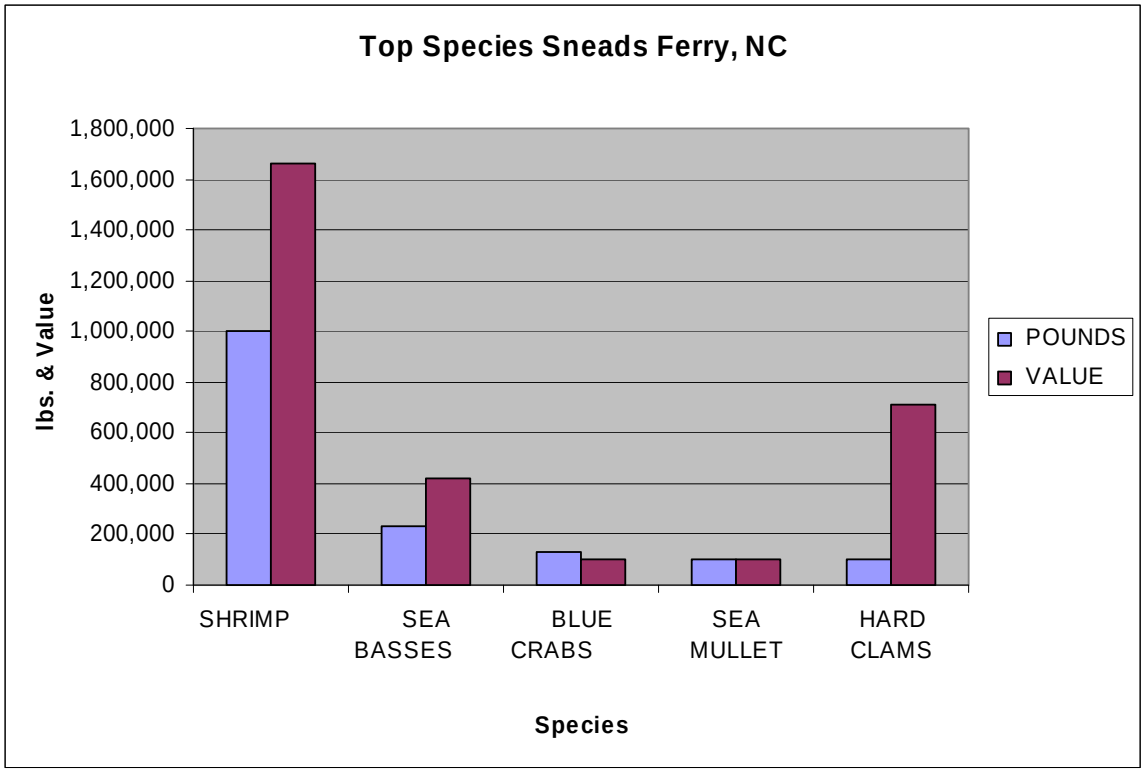


Figure 3.4-1. Value and pounds of top five species in Sneads Ferry, NC, for 2006 (Source: North Carolina Division of Marine Fisheries, Fishery Statistics Division).

In 2007 there were 14 open access rock shrimp permits, three (3) limited access endorsements and 27 South Atlantic penaeid shrimp permits. Because boats sometimes have more than one license or permit per vessel, these numbers cannot be added together to reflect a total number of boats fishing rock shrimp and penaeid species. Currently, there are two (2) active endorsements, no (0) renewable endorsements, one (1) terminated endorsement and one (1) potentially reinstated endorsement. Rock shrimp landings for 2004 were almost nothing and only one dealer and one vessel was said to have fished for rock shrimp during that year.

Wanchese Community Description

Roanoke Island has a mix of tall, green, piney woods and miles of sheltered shoreline on the sound side providing a contrast to the open dunes of the outer islands. Wanchese is one of the island's two villages and is located at the southern end of the island. It is a small, unincorporated fishing community with docks that provide services to many types of local and non-local commercial and recreational fishermen. Throughout the nineteenth century, the commercial industry was able to expanded owing in part to the first local postmaster, who owned or financed most of the commercial fishing boats in Wanchese. That individual established a system of credit for local fishermen at his store where debts were paid off when fishermen brought in their catches. It is said that at that time all residents were commercial fishermen (Wilson and McCay 1998). Wanchese's first fish house was established in 1936 by ER (Zeke) Daniels, the grandfather of the current

generation of two fish house owners. Zeke's son was the first to fish a trawler in Wanchese in the 1950s. He converted a 65' wooden boat which was primarily used to fish for things like flounder during the winter time. As mentioned, most of their fishing occurred in the Pamlico and Albemarle Sounds, however there was a certain amount beach fishing targeting species such as sea mollusks, trout, croaker, spot, striped bass (rock fish) and bluefish. The sounds provided croakers, butterfish, Spanish mackerel, spot and pigfish. At that time, sea bass was the primary species targeted in the ocean during the winter months. Later a WWI sub-chaser was purchased and converted for scalloping (Wilson and McCay 1998). The largest industrial area in Wanchese is centered round the Wanchese Seafood Industrial Park.

The Park was built to enhance business opportunities in the seafood and marine trades. It encourages outside as well as local development in an effort to create a "new day for seafood and marine commerce."[18] Between 1978 and 1985 it was reported that there were nine fish houses in operation in Wanchese. Today, there are six packing houses all operational and all dealing in many of the same species, with each house having a slightly different specialty. In the past all of the houses packed basically the same fish, with flounder being one of the most prominent species. However, over time this has changed as each house has had to specialize in order to remain in business. Charter boat fishing has become increasingly popular in Wanchese over the last 10 years. The number of charter boats has increased and facilities have been created to handle the increased presence of the for-hire industry. Currently, there are 27 charter boats and 2 head boats working out of Wanchese. Many of these individuals are from outside the Wanchese area; however, there are a few local fishermen who have decided to try recreational fishing instead of commercial. Wanchese has seen an increase in its population over the past decade but a reduction in the percentage of people in the labor force. Percent of unemployed has dropped from 7.8 in 1990 to 1.8 in 2000 (Table 3.4-48). While average wage and salary has increased, the number of persons below the poverty level has remained constant. Yet the number of households with public assistance has gone from a high of 35 in 1990 to none in 2000. Employment in farm, fishing and forestry rose from 1980 to 1990 but has seen a decline in the year 2000.

There have remained about 30 vessels with federal permits homeported in the community for the past four years (Jepson *et al.* 2006). Employment in fishing related activities reported indicates 120 people employed in several categories with 56 in fish and seafood, 40 in boatbuilding, 16 in fishing and 8 in seafood processing. There were 228 commercial vessels registered and over 200 standard commercial fishing licenses in the community (Jepson *et al.* 2006). There were also 12 dealer licenses and 18 flounder licenses for Wanchese. Table 3.4-49 and Figure 3.4-2 show the top five landed species in Wanchese.

[18] www.nccommerce.com

Table 3.4-48. Wanchese, NC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial Census).

Wanchese, NC	**1990**	**2000**	**2006**
Population	1,380	1,527	
Median Education Attainment	High School Graduate	High School Graduate	
White	1,366	1,498	
Black or African American	1	5	
American Indian & Alaska Native	4	9	
Asian, Native Hawaiian & Other Pacific Islander	5	2	
Some Other Race	4	13	
Hispanic or Latino (or any race)	15	28	
Total Housing Units	574	702	
Vacant	62	77	
Median Gross Rent	$412	$617	
Median Housing Value	$75,200	$104,900	$113,100
Median Household Income	$25,977	$39,250	$38,600
Per Capita Income	$10,830	$17,492	
Unemployment %	7.80%	1.80%	
Employment by Industry (Top 5)			
Fisheries, agriculture, forestry	19.60%	8.20%	
Retail Trade	19.10%	11.70%	
Manufacturing, durable goods	8.10%	13.10%	
Other Professional & related services	7.60%	DO*	
Public Administration	6.60%	DO	
Wholesale Trade	6.60%	DO	
Education, health and social services	DO	22%	
Construction	DO	9.90%	
DO= Dropped Out			

Table 3.4-49. Top five species by pounds caught in Wanchese, NC from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	DEALERS	FISH RANK	POUNDS	TRIPS	VALUE	YEAR
CROAKER	6	1	8,951,239	2,046	$3,053,027	2006
BLUEFISH	6	2	2,303,558	2,459	$687,546	2006
TUNAS	5	3	1,678,446	932	$3,136,245	2006
BLUE CRABS	7	4	1,667,266	4,414	$1,441,225	2006
SUMMER FLOUNDER	6	5	1,533,061	231	$3,265,860	2006

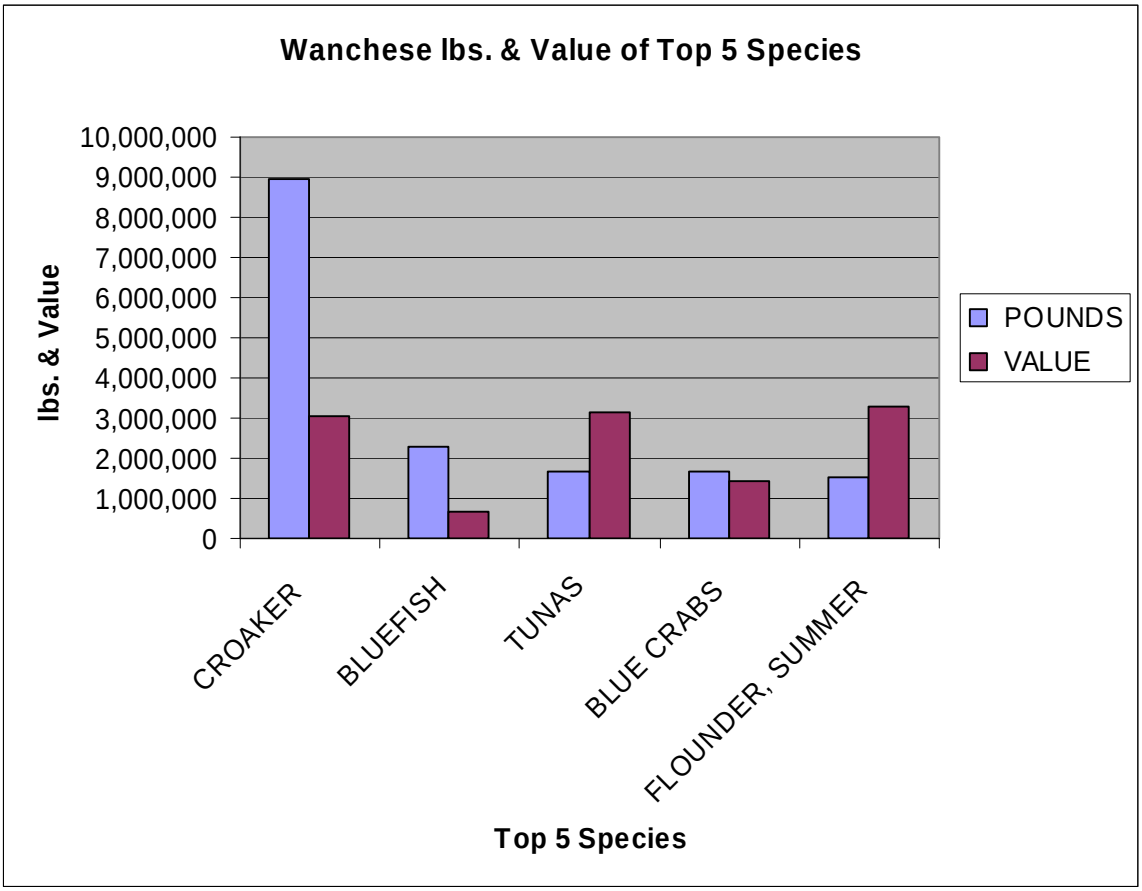


Figure 3.4-2. Value and pounds of top five species in Wanchese, NC, for 2006 (Source: Accumulated Landings System (ALS) Database).

In 2007 there were five (5) open access rock shrimp permits, no (0) limited access rock shrimp endorsements and nine (9) South Atlantic penaeid shrimp permits in Wanchese. There are no data on the active, renewable, terminated, potentially reinstated endorsements and no data on landings.

3.4.3.2 Georgia Communities

Brunswick Community Description

Brunswick is home to a thriving port, the deepest natural port in the area. As the western-most harbor on the eastern seaboard, as well as the proclaimed "Shrimp Capital of the World," Brunswick bustles with activity. The city is also home to Hercules, one of the oldest and most important yellow-pine chemical plants in the world. Rich-SeaPak Corporation and King and Prince Seafood are also based in the area. The Georgia Ports Authority Mayor's Point and Marine Point Terminals, as well as the Colonel Island Bulk Facility attract business from around the world.

Brunswick's Old Town residential and commercial district is the largest small town, urban National Register of Historic Places district in Georgia. Downtown is undergoing

a revitalization through the National Main Street Program, preserving and showcasing its distinctive historic structures. Annual events such as the Old Town Tour of Homes, Concerts in the Square, and HarborFest encourage visitors to discover the charms of Brunswick's parks and gracious homes.

Brunswick's population has seen a steady decline over the past three decades in almost every age category up until recently. The percent of the population in the labor force has remained the same since 1990 but unemployment has risen to 10.4% in 2000. Average wage and salary has dropped since 1990 and the number of people living under the poverty level has increased. For those working in the sectors of farm, fish and forestry in occupation and industry there has also been a steady decline (Table 3.4-50).

There is a substantial number of persons working in fishing related businesses (Jepson *et al.* 2006), with 209 over 1,500 persons working in the seafood processing sector. Brunswick has 8 vessels registered with federal permits while the state has 88 vessels registered in Brunswick and 56 of them have shrimp gear. Of those vessel owners registered 66 consider themselves to be full-time commercial fishermen and 11 part-time. Shrimp was the number one species caught in 2006 with 868,648 lbs. (Table 3.4-51 and Figure 3.4-3).

Table 3.4-50. Brunswick, GA, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial Census).

Brunswick, GA	**1990**	**2000**	**2006**
Population	16,433	15,600	16,074
Median Education Attainment	High School Graduate	High School Graduate	
White	6,726	5,680	
Black or African American	9,570	9,330	
American Indian & Alaska Native	37	42	
Asian, Native Hawaiian & Other Pacific Islander	70	60	
Some Other Race	30	270	
Hispanic or Latino (or any race)	146	908	
Total Housing Units	6,901	6,918	
Vacant	740	867	
Median Gross Rent	$210	$434	
Median Housing Value	$42,900	$61,200	$80,800
Median Household Income	$17,959	$22,272.00	$45,604
Per Capita Income	$8,937	13,062	
Unemployment %	4%	10.4%	
Employment by Industry (Top 5)			
Educational, health, social services	9.50%	20.10%	

Table 3.4-50. Cont'd.

Accommodation, food services, recreation, entertainment, art	DO	18.20%	
Retail Trade	23.30%	12.20%	
Manufacturing	10.20%	8.70%	
Other Services	DO	7.70%	
Personal Services	12%	DO	
Public Administration	7.10%	DO	
DO= Dropped Out			

Table 3.4-51. Top five species by pounds caught in Brunswick, GA from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SHRIMP	1	868,648	$1,684,591	328
CRABS,BLUE,HARD	2	329,997	$174,499	103
FINFISHES	3	16,690	$19,210	17
CRAB,BLUE,PEELER	4	532	$397	*
KING WHITING	5	106	$144	4

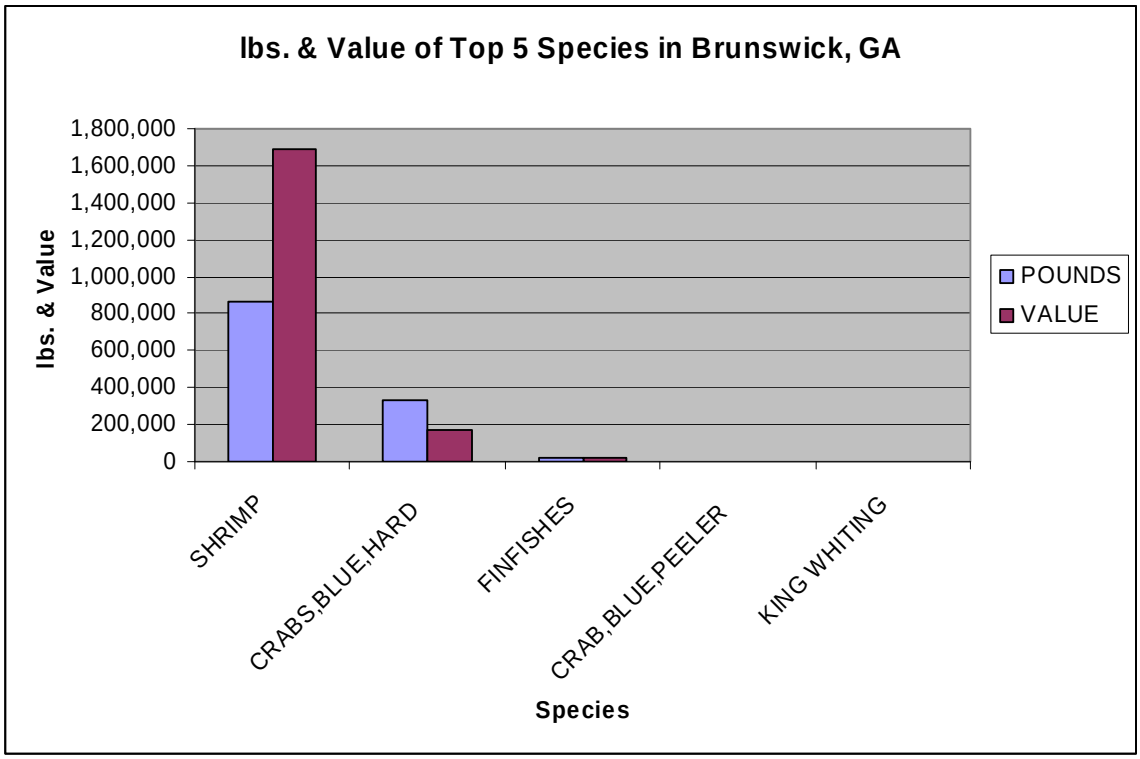


Figure 3.4-3. Value and pounds of top five species in Brunswick, GA for 2006 (Source: Accumulated Landings System (ALS) Database).

As of 2007, Brunswick's shrimp fishery had seven (7) open access rock shrimp permits, five (5) limited access rock shrimp endorsements, and 25 penaeid shrimp permits. Brunswick shrimpers have three (3) active endorsements, one (1) renewable endorsement, one (1) terminated endorsement and no (0) potentially renewable endorsements.

3.4.3.3 Florida Communities

Cape Canaveral Community Description

Cape Canaveral received its name from the Spanish explorers who found it in the early 1500s. The word "Cape" was used to describe the land formation, and the word "Canaveral" comes from the Spanish word for "canebreak." There is much debate over the exact translation and meaning of the name. A traveling exhibition for the Smithsonian Institute translates Cape Canaveral as "Place of the Cane Bearers," so named by Spanish explorer Francisco Gordillo after he was shot by an Ais Indian arrow made of cane. Others believe it should be translated as "Point of Reeds" or "Point of Canes" because the Spanish mistook some of the indigenous plants for sugar cane. Whatever the exact translation of the name may be, all agree that it is of Spanish origin.[19]

Even before the area of Cape Canaveral was settled, it was an important landmark for sailors. Once sighted, they would turn northeastward for the journey back to Europe. Douglas D. Dummitt arrived in the area in the 1820s, establishing Dummitt Grove on Merritt Island. He used the Indian River to ship his oranges northward, beginning in 1828. However, the actual geographic area known as Cape Canaveral was not settled until the 1840s. Cut off from the mainland, this small community remained self-reliant until the late 1800s. The city of Cape Canaveral really began to expand in the early 1920s when a group of retired Orlando journalists were vacationing in the area and appraising its value. They invested over $150,000 in the surrounding beach areas, calling it "Journalista," the area today known as Avon-by-the-Sea. Instead of the area becoming solely a beach resort for wealthy inland residents and northerners, many fishermen moved into the area as well.[20] However, with the establishment and expansion of the space program in the United States in the late 1950s and early 1960s, Cape Canaveral, Titusville, Merritt Island, and the surrounding communities truly began to expand. Today, the residents of Cape Canaveral and the rest of Brevard County rely on the surrounding waters. Port Canaveral, constructed in the 1950s, is the second busiest cruise port in the world and home to many charter fishing companies in the area.[21] The more than three dozen charter fishing boats offer half-day, three-quarter-day, full-day, and Gulf Stream trips for dolphin, tuna, king and Spanish mackerel, wahoo, redfish, tarpon, snook, snapper, grouper, and many others. Both light tackle flats fishing on the Indian and Banana Rivers and Mosquito Lagoon as well as deep sea fishing are available. Most of the boat captains are second or third generation fishermen. The history of fishing in Brevard County dates back more than 100 years. Cape Canaveral's population has grown steadily over the years while the percent of the population in the labor force has dropped.

[19] http://www.spaceline.org/capehistory/1a.html
[20] http://fcn.state.fl.us/cape/LocalArea.html
[21] http://www.portcanaveral.org/business

Unemployment has also dropped from 4.60% to 3.10% (Table 3.4-52). Average wage and salary has grown as has the median housing value. The number of persons working in the fish, farm and forestry sector has dropped significantly to only 17 persons in 2000 for both occupation and industry. Cape Canaveral has 15 vessels with federal permits homeported there with a large portion of the employment in fishing related business in marinas with 125 with 35 in boat building and 17 in fish and seafood (Jepson *et al.* 2006). In 2006 shrimp were the top species caught by pound (Table 3.4-53 and Figure 3.4-4).

Table 3.4-52. Cape Canaveral, FL, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial Census).

Cape Canaveral, FL	**1990**	**2000**	**2006**
Population	8,014	8,892	10,363
Median Education Attainment	Some college, no degree	Some college, no degree	
White	7,630	8,359	
Black or African American	164	126	
American Indian & Alaska Native	81	28	
Asian, Native Hawaiian & Other Pacific Islander	92	155	
Some Other Race	47	37	
Hispanic or Latino (or any race)	285	307	
Total Housing Units	6,077	6,641	
Vacant	1,773	1,575	
Median Gross Rent	$370	$564	
Median Housing Value	$79,700	$91,600	$188,000
Median Household Income	$25,499	$30,858	$33,300
Per Capita Income	$16,397	$23,537	
Unemployment %	4.60%	3.10%	
Employment by Industry (Top 5)			
Arts, entertainment, recreation, accommodation and food services	DO	18.20%	
Professional, scientific, management, administrative, and waste management services	7%	13.30%	
Educational, health and social services	DO	11.40%	
Retail Trade	22%	10.80%	
Manufacturing	17.60%	10.10%	
Personal Services	8.20%	DO	
Construction	7%	DO	
Business & Repair Services	6.80%	DO	
DO= Dropped Out			

Table 3.4-53. Top five species by pounds caught in Cape Canaveral, FL, from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SHRIMP	1	1,038,110	$1,790,848	53
CRABS,BLUE,HARD	2	58,096	$71,872	26
KING, WHITING	3	44,041	$29,779	41
MULLET,STRIPED	4	23,841	$16,420	28
SCUPS/PORGIES	5	2,886	$520	1

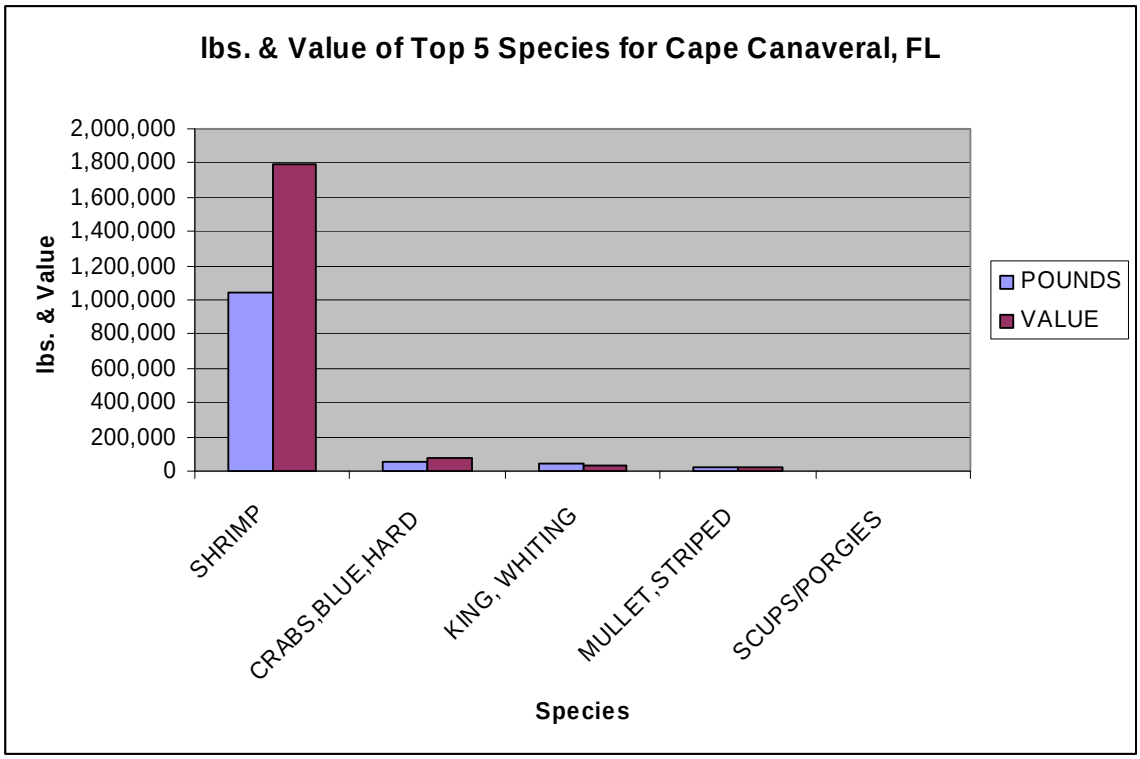


Figure 3.4-4. Value and pounds of top five species in Cape Canaveral, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Currently, there are no (0) open access, limited endorsement or South Atlantic penaeid shrimp permits for Cape Canaveral. In 2003, there were six (6) dealers and 48 vessels said to fish for shrimp out of Cape Canaveral. There were almost 800,000 pounds landed valued at approximately $1.25 million. Since 2003 there has been a drastic decline in the number of dealers and the number of vessels targeting rock shrimp out of Cape Canaveral. In fact, in 2007, there was one (1) dealer and 12 vessels targeting rock shrimp and caught significantly less shrimp and generated a fraction of the revenue. The reason for the discrepancy between number of vessels that fish for shrimp out of Cape Canaveral and the apparent lack of actual licenses associated with the community suggests that those that fish out of Cape Canaveral do not live in Cape Canaveral.

Fernandina Beach Community Description

Fernandina Beach is located in Nassau County, Florida, on the northernmost barrier island (Amelia Island) of the state's east coast. The island extends from the mouth of the St. Mary's River southward to Nassau Sound and is just over thirteen miles long and two miles wide (Jacob *et al.* 2001). Fishing has had a long history in the community as immigrants in the 1700s were net fishermen seeking mullet, sheepshead, crabs, trout, turtles, drum, oysters and "pogies" (menhaden). Agriculture, forestry, fishing, and tourism were the most prominent industries in the Fernandina Beach area during the early 1900s. Shrimp fishing was developed in 1902 by a Sicilian immigrant living in Fernandina Beach who fished with a small diesel engine on his boat to pull a shrimp seine net across the ocean floor. Commercial shrimp fishing grew substantially when a New England fisherman, who was searching the Florida peninsula for blue fish, began harvesting large quantities of shrimp. Shrimp processing and shipment facilities were soon developed in Fernandina Beach. That fishing heritage has been preserved in Old Town Fernandina Beach, which has been designated a National Historic District. Today, Fernandina's harbor is filled with commercial and charter fishing boats, shrimp boats and private vessels. Seafood restaurants contribute to the fishing village theme which continues to resonate throughout the community although tourism has become the primary source of economic revenue (Jacob *et al.* 2001).

Fernandina Beach has seen a moderate increase in population from 8,765 in 1990 to 11,324 in 2006 (Table 3.4-54). Median household income has only slightly increased from 1990 to 2006 while the median education has slightly increased. In 2006 shrimp were the top species caught by pound (Table 3.4-55 and Figure 3.4-5).

Table 3.4-54. Fernandina Beach, FL, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial Census).

Fernandina Beach, FL	**1990**	**2000**	**2006**
Population	8,765	10,549	11,324
Median Education Attainment	High School graduate	Some college, 1 or more years, no degree	
White	6,706	8,602	
Black or African American	1,975	1,708	
American Indian & Alaska Native	20	29	
Asian, Native Hawaiian & Other Pacific Islander	47	68	
Some Other Race	17	54	
Hispanic or Latino (or any race)	110	246	
Total Housing Units	4,477	5,559	
Vacant	974	1,046	
Median Gross Rent	$485	$627	
Median Housing Value	$69,400	$134,500	$146,400

Table 3.54. Cont'd.

Median Household Income	$31,310	$40,893	$43,100
Per Capita Income	$14,875	$24,517	
Unemployment %	2.80%	4.10%	3.20%
Employment by Industry (Top 5)			
Food services, accommodation, recreation, entertainment, arts	DO	17.40%	
Educational, health, social services	DO	18.40%	
Retail Trade	19%	11.30%	
Manufacturing	11.10%	9.70%	
Professional, scientific, mgmt., administrative, waste mgmt. services	DO	8.10%	
Personal Services	9.20%	DO	
Construction	7.30%	DO	
Public Administration	6.70%	DO	
DO= Dropped Out			

Table 3.4-55. Top five species by pounds caught in Fernandina Beach, FL, from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SHRIMP	1	718,619	$1,446,624	173
KING WHITING	2	28,508	$27,716	44
FISHES,BAIT	3	9,450	$11,710	10
CRABS,BLUE,HARD	4	2,368	$2,754	11
SNAILS(CONCH)	5	1,841	$783	5

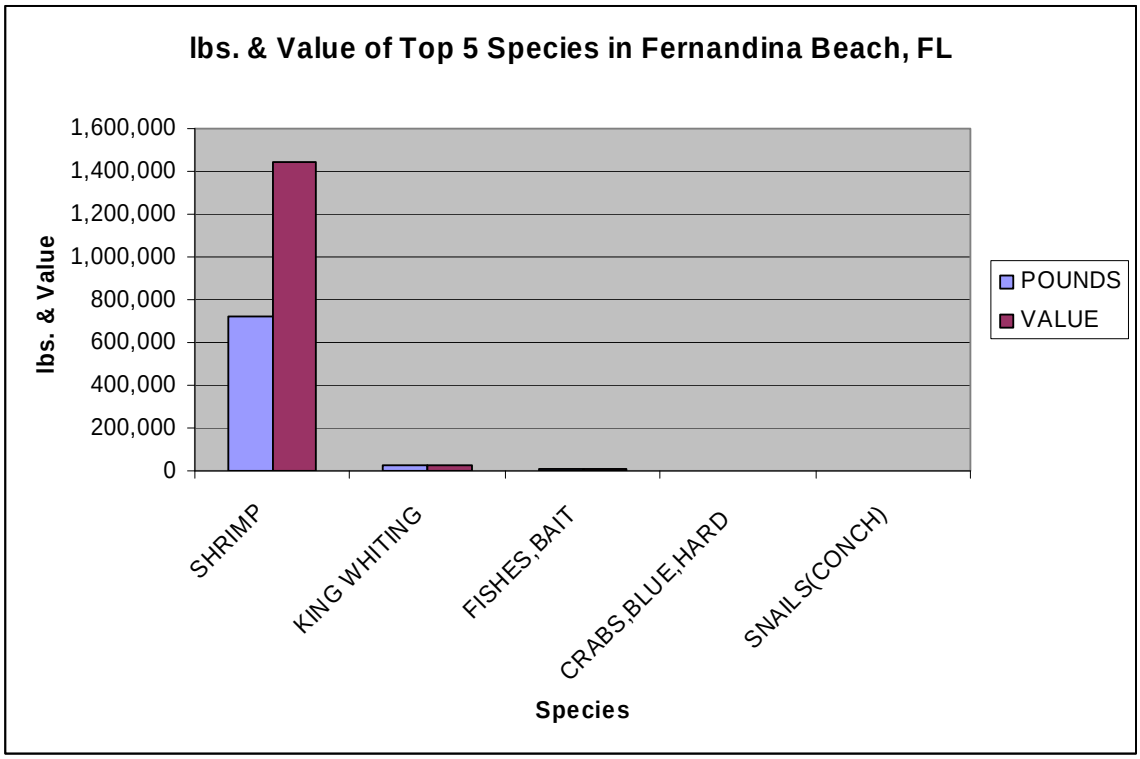


Figure 3.4-5. Value and pounds of top five species in Fernandina Beach, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Data for Fernandina Beach and Fernandina are combined together based on their geographic proximity and likelihood that the social and economic networks are intertwined. Currently there are nine (9) open access permits, eight (8) limited access endorsements and 11 South Atlantic penaeid shrimp permits. There are currently eight (8) active endorsements, and no (0) renewable, terminated or potentially reinstated endorsements.

Jacksonville Community Description

Jacksonville, located in Northeast Florida, is the largest city by area in the continental United States and is continuing to grow in population and size. Jacksonville is a popular city for corporate expansions and relocations due to its location on Florida's east coast allowing for a large international shipyard. This has resulted in Jacksonville being rated in the top 10 cities for business expansions and relocations by Expansion Management magazine for the past six years. Jacksonville mayor, John Peyton, constructed a growth management task force in 2005 focused on balancing commercial and residential development with transit and infrastructure capacity and the preservation of green space[22].

[22] http://www.coj.net/About+Jacksonville/default.htm.

Jacksonville has seen a moderate increase in population while unemployment has remained steady (Table 3.4-56). The housing value has more than doubled from 1990 to 2006 while the median household income has not quite doubled (Table 3.4-56). In 2006 shrimp were the top species caught by pound (Table 3.4-57 and Figure 3.4-6).

Table 3.4-56. Jacksonville, FL, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial Census).

Jacksonville, FL	**1990**	**2000**	**2006**
Population	635,230	735,617	794,555
Median Education Attainment	High School graduate	Some college, less than 1 year	
White	456,529	474,307	
Black or African American	160,283	213,514	
American Indian & Alaska Native	1,801	2,474	
Asian, Native Hawaiian & Other Pacific Islander	12,182	20,875	
Some Other Race	4,435	9,816	
Hispanic or Latino (or any race)	16,455	30,594	
Total Housing Units	267,148	308,736	
Vacant	25,764	24,244	
Median Gross Rent	$3,494	$598	
Median Housing Value	$62,900	$87,800	$144,600
Median Household Income	$28,000	$40,316	$44,173
Per Capita Income	$13,661	$20,337	
Unemployment %	3.60%	3.30%	4%
Employment by Industry (Top 5)			
Educational, health, social services	7.90%	16.40%	
Retail Trade	17.60%	12.30%	
Professional, scientific, mgmt., administrative, waste mgmt. services	DO	10.30%	
Finance, insurance, real estate, rental & leasing	12.20%	13.40%	
Transportation, warehousing, utilities	7.20%	7.90%	
Construction	6.90%	DO	
DO= Dropped Out			

Table 3.4-57. Top five species by pounds caught in Jacksonville, FL, from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SHRIMP	1	1,078,161	2,047,620	303
CRAB,BLUE,HARD	2	459,818	535,212	262
KING WHITING	3	24,076	33,089	115
MULLET with ROE	4	23,674	22,301	39
MULLET,STRIPED	5	14,272	14,495	72

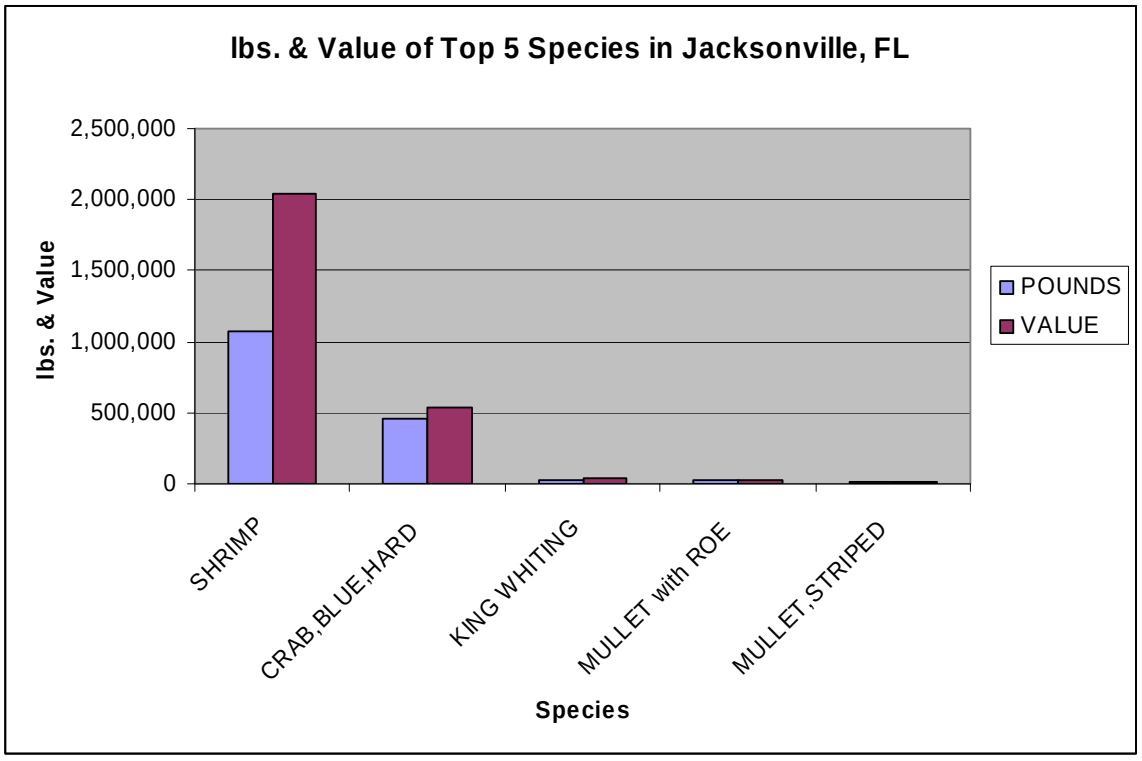


Figure 3.4-6. Value and pounds of top five species in Jacksonville, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Similar to Fernandina Beach and Fernandina, Jacksonville Beach and Jacksonville are also combined when discussing permits and endorsements. There are ten (10) open access permits, eighteen (18) limited access endorsements, and thirty-two (32) South Atlantic shrimp permits. There are eight (8) active endorsements, six (6) renewable endorsements, four (4) terminated endorsements and no (0) potentially reinstated endorsements. The number of permits, endorsements and licenses increases if Atlantic Beach is added into the equation and suggests that the north Florida area is likely to be one of the most impacted by proposed management actions. Since 2003, the amount of rock shrimp landed has fluctuated, while proceeding on a steady decline in the overall amount caught and revenue generated.

Key West Community Description

Key West, located in Monroe County, the population of Key West has not grown much over the past three decades. The percent of the population in the labor force and unemployment have both remained fairly constant since 1990 (Table 3.4-58). Average wage and salary has grown over the years while the number of people living under the poverty level has decreased overall. Key West has the greatest number of persons working in the farm, fish and forestry categories of any coastal community with over 300 in both occupation and industry. Over 360 vessels with federal permits homeport in the community and the majority of those vessels have coastal pelagic permits but other permits are also held by many of these vessels (Jepson *et al.* 2006). There are 15 dealers with federal permits in the community also. Given so many fishing vessels the number of

persons employed in fishing related employment seems low with only 18 in the fishing sector and 49 in marinas.

Spanish explorer Juan Ponce de Leon and chronicler Antonio de Herrera were the first Europeans settle Key West on May 15, 1513 and it is the oldest city in south Florida. However, the first permanent occupancy of Key West did not occur until 1822[23]. They also established a port in order to open the shipping lanes from the Gulf of Mexico, the Caribbean, and the Atlantic. The people of Key West began the sponge trade in Florida, and by the 1890s, they made Key West "the commercial sponging capital of the world."[24] Nevertheless, fishing was a primary source of income and survival since the very beginning. Before permanent settlement of Key West, fishermen from New England and the Bahamas would come to take advantage of the species the waters of Key West had to offer. Similarly, in the early 1900s, fishermen from St. Augustine would fish in Key West and sell their catch in Havana. Since the beginning, grouper and spiny lobster have been the most profitable species of the Key West fishing industry. Shrimp has been another important species for the Key West fishing community (Table 3.4-59 and Figure 3.4-7). John Salvador, a son of one of the original fishing families in St. Augustine, discovered rich shrimping grounds in the Dry Tortugas in 1950. The rush to harvest the shrimp has been related to the gold rush of 1849, naming the shrimp "pink gold." "Currently, Key West pink shrimp make up almost 50% of the total Monroe County shrimp landings."[25] The marine resources have been the key to survival and income for conchs for nearly 200 years. Today, the port in Key West is famous for its scuba diving, sport fishing, and yachting opportunities.

Table 3.4-58. Key West, FL, demographic data from 1990-2000 (Source U.S. Census Bureau Decennial Census).

Key West, FL	**1990**	**2000**
Population	24,832	25,480
Education Attainment	Some college, no degree	Some college, no degree
White	17,908	21,642
Black or African American	2,395	2,365
American Indian & Alaska Native	74	99
Asian, Native Hawaiian & Other Pacific Islander	336	343
Some Other Race	22	474
Hispanic or Latino (or any race)	4,097	4,215
Total Housing Units	12,221	13,306
Vacant	1,797	2,290
Median Gross Rent	$608	$899
Median Housing Value	$147,400	$265,800
Median Household Income	$32,320	$43,021

[23] http://www.keywestcity.com/ourcity/cityinfo.asp
[24] http://www.fl-seafood.com/water/places/keywest.htm
[25] http://www.fl-seafood.com/water/places/keywest.htm

Table 3.4-58. Cont'd.

Per Capita Income	$15,547	$26,316
Unemployment %	2.10%	1.90%
Employment by Industry (Top 5)		
Retail trade	23.40%	11.70%
Arts, entertainment, recreation, accommodation and food service	DO	27%
Educational, health and social services	15.60%	11.80%
Public Transportation	DO	10%
Construction	10.40%	8.20%
Other professional and related services	7.60%	DO
Finance, insurance, and real estate	6.60%	DO
DO= Dropped Out		

Table 3.4-59. Top five species by pounds caught in Monroe County, FL, from 2006 data. (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE
LOBSTER, SPINY	1	4,327,757	$24,632,908
SHRIMP	2	2,520,116	$3,725,052
CRAB,STONE	3	1,701,356	$8,941,692
SNAPPER	4	1,438,939	$3,525,071
KING MACKEREL	5	1,037,473	$1,059,112

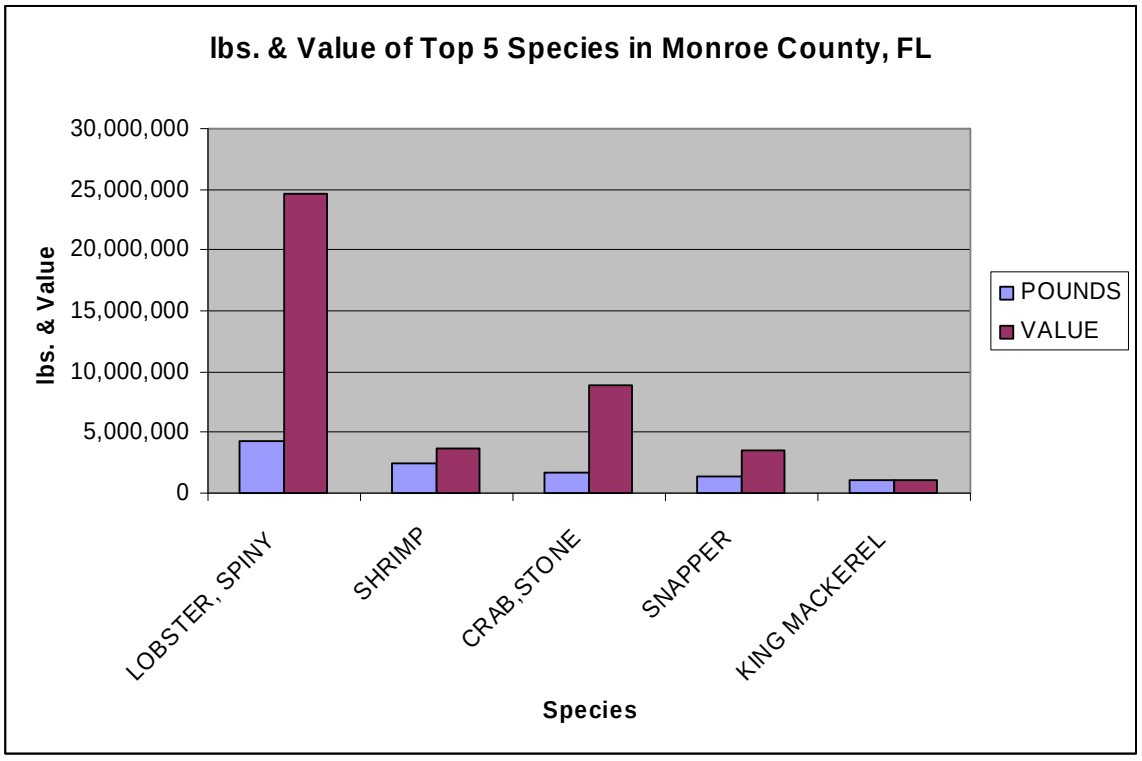


Figure 3.4-7. Value and pounds of top five species in Monroe County, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Currently, there are nine (9) open access permits, one (1) limited access endorsement, and eleven (11) South Atlantic shrimp permits. There is one (1) active endorsement, no (0) renewable, terminated, or potentially reinstated endorsements. Key West shrimpers have experienced a drastic decrease in catch and revenue since 2003. This is potentially one of the communities that may benefit from policy decisions that encourage increased participation.

New Port Richey Community Description

New Port Richey is the largest municipality in Pasco County, with a population of slightly over 16,000 people (Table 3.4-60). The Pithlachascotee River flows through the area on its way to the Gulf. New Port Richey was incorporated in 1924. There are numerous fishing-related businesses here, and the local commercial fleet is productive. Shrimp and crab were among the principal landings in 2006 for Pasco County (Table 3.4-61 and Figure 3.4-8) but various benthic and pelagic species were also landed.

Table 3.4-60. New Port Richey, FL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial Census).

New Port Richey, FL	**1990**	**2000**
Population	14,044	16,117
Education Attainment	High School graduate	High School graduate
White	13,808	15,165
Black or African American	67	161
American Indian & Alaska Native	41	86
Asian, Native Hawaiian & Other Pacific Islander	82	166
Some Other Race	46	235
Hispanic or Latino (or any race)	285	846
Total Housing Units	7,824	8,428
Vacant	1,347	1,197
Median Gross Rent	$314	$462
Median Housing Value	$50,400	$61,300
Median Household Income	$18,514	$25,881
Per Capita Income	$13,557	$16,644
Unemployment %	6%	5.10%
Employment by Industry (Top 5)		
Retail Trade	21.40%	14.60%
Construction	10.50%	10.50%
Health and Education Services	20%	21.10%
Other professional and related services	7.30%	11.50%
Finance, insurance, and real estate	6.50%	DO
Arts, entertainment, recreation, accommodation and food services	DO	13.10%
DO= Dropped Out		

Table 3.4-61. Top five species by pounds caught in Pasco County, FL, from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE
SHRIMP	1	194,479	786,597
GROUPER	2	67,551	182,424
STONE CRAB	3	34,266	197,041
SNAPPER	4	14,005	33,863
AMBERJACK	5	12,076	15,703

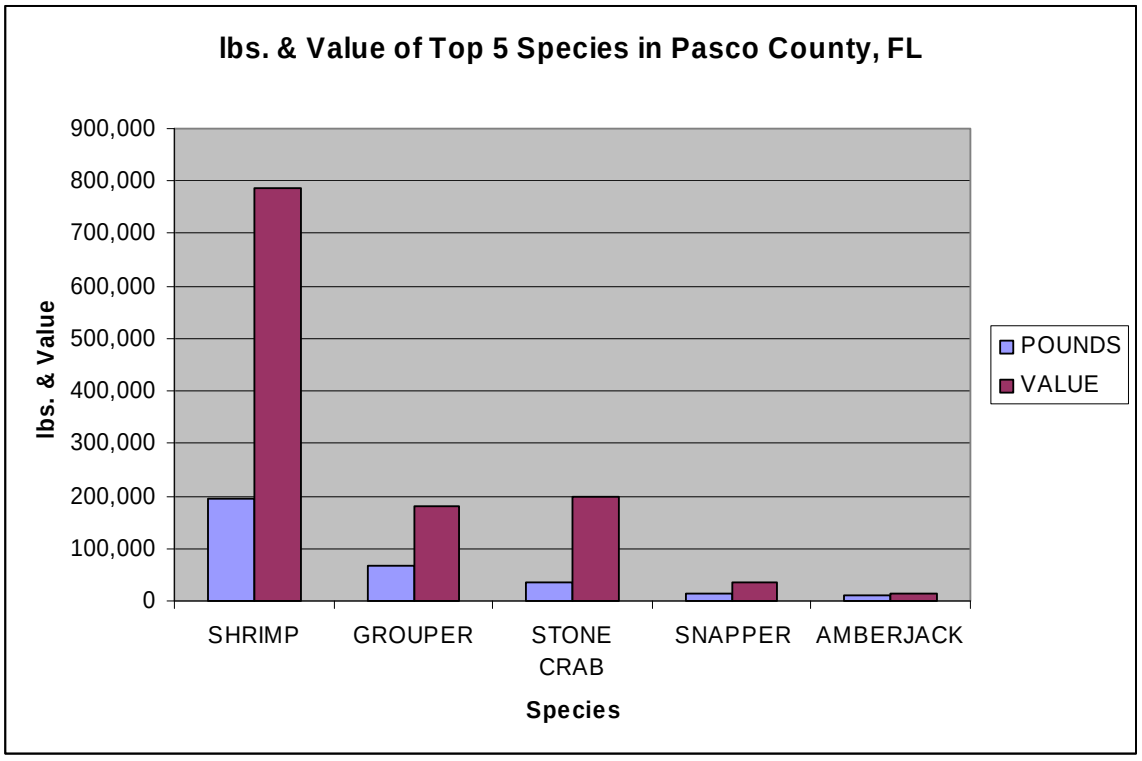


Figure 3.4-8. Value and pounds of top five species in Pasco County, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

While shrimp landings from the ALS database indicates that a large amount of shrimp is purchased by dealers in Pasco county, the amount of rock shrimp fishermen and penaeid shrimp fishermen is comparable to other areas. The number of open access permits is eight (8), limited access permits five (5), and South Atlantic shrimp permits is nine (9). The number of active endorsements is two (2), number of renewable endorsements is two (2), number of terminated endorsements is zero (0) and the number of potentially reinstated endorsements is also zero (0). This being said, the county appears to be reliant on shrimp more than all the other species comprising the top five purchased by dealers.

3.4.3.4 Alabama Communities

Bayou La Batre Community Description

Bayou La Batre is located along State Highway 188 in southern Mobile County, adjacent to the body of water of the same name. The bayou empties into Mississippi Sound, providing easy access to several major ship channels and the Gulf of Mexico. The Gulf of Mexico is about 17 miles south, accessible via Portersville Bay and the Mississippi Sound.

Bayou La Batre was founded in the 1780s by a Frenchman named Joseph Bosarge. A hurricane so devastated the area in 1906 that commercial fishing became the only source of income. Residents subsequently established a lengthy history of involvement in the harvest, processing, and distribution of seafood.

The year 2000 census enumerated 2,313 persons in Bayou La Batre, a decline from the 1990 count of 2,456 (Table 3.4-62). The commercial fishing and processing industries are vital to the local economy with shrimp, oysters, crabs, and finfish being the primary products (Table 3.4-64 and Figure 3.4-9). Fishery participants from Bayou La Batre also produce the majority of Alabama seafood landings; shrimp accounts for 90% of landed seafood value. Shipbuilding is Bayou La Batre's other major industry by building oil supply boats, work boats, barges, shrimp boats, tugs, cruisers, and casino boats.

Coden and Irvington are small fishing communities that have many or all of their boats docked in Bayou La Batre. Therefore their community profiles are included in Bayou La Batre's.

Coden is located in southern Mobile County. Gulf of Mexico access is approximately 15 miles distant via Portersville Bay to Mississippi Sound and out through Petit Bois Pass. The town was once a tourist destination, but a hurricane in 1906 ruined the then popular Rolston Hotel. The year 2000 census enumerated 1,318 persons, up from 1,233 in 1990. There are several boat building facilities and seafood operations along both sides of Coden Bayou. Coden is home to over 20 oyster houses and at least ten crab processing facilities. Most of these businesses are small family owned shucking houses that may employ from three to ten workers, depending on the time of year. The 27 local processors produced over three million pounds of seafood valued over 11 million dollars during 2000. The local commercial fleet focuses on oysters and shrimp. Most locally-operated vessels are moored at Bayou La Batre.

Irvington is also in Mobile County and is 26 miles north of the Gulf of Mexico. With a population of 2,524 persons as of the year 2000 census, Irvington gained 1,060 residents from 1990. The Irvington area is home to numerous oyster and crab processing firms. Most are small family-owned businesses. Over 1.7 million pounds of seafood valued at $9.7 million was processed here in 2000. Numerous commercial fishermen live here but work on vessels docked in Bayou La Batre. The fleet focuses on shrimp and crab, but finfish are also landed, including various pelagic species. There were 18 federally-permitted Gulf shrimp permit holders residing or maintaining postal addresses in the area in 2003. As of the year 2000, three local processors employed an average of two employees, and processed nearly 60,000 pounds of product valued over $300,000. A very small but productive fleet resided here in 2000, with extensive landings of shrimp and a variety of other species.

Table 3.4-62. Bayou La Batre, AL, demographic data from 1990-2000 (Source U.S. Census Bureau Decennial Census).

Bayou La Batre, AL	**1990**	**2000**
Population	2,456	2,313
Education Attainment	High School graduate or higher, no college degree	High School graduate or higher, no college degree
White	1,605	1,213
Black or African American	250	237
American Indian & Alaska Native	3	6
Asian, Native Hawaiian & Other Pacific Islander	595	780
Some Other Race	3	22
Hispanic or Latino (or any race)	67	44
Total Housing Units	883	864
Vacant	112	81
Median Gross Rent	$164	$366
Median Housing Value	$35,200	$45,800
Median Household Income	$15,775	$24,539
Per Capita Income	$6,926	$9,928
Unemployment %	9.70%	11.10%
Employment by Industry (Top 5)		
Retail Trade	20.0%	18.9%
Manufacturing	23.4%	21.9%
Wholesale trade	12.1%	10.6%
Educational, Health and Social Services	7.5%	9.0%
Fisheries, agriculture, forestry	10.4%	8.4%

Currently there are twenty-eight (28) open access rock shrimp permits, thirty-one (31) limited access permits, and 31 South Atlantic shrimp permits. For the three communities there are twenty-three (23) active endorsements, four (4) renewable endorsements, four (4) terminated endorsements, and only one (1) potentially reinstated endorsement. This means that this area is likely to be one of the those most impacted by the management actions being considered in this amendment, even though the total landings are small in comparison to other areas throughout the region.

Theodore Community Description

Theodore is in Mobile County, 30 miles south of the Gulf of Mexico. Theodore was named for William Theodore Hieronymous who was a local sawmill operator and

postmaster. The year 2000 census enumerated 6,811 persons in Theodore, an increase of 302 from 1990 (Table 3.4-63).

Table 3.4-63. Theodore, AL, demographic data from 1990-2000 (Source U.S. Census Bureau Decennial Census).

Theodore, AL	**1990**	**2000**
Population	6,509	6,811
Education Attainment	High School graduate or higher, no college degree	High School graduate or higher, no college degree
White	4,828	4,843
Black or African American	1,640	1,742
American Indian & Alaska Native	22	42
Asian, Native Hawaiian & Other Pacific Islander	18	88
Some Other Race	1	28
Hispanic or Latino (or any race)	21	94
Total Housing Units	2,452	2,687
Vacant	204	215
Median Gross Rent	$231	$428
Median Housing Value	$48,800	$77,800
Median Household Income	$23,075	$33,750
Per Capita Income	$9,056	$15,129
Unemployment %	4.30%	7.70%
Employment by Industry (Top 5)		
Educational, health and social services	12%	19.60%
Retail trade	17.30%	13.30%
Manufacturing	20.90%	17.90%
Construction	8.80%	10.40%
Transportation and warehousing, and utilities	7.20%	8.60%

Table 3.4-64. Top five species by pounds caught in Mobile County, AL, from 2006 data (Source: Accumulated Landings System (ALS) Database).

SPECIES	FISH RANK	POUNDS	VALUE
SHRIMP	1	20,923,249	$33,020,384
CRABS,BLUE,HARD	2	2,364,766	$1,303,426
OYSTERS	3	939,449	$3,638,081
SHARK	4	900,757	$287,795
MULLETS & MULLETS with ROE	5	814,108	$412,787

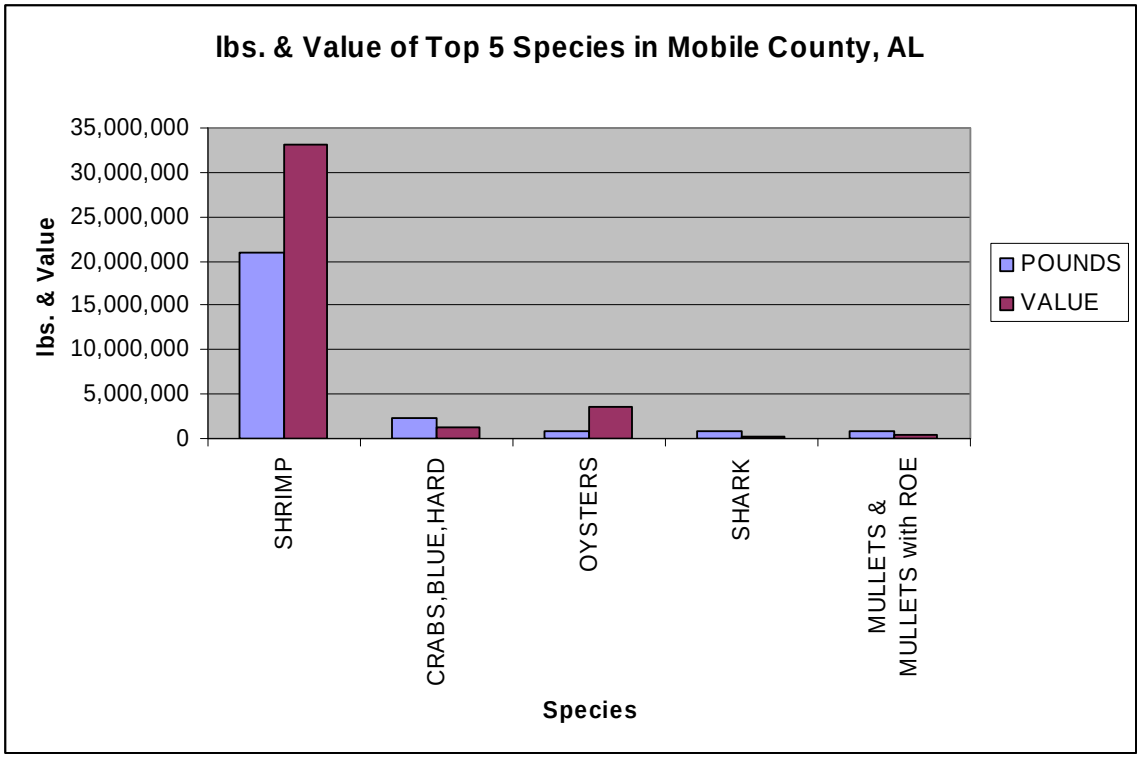


Figure 3.4-9. Value and pounds of top five species in Mobile County, AL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Currently there are five (5) open access rock shrimp permits, five (5) limited access endorsements, and four (4) South Atlantic shrimp permits. This is an area that relies on the commercial shrimp fishery, yet appears to be one of the areas that have a small amount of rock shrimp landed.

4 Environmental Consequences

4.1 Action 1 Alternatives

Alternative 1 (No-action). Retain the 15,000-pound rock shrimp landing requirement.

Preferred Alternative 2. Remove the 15,000-pound rock shrimp landing requirement.

Alternative 3. Change the landing requirement to 7,500 pounds of rock shrimp.

4.1.1 Biological Effects

National Environmental Policy Act (NEPA) regulations at 40 CFR §1508.8 (a) define direct effects as those "which are caused by the action and occur at the same time and place." NEPA regulations at 40 CFR §1508.8 (b) defines indirect effects "which are caused by the action and are later in time or farther removed by distance." None of the alternatives in this action would have a direct effect on the biological environment. Indirect effects on the biological environment could occur if the level of fishing effort changes as a result of the alternatives. Higher levels of effort could result in greater fishing mortality and greater bycatch mortality.

Alternative 1 (No-action) would reduce the number of participants in the fishery to 55 (if expired endorsements are not allowed renewal) or 60 (if expired endorsements are allowed renewal). This is the smallest number of potential participants of all the alternatives. Effort would be expected to be lowest under this alternative, and thus adverse biological impacts would be lowest.

Preferred Alternative 2 would allow the greatest number of participants in the rock shrimp fishery and presumably have the greatest impact on targeted and non-targeted species. The number of vessels eligible for the limited access endorsement would not change from the current number of 125 (if expired endorsements are not allowed renewal) or 155 (if expired endorsements are allowed renewal). Although many of these fishermen are not currently participating in the South Atlantic rock shrimp fishery, changes in biological and economic conditions may cause them to rejoin this fishery in the future. Also, future management measures in other South Atlantic fisheries may shift effort to the rock shrimp fishery increasing effort and thereby increasing adverse biological impacts.

Alternative 3 would allow 58 (if expired endorsements are not allowed renewal) or 64 (if expired endorsements are allowed renewal) participants in the rock shrimp fishery. The biological impacts would be intermediate to **Alternatives 1 and 2**.

4.1.2 Economic Effects

This action is directly related to **Action 2** and, to a lesser extent, **Action 3**. Specifically, whereas **Action 2** is meant to determine what will happen to the endorsements of vessels that did not meet the 15,000 landing requirement at the end of calendar year 2007, **Action**

1 attempts to deal with the issue of the current 15,000-pound landing requirement in the long-term with respect to whether it should be retained, altered, or removed. Thus, short-term impacts on vessels initially obtaining endorsements in 2003 are discussed in detail under **Action 2**. The vessels of particular concern in this action are those that initially obtained their endorsements after 2003 as they need to land at least 15,000 pounds of South Atlantic rock shrimp in at least one calendar year in the first four year time period after the year in which they initially obtained their endorsement. So, the analysis for **Action 1** focuses on long-term effects on vessels with active or renewable endorsements that obtained endorsements after 2003 and, to a lesser extent, vessels that have in fact already met the requirement. In effect, the analysis attempts to determine what the fleet is likely to look like in the long-term under the three alternatives being considered. Note that, with exception of the five vessels with endorsements potentially reinstated under **Action 3**, **Action 1** would have no impact on the other 25 vessels with terminated endorsements. As such, it is assumed that the maximum fleet size in the South Atlantic rock shrimp fishery will be no more than 130 vessels regardless of which alternative the Council selects under **Action 1** or any of the other actions being considered in this Amendment. Thus, this fleet size is the reference point from which the alternatives under **Action 1** are analyzed.

First, according to the information in column 3 in Table 3.4-6, 42 vessels with active or renewable endorsements initially obtained their endorsements after 2004. Therefore, these vessels and their endorsements are of primary concern in this action since, sometime between the end of 2008 and the end of 2012, they will need to land at least 15,000 pounds of South Atlantic rock shrimp in at least one of four consecutive calendar years in order to retain their endorsement[26]. According to the information in columns 5 and 6 in Table 3.4-6, at this point in time, 15 of those 42 vessels have already met the current 15,000-pound landing requirement while 27 vessels have not yet met the requirement. Given the fishery's performance in two of the last three years and the significant and ongoing increases in diesel fuel prices, which the increases in rock shrimp prices have not been close to matching, it is quite possible that these 27 vessels will meet the existing requirement before the end of their four consecutive calendar year time periods. In turn, it is also quite possible that these vessels will not be eligible to have their endorsements renewed at that time and thus their endorsements will be terminated and removed from the fishery. Thus, if the current landing requirement is retained as would be the case under **Alternative 1 (No-action)**, it is quite possible that these 27 vessels would lose their endorsements in the long-run and these endorsements would be removed from the fishery.

With respect to **Alternative 3**, this alternative would permanently reduce the current landing requirement by 50%. As such, it would be expected that more vessels that initially obtained their endorsements after 2003 would have been able to have already met this much lower landing requirement. However, as information in columns 7 and 8 in Table 3.4-6 illustrate, that is not the case. In fact, the results are exactly the same as

[26] This statement is somewhat of an oversimplification of potential future scenarios under the status quo since, if any of these vessels' endorsements are transferred to another vessel, the clock would start anew for the vessel acquiring the transferred endorsement.

under **Alternative 1**. Namely, of the 42 vessels that initially obtained their endorsements after 2003, 15 vessels have landed at least 7,500 pounds of South Atlantic rock shrimp in at least one calendar year while the other 27 vessels have not. Given that the numbers are exactly the same, it is obvious that it is the exact same 15 and 27 vessels, respectively, that have and have not met the current 15,000-pound requirement. Thus, the impact of permanently reducing the landing requirement by 50% will quite possibly be nearly the same as retaining the current 15,000-pound landing requirement.

Information on the landings and revenues of these 27 vessels that could lose their endorsements in the long-term under either **Alternative 1** or **Alternative 3** are provided in Table 4.1-1. According to this information, as would be expected since they could not even meet the 7,500-pound landing requirement in a single year, revenues from South Atlantic rock shrimp landings have accounted for less than a half-percent of their average total revenues in the past five years, though they show some dependency on the South Atlantic penaeid shrimp fishery. But the vast majority of their revenues come from the Gulf shrimp and Northeast non-shrimp fisheries. Still, these are relatively productive vessels that have averaged $268,000 in total revenues per year over the past five years. Though the loss in the short-term with respect to production in the South Atlantic rock shrimp fishery is likely to be negligible in the short-term if these vessels lost their endorsements, the loss of this potential productive capacity could generate significant adverse impacts on the fishery in the long-term. And, these 27 vessels would lose the market value of their endorsements, which would represent a loss of $135,000 to these vessels.

Without going into the details of the analysis of the alternative under **Action 2**, it can still be seen in column 5 of Table 3.4-6 that, if all vessels that have not or have not yet met the current 15,000 landing requirement lose their endorsements and these endorsements are terminated and removed from the fishery, the maximum fleet size in the long-term would only be 55 vessels under **Alternative 1**, which is 56% less than the current number of active and renewable endorsements, 58% less than the maximum fleet size possible under other alternatives and actions in this Amendment, and more than 63% less than what the Council determined was the desirable maximum fleet size in Amendment 5 (SAFMC 2002). Similarly, according to the information in column 7 of Table 3.4-6, if all vessels that have not or have not yet landed at least 7,500 pounds of South Atlantic rock shrimp in at least one out of four consecutive calendar years lose their endorsements and these endorsements are terminated and removed from the fishery, the maximum fleet size in the long-term would only be 58 vessels under **Alternative 3** (possibly 59 vessels depending on the alternative selected under Action 3), which is 54% less than the current number of active and renewable endorsements, 55% less than the maximum fleet size possible under other alternatives and actions in this Amendment, and more than 61% less than what the Council determined was the desirable maximum fleet size in Amendment 5 (SAFMC 2002).

As can be seen in Tables 4.1-2 through 4.1-5, the physical, operational, landings, and revenue characteristics between the two fleets under **Alternatives 1 and 3** would be minimal at best. Though a table is not provided, in both instances, each fleet would be

composed completely of large vessels, 82% of which would be steel-hulled, and 98% would have on-board freezing capacity. Thus, in sum, permanently reducing the landing requirement by 50% under **Alternative 3** would yield little if any direct economic benefits to the harvesting sector relative to retaining the current 15,000-pound requirement under **Alternative 1**.

As in the harvesting sector, in the long-term, there is likely to be little difference between **Alternative 3 and Alternative 1** with respect to impacts on the onshore sector (i.e. dealers, processors, and other associated businesses). This result is expected since, as previously noted, there are only at most four additional vessels in the harvesting sector under **Alternative 3** relative to **Alternative 1** in both the short-run (i.e. after those vessels not meeting the landings requirement based on their 2004-2007 landings lose their endorsements) and the long-run since the same 27 vessels could potentially lose their endorsements over the next 2-5 years under both alternatives. That is, with respect to impacts on the onshore sector, the difference between a fleet size of 59 vessels under **Alternative 3** as opposed to 55 vessels under **Alternative 1** is likely minimal in the long-term.

Under **Preferred Alternative 2**, none of the 27 vessels projected to potentially lose their endorsements under **Alternative 1 and Alternative 3** would lose their endorsements and thus would retain their ability to participate in the fishery in the long-term. Thus, none of the adverse impacts discussed under either of these alternatives would occur. And thus, since **Alternative 1** is the status quo, the elimination of such potential adverse impacts should be characterized as a direct benefit to the fishery. In the short-term, the biggest benefit to these particular 27 vessels is the retention of their endorsements' market value. The short-term benefits in terms of revenues from South Atlantic rock shrimp landings are likely minimal at best given their very limited participation in the fishery during the past five years.

In effect, and assuming that **Preferred Alternative 2** is selected under **Action 2**, the maximum fleet size under **Preferred Alternative 2** for this action would be equivalent to the current fleet of vessels with active or renewable endorsements as described in the economic description of the fishery (see Tables 3.4-18 to 3.4-23). Retaining these vessels' potential productive capacity in the rock shrimp fishery could yield additional long-term benefits if vessels not currently or recently active in the fishery eventually return. And if **Preferred Alternative 2** under **Action 3** is ultimately selected by the Council, then the maximum fleet size would actually be increased from its current 125 vessels to 130 vessels, which would further increase potential productive capacity in the fishery, as further described in the analysis for **Action 3**.

With respect to indirect effects, in the long-term, given that an additional 27 vessels (i.e. above and beyond the 43 vessels that would not lose their endorsements under preferred **Alternative 2** for **Action 2**) would not lose their endorsements under **Preferred Alternative 2**, two additional dealers, or a total of 19 dealers (given information discussed under **Preferred Alternative 2** for **Action 2**) would also likely be better off under this alternative relative to **Alternative 1**. Furthermore, benefits to the

aforementioned 17 dealers would likely be even greater in the long-term under **Preferred Alternative 2**. The same would also be true for other onshore businesses and rock shrimp processors. And if effort and its associated productive capacity return to the fishery as a result of more restrictive regulations in other fisheries, most notably the Atlantic sea scallop fishery[27], the benefits in the long-term would be even greater and likely spread to other dealers as well.

However, even if more restrictive regulations are imposed in other fisheries that vessels with rock shrimp endorsements participate in, it is important to keep in mind that such changes, by themselves, will not necessarily cause vessels to shift more effort back to the rock shrimp fishery. That is, economic conditions in the rock and penaeid shrimp fisheries will likely need to improve appreciably in order for such a result to occur. Although rock and penaeid shrimp prices have been slowly recovering over the past year or so, increases in fuel prices over that same time period have likely offset the benefits of such improvements with respect to their impact on vessels' profitability, particularly in the rock shrimp fishery given that it is prosecuted in more distant, offshore waters which requires relatively greater fuel consumption. And, based on the catch per trip statistics in 2005 and 2007, catch rates in the rock shrimp fishery will need to increase significantly in order to induce vessels to re-enter the fishery. Since catch rates are a function of abundance, and abundance is environmentally determined, highly cyclical, and thus highly unpredictable, considerable uncertainty exists with respect to how much productive capacity will actually exist in the fishery in the long-term.

[27] In fact, a final rule implementing new regulations in the Atlantic sea scallop fishery was issued on April 14, 2008. Given that the rule came out very recently, it is not yet known whether and to what extent the new regulations will impact any vessels with limited access rock shrimp endorsements.

Table 4.1-1. Landings and Revenue Statistics for 27 Vessels Losing Active/Renewable Endorsements in Long-Run under Action 1, Alternatives 1 and 3, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	38,203	$56,161	$12,188,794	$3,095,119	$3,396	$28,252	$8,488,684	$3,151,280	$23,860,405	N/A	N/A
Average / Vessel / Year	429	$631	$136,953	$34,777	$38	$317	$95,378	$35,408	$268,094	.4	25.7

Table 4.1-2. Physical Characteristics and Selected Statistics for Remaining 55 RSE Vessels Under Action 1, Alternative 1.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	2	2	30	6	63	360	4,000	74	800
Maximum	5	4	80	38	88	1,200	30,000	175	120,000
Mean	3.6	3.9	56.6	19.8	77.0	596.8	16,287	131.9	66,408
St. Dev.	0.6	0.4	10.9	10.1	7.1	155.6	7,764	23.8	27,020

Table 4.1-3. Physical Characteristics and Selected Statistics for Remaining 59 RSE Vessels Under Action 1, Alternative 3.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	2	2	30	6	63	360	4,000	74	800
Maximum	5	4	80	38	88	1,200	30,000	175	120,000
Mean	3.6	3.9	56.7	19.8	77.0	591.9	16,147	131.8	66,495
St. Dev.	0.6	0.3	10.8	10.0	7.0	153.8	7,647	23.5	26,681

Table 4.1-4. Landings and Revenue Statistics for 55 Remaining RSE Vessels Under Action 1, Alternative 1, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	10,616,452	$11,599,478	$34,760,468	$26,300,313	$76,212	$773,931	$5,589,994	$37,899,791	$79,100,397	N/A	N/A
Average / Vessel / Year	37,916	$41,427	$124,145	$93,930	$272	$2,764	$19,964	$135,356	$282,501	13.6	46.5

Table 4.1-5. Landings and Revenue Statistics for 59 Remaining RSE Vessels Under Action 1, Alternative 3, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	10,451,737	$11,367,754	$31,851,747	$24,834,543	$74,348	$742,067	$5,588,373	$36,202,297	$74,458,832	N/A	N/A
Average / Vessel / Year	39,441	$42,897	$120,195	$93,715	$281	$2,800	$21,088	$136,612	$280,977	14.1	46.8

4.1.3 Social Effects

Alternative 1 (No-action) could result in a permanent 34% reduction in fishery participation in the short-term and a possible 56% reduction in the long-term which, according to public input and that from AP members, would result in insufficient effort to support the rock shrimp fishery infrastructure. Under this alternative the current definition of an inactive endorsement would remain unchanged, and the cap on rock shrimp fishery participation would be permanently reset to a much lower number. Landings taken from the limited access area and outside of the limited access area, if taken within the Council's area of jurisdiction, would continue to be used to meet the annual landing condition. Additionally, other fishery participants may be forced to leave the fishery in subsequent years, further lowering the number participants. This alternative would uphold the current requirement implemented through Shrimp Amendment 5 (SAFMC 2002).

If **Alternative 1** is selected it is likely that the rock shrimp fishery, which already catches far below what is considered MSY, will fail in the coming years to catch an amount that is economically sufficient to maintain certain onshore activities directly and indirectly associated with the fishery. This could mean the loss of certain types of land based services, carrying over into a potential loss of employment both onshore and offshore (crew and captains). While there are those boats that have not landed much rock shrimp over the last few years, their elimination from the fishery could result in the reorganization of fishing effort, making it difficult in the future to catch enough product to sustain the necessary infrastructure for maintenance of a vibrant and healthy fishery.

Preferred Alternative 2, removing the 15,000-pound rock shrimp landing requirement, would make fishery participation possible for all rock shrimp vessels holding a limited access endorsement and effectively nullify the current landing requirement implemented through Shrimp Amendment 5 (SAFMC 2002). As many as 70 vessels that have not or may not meet the requirement in coming years could be affected by the removal of the 15,000-pound landing requirement. An additional 5 vessels could also be affected if this alternative, along with **Alternatives 2 or 3 in Action 3** of this amendment were chosen as preferred alternatives. In contrast to **Alternative 1**, the removal of the landing requirement would allow those that would be eliminated from the fishery (if **Action 1** is accepted) to re-engage and begin to harvest quantities necessary for the maintenance of a productive fishery, both on land and at sea. This may allow captains to retain crew and other support services (such as boat and engine repair facilities, commercial marinas etc.), thus contributing to the economic stability of the fishery and those local services directly and indirectly tied to the fishery. After the devastation associated with Hurricane Katrina (and others which impacted Gulf and South Atlantic communities), communities in Alabama and throughout the northern Gulf sub-region may be more likely to benefit from the selection of **Preferred Alternative 2** because of the opportunity to re-engage and re-establish a presence in the fishery. If this is economically viable, then local economies may benefit from the income generated through employment and revenue associated with the potential shrimp landings. This may also provide greater stability within local communities where unemployment may be high and the cost of living is

rising (especially related to prices associated with gas, food and the decrease in home value). This is especially relevant to places in North Carolina, northern Florida and Alabama. Unemployment and job loss correlate with social-psychological problems. Often the manifestation of this is increased anxiety and depression, alcoholism and drug use, and a tendency to become abusive. The loss of this fishery coupled with current economic factors and stressors associated with an increased cost of living and high rates of default on home loans, may make the situation worse for those individuals and families associated with the success of and involvement in the rock shrimp fishery. In addition, it may place more stress on assistance programs as the inability to re-engage in the fishery may force people to have to increasingly rely on these programs for survival. For these reasons alone, it is understandable why some consider this to be the best selection and having the smallest negative impact of all the management alternatives.

Alternative 3 would reduce the pounds-landed component of the landing requirement from 15,000 pounds to a minimum of 7,500 pounds, while maintaining the current time limit component of the landing requirement. This would effectively change the current definition of an inactive endorsement to one that is attached to a vessel having landed less than 7,500 pounds of rock shrimp in a calendar year. Rock shrimp vessels that failed to land at least 7,500 pounds of rock shrimp within one of four consecutive calendar years would be eliminated from the fishery. Rock shrimp fishermen who can demonstrate fishing effort in the form of recorded landings of 7,500 pounds or more, in at least one of four consecutive years, would be allowed to apply for renewal of their rock shrimp endorsement. It is expected that this alternative would affect less than 14 vessels with active or renewable endorsements and less than 3 vessels with non-renewable endorsements. Landings taken from the limited access area and outside of the limited access area but within the Council's area of jurisdiction would continue to be able to be used to meet this annual landings condition. While **Alternative 3** would create a reduction in the overall size of the fleet, its impact would have one of three results: 1) a minimal impact because of the current lack of participation in the fishery, essentially eliminating participants who are already appear to be out of the fishery; 2) a negative impact because it would reduce the likelihood of these vessels returning to the fishery , thus potentially eliminating future shrimp landings which could support the infrastructure, local employment, and businesses directly and indirectly associated with the fishery; or 3) a positive impact in comparison to **Alternative 1** for it would allow an increased number of fishermen to have met the lowered quota and not be eliminated from the fishery. This would provide an opportunity to continue to exploit the resources and interject monies into local economies. According the fisheries data on rock shrimp there are few communities where the 15,000-pound versus the 7,500-pound landing requirement has any real impact on the socio-cultural composition of the community.

4.1.4 Administrative Effects

Alternative 1 (No-action) would retain the current landing requirement and would not be expected to alter the status quo administrative burdens or costs. In the long-term this alternative could reduce the administrative burden if the fishery ceases to be viable. **Preferred Alternative 2** would remove the landing requirement altogether, which would incur an intermediate increase, relative to the other alternatives, in administrative cost and

burden associated with producing outreach materials for the industry, coordination with NOAA Fisheries Service Permits Office, and changing existing regulations to reflect the removal of the requirement. However, removing the landing requirement would omit the need to track landings in the fishery to determine each shrimper's eligibility. **Alternative 3** would also produce the greatest effect on the administrative environment since it would require a change to current regulations, production of outreach materials for industry participants, as well as coordination with NOAA FISHERIES SERVICE' Permits Office without easing the burden of tracking landings.

4.1.5 Council Conclusions

To be completed after June 2008 Council meeting.

4.2 Action 2 Alternatives

Alternative 1. (No-action). Do not reinstate lost endorsements.

Preferred Alternative 2. Reinstate all endorsements lost due to not meeting the landing requirement of 15,000 pounds of rock shrimp in one of four consecutive calendar years.

Alternative 3. Reinstate endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement in one of four consecutive calendar years, for those vessels that landed at least 7,500 pounds of rock shrimp during the same time period.

4.2.1 Biological Effects

National Environmental Policy Act (NEPA) regulations at 40 CFR §1508.8 (a) define direct effects as those "which are caused by the action and occur at the same time and place." NEPA regulations at 40 CFR §1508.8 (b) defines indirect effects "which are caused by the action and are later in time or farther removed by distance." None of the alternatives in this action would have a direct effect on the biological environment. Indirect effects on the biological environment could occur if the level of fishing effort changes as a result of the alternatives. Higher levels of effort could result in greater fishing mortality and greater bycatch mortality.

Alternative 1 (No-action) would have the same impacts as those associated with **Action 1**, **Alternative 1**. Even if the landing requirement is changed by choosing **Action 1**, **Alternative 2 or 3**, individuals who have already lost their endorsements would not have them reinstated and would not have a chance to re-qualify under the new requirements. Therefore, regardless of the alternative chosen for **Action 1**, the number of participants in the fishery would be limited to those 55 (if expired endorsements are not allowed renewal) or 60 (if expired endorsements are allowed renewal) participants who previously met the landing requirement. This would retain the smallest number of potential participants of all the alternatives, and effort would be expected to be lowest under this alternative. Thus the adverse biological impacts described above would be lowest under this alternative.

Preferred Alternative 2 would allow the greatest number of participants in the rock shrimp fishery and presumably have the greatest adverse impact on targeted and non-

targeted species. The number of potential vessels would not change from the number prior to December 31, 2007. The number of eligible participants would be 125 (if expired endorsements are not allowed renewal) or 155 (if expired endorsements are allowed renewal). Although many of these fishermen are not currently participating in the South Atlantic rock shrimp fishery, changes in biological and economic conditions may cause them to rejoin this fishery in the future.

Alternative 3 would allow reinstatement of 58 (if expired endorsements are not allowed renewal) or 64 (if expired endorsements are allowed renewal) participants in the rock shrimp fishery. The biological impacts would be intermediate to **Alternatives 1 and 2**. However, not all vessels with reinstated endorsements would become active in the rock shrimp fishery.

4.2.2 Economic Effects

This action is directly related to **Action 1** and, to a lesser extent, **Action 3**. Specifically, whereas **Action 1** attempts to deal with the issue of the current 15,000-pound landing requirement in the long-term with respect to whether it should be retained, altered, or removed, **Action 2** is meant to determine what will happen to the endorsements of vessels that did not meet the 15,000 landing requirement at the end of calendar year 2007. The vessels of particular concern in this action are those that initially obtained their endorsements in 2003 as they would have needed to land at least 15,000 pounds of South Atlantic rock shrimp in at least one calendar year between 2004 and 2007, which represents the most recent four year calendar time period.

Before examining how many vessels met the requirement within the 2004 to 2007 time period, certain important insights can be gleaned by reviewing the preliminary analysis that was conducted for this Amendment. That analysis examined how many vessels with endorsements met the current 15,000-pound landing requirement during the 2003-2006 time period. Since the landings data have been edited and updated through 2007 since the time of that analysis, that analysis was updated for two reasons: 1) to determine if the results changed as a result of changes to the 2003-2006 data[28] and 2) to determine if the results differed depending on which four year time period was considered (i.e. 2003-2006 as opposed to 2004-2007). Another purpose of updated the analysis was to determine how taking into account landings being made through non-permitted dealers would impact the results, since such landings cannot be counted towards meeting the landing requirement. The detailed results of the analysis for 2003-2006 are not reproduced in this Amendment since, even if vessels met the requirement during this time, the ultimate issue is whether they meet the requirement in the most current four year calendar time period.

[28] Due to certain results from the preliminary analysis, particularly the large number of vessels without endorsements allegedly harvesting rock shrimp from South Atlantic waters, a thorough review of the data was conducted. As a result of this review, it was determined that many dealers in Florida, particularly from Key West and the west coast of Florida, were confused about the current waterbody coding system being used in the Florida trip ticket program, particularly codes used in the Keys. Thus, considerable editing was made to the data as a result of discussions with dealers and vessel captains. This review process illustrated that there are many weaknesses in relying on trip ticket data to determine the specific waterbodies from which vessels' catches are coming. And though VMS data could potentially help considerably in making such determinations, it is not a foolproof solution either.

And in fact, this statement illustrates a point that cannot be overemphasized. Namely, it is not sufficient that a vessel meet the requirement in one four calendar year time period. Rather, a vessel must meet the requirement in every four calendar year time-period and a new four-year cycle occurs each year. As the results will demonstrate, in a fishery that is experiencing an economic and/or biological downturn, a landings requirement can have dramatic impacts on the fleet size within a relatively short period of time.

To illustrate, according to the updated analysis only considering data from 2003-2006, 82 of the 155 vessels with endorsements were determined to have at least 15,000 pounds of South Atlantic rock shrimp landings in at least one year from 2003 through 2006, or one less vessel than what the original data suggested. Thus, edits to the data did make a minor difference[29]. Of these 82 vessels, only 71 currently have active or renewable endorsements while the other 11 vessels' endorsements have been terminated. These numbers compare to the 80 vessels with active or renewable endorsements and 3 vessels with terminated endorsements that met the requirement in the preliminary analysis. So, updating information on the current status of these endorsements, particularly with the much higher number of endorsements that have been terminated, also has a significant effect on the results.

In addition, this number must be reduced further to only 76 vessels since six of the vessels that met the requirement sold some or all of their landings through a non-permitted dealer. Once these illegal landings are removed from their catch history, they no longer meet the requirement. Thus, taking into account landings from non-permitted as opposed to permitted dealers can have an effect on the results. And though a 7,500-pound alternative was not originally considered in the preliminary analysis, the current data suggests that 89 vessels landed at least 7,500 pounds of South Atlantic rock shrimp in at least one calendar year between 2003 and 2006 and thus would meet this lower requirement. However, again, the number is reduced to 83 vessels since those same six vessels would not even meet this lower requirement once landings through non-permitted dealers are removed from their catch histories.

With respect to the 2004 to 2007 time period, columns 5 and 6 in Table 3.4-6 specifically address whether vessels with currently active or renewable endorsements have or have not yet met the 15,000-pound landing requirement in at least calendar year. According to this information, of the 125 vessels with active or renewable endorsements, only 55 vessels have landed at least 15,000 pounds of South Atlantic rock shrimp in at least one calendar year between 2004 and 2007. This number is significantly smaller than the number of vessels that met the requirement between 2003 and 2006. This result is due to the fact that, between 2003 and 2006, the only year with an extremely low level of rock shrimp landings was 2005. However, between 2004 and 2007, both 2005 and 2007 had extremely low levels of landings. Thus, two of the last three years had very low levels of landings and whether that was due to economic factors, biological factors or both is somewhat irrelevant. The primary point is that the fishery appears to be in the midst of a

[29] This finding should not lead to the conclusion that the edits were minor. They only appear minor in relation to this particular reference point (i.e. the landings requirement). They could be more significant when compared to a difference reference point.

downturn and, given current economic conditions in particular, this is likely to continue at least in the short-term. As such, it will become increasingly more difficult, and far less in at least their short-term best interests, for vessels to meet the current landing requirement. When firms are struggling to survive and it is fairly clear that engaging in a particular productive activity is likely to cause a financial loss, it must be expected that they will forego those activities in order to survive. Therefore, it is also likely that, when these analyses are updated through 2008 and 2009, the number of vessels meeting the current requirement will continue to decline. This is true not only for the vessels that obtained their endorsements in 2004 and later years and have not yet met the requirement, but even for the vessels that me the requirement during the 2004 to 2007 time period. As such, given that the current regulations require that vessels not meeting the landing requirement will not have their endorsements renewed, the number of endorsements and thus the maximum fleet size and potential productive capacity in the fishery could decline dramatically in a just a few years.

However, in the short-term, the only vessels that need to be considered are the 83 vessels with active or renewable endorsements that initially obtained their endorsements in 2003 since vessels that initially obtained their endorsements in 2004 and later still have one year or more to meet the current landing requirement. Of these 83 vessels, only 40 (48%) landed at least 15,000 pounds of South Atlantic rock shrimp in at least one calendar year between 2004 and 2007. Note that two additional vessels would have met the requirement except that some or all of their landings were with a non-permitted dealer and thus those landings cannot be counted towards meeting the requirement. As such, under the current regulations, the endorsements of the other 43 vessels would not be renewed when they come up for renewal either in 2008 or early 2009.

Therefore, in the short-run, under **Alternative 1 (No-action)**, the maximum fleet size would be reduced from 125 vessels to 82 vessels. These vessels will permanently lose their ability to participate in the fishery as well as the market value of their endorsements. At a value of $5,000 per endorsement, the estimated loss to these vessels would be $215,000 with respect to the market value of their endorsements. With respect to losing their ability to participate in the fishery, these vessels have not been very dependent on the South Atlantic rock shrimp fishery during the past five years, as illustrated by the information in Table 4.2-1. Specifically, only about 2% of their total revenues ($4,600) have come from South Atlantic rock shrimp landings on average over the past five years. These vessels are much more dependent on landings from other fisheries, particularly the Gulf shrimp fishery and, to a lesser extent, Northeast non-shrimp fisheries. On the other hand, these vessels are highly productive as demonstrated by the fact that they have averaged more than $301,000 in total revenues per year during the past five years.

These findings can be contrasted with the characteristics of the fleet that would remain if these vessels lost their endorsements, which are provided in Tables 4.2-2 through 4.2-4. In terms of landings and revenues, the remaining vessels are more dependent on revenues from the South Atlantic rock shrimp fishery given that they represent approximately 11% of their total revenues on average. However, in terms of their average total revenues, the remaining vessels have been less productive than the vessels that would lose their

endorsements, as the former's average total revenues have only been around $277,000 per year. With respect to physical and operational characteristics, the 82 remaining vessels, on average, would be almost identical to the current fleet of commercially active vessels with endorsements. Of course, there would be far fewer vessels as well, and this is the ultimate point. Namely, these highly productive vessels would be permanently lost to the rock shrimp fishery if their endorsements are not renewed due to not meeting the current landing requirement. Such a loss is not consistent with the Council's objective of ensuring sufficient effort and production in the fishery to support the fishery's onshore infrastructure.

It is possible that, for the vessels that would remain in the fishery, at least in the short-term, the market value of their endorsements could be increased by the departure of these vessels and their endorsements. That is, with a more restricted supply of endorsements potentially on the market, the endorsements could become more valuable, thus resulting in a transfer of market value from one group of vessels to another in the short-run. However, that result assumes economic conditions remain unchanged. A continued economic decline in the fishery could offset any benefits to the remaining vessels resulting from a restricted supply of endorsements. Outside of the fact that such a decline would decrease the market value of the endorsements, if the onshore infrastructure collapses as a result of insufficient production in the fishery, even the remaining vessels would not benefit from the permanent departure of these 43 vessels from the fishery as they would lack buyers and processors for their product. And thus, in the long-term, they would be worse off as well.

Under **Preferred Alternative 2**, the 43 vessels discussed above would not lose their endorsements and thus would retain their ability to participate in the fishery, at least in the short-term. Whether they retain that ability in the long-term is dependent on the chosen alternative under **Action 1**. But at least in the short-term, these 43 vessels could still harvest South Atlantic rock shrimp and retain their endorsements. As noted above, these endorsements' current market value is estimated at $5,000 per endorsement and thus their total value of $215,000 would remain with these vessels. Based on the past five years of data, the benefit to each of these vessels from the continued harvest of South Atlantic rock shrimp would be approximately $4,600 per year, or 2% of their average total revenues. Moreover, the potential productive capacity associated with these vessels would be retained in the fishery. With respect to the fleet's characteristics under **Preferred Alternative 2**, they would be equivalent to the current fleet of vessels with active or renewable endorsements as described in the affected economic environment section (see Tables 3.4-18 through 3.4-23). It is also possible that as many as five additional vessels would benefit under **Preferred Alternative 2** depending on which alternative the Council selects under **Action 3**. These benefits are discussed in the economic impacts analysis for **Action 3**, but should be considered in conjunction with the benefits discussed here.

With respect to indirect effects on dealers, depending on which alternative the Council selects under **Action 3**, **Preferred Alternative 2** could benefit as many as 17 dealers in the short-run based on the landings histories of the 43 vessels that would lose their

endorsements under **Alternative 1**[30]. Given that only 36 dealers have been actively involved in the fishery during the past five years, a significant percentage of these dealers would likely be better off under this alternative relative to the status quo. However, the benefits under **Preferred Alternative 2** would not likely be evenly distributed across these dealers. Rather, in the short-run, the benefits to approximately one-third of these dealers would likely be trivial, while another third of these dealers would likely only be minimally better off under **Preferred Alternative 2** relative to **Alternative 1**. However, the other third would likely be noticeably better off and at least one and possibly two dealers would be significantly better off under this alternative than under **Alternative 1**[31]. Similarly, these benefits would not be evenly distributed across communities. These differential impacts are discussed in the social impacts section. Given that many dealers would experience noticeable benefits, and several would benefit significantly, it is also likely that indirect benefits would be passed along to other support businesses in those communities as well as rock shrimp processors.

With respect to **Alternative 3**, this alternative would, in effect, temporarily reduce the current landing requirement by 50% for the vessels that initially obtained their endorsements in 2003. Thus, all other things being equal, it would be expected that reducing the requirement this significantly would generate considerable benefits beyond **Alternative 1**, but not as much as under **Preferred Alternative 2**. However, all other things are not equal since, as previously noted, two of the last three years have been two of the worst years on record in terms of landings. This fact explains the results in columns 7 and 8 in Table 3.4-6. Specifically, even with this reduction in the requirement, only 43 of the 83 vessels with active or renewable endorsements initially obtained in 2003 have landed at least 7,500 pounds of South Atlantic rock shrimp in one of the past four calendar years. That is, 40 vessels with active or renewable endorsement would not have their endorsements renewed in the short-term and the maximum number of vessels remaining in the fleet would be 85. The landings and revenues of these 40 vessels between 2003 and 2007 are provided in Table 4.2-5. As can be seen, their characteristics differ little in total or on average from the 43 vessels with active or renewable endorsements that would lose their endorsements under **Alternative 1**. Thus, **Alternative 3** would only allow three more vessels with active or renewable endorsements to remain in the fishery relative to **Alternative 1**. Depending on the alternative selected under **Action 3**, one additional vessel with a terminated endorsement could be allowed back in the fishery under this alternative.

Specifically, the landings and revenues of the four vessels that would be allowed to remain in the fishery under **Alternative 3** relative to **Alternative 1** are provided in Table 4.2-6. For these four vessels, the benefits of remaining in the fishery are not insignificant given that, on average, revenues from South Atlantic rock shrimp landings average

[30] This statement ignores the distinction between permitted and non-permitted dealers since it is possible that dealers without permits could obtain them once they are made aware of the problem.

[31] Specific quantitative estimates of indirect benefits are not provided for two reasons. First, such estimates would be highly speculative given that vessels can switch to other dealers with relative ease. Second, given the small number of dealers involved, using information based on past selling patterns could easily result in the disclosure of confidential data.

$17,400 per year on average, representing more than 5% of their average total revenues. And they would retain the total market value of their endorsements ($20,000) as well. However, the primary point is that, while these benefits are likely significant to these four vessels, in the aggregate, they are not nearly as large as the benefits accruing to the 43 or possibly 48 vessels that would be allowed to retain their endorsements under **Preferred Alternative 2**. Further, the potential productive capacity retained in the fishery is much larger under **Preferred Alternative 2** than under **Alternative 3**. The characteristics of the 85 remaining vessels under **Alternative 3** are provided in Tables 4.2-7 through 4.2-9. As can be seen, there is no discernible difference between this fleet and the fleet that would remain under **Alternative 1**, on average or with respect to their total productive capacity. Thus, the short-term direct benefits of **Alternative 3** relative to **Alternative 1** are minimal in the short-run and far less than those under **Preferred Alternative 2**.

Regarding indirect effects on dealers, based on these four vessels' past landings histories, it is possible that between 6 and 8 dealers could be better off under **Alternative 3** relative to **Alternative 1** in the short-run, again depending in part on the alternative selected under **Action 3**. However, the benefits to most of these dealers would be trivial, with only 2 or 3 dealers experiencing any appreciable benefits under this alternative relative to **Alternative 1**. But even these benefits would likely be minimal at best and certainly not noticeable at the community level. As such, it is also highly unlikely that any indirect benefits would be passed along to rock shrimp processors.

Table 4.2-1. Landings and Revenue Statistics for 43 Vessels Losing Active/Renewable Endorsements under Action 2, Alternative 1, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	624,842	$842,539	$32,697,379	$5,995,048	$3,938	$119,535	$15,451,169	$6,837,587	$55,109,608	N/A	N/A
Average / Vessel / Year	3,414	$4,604	$178,674	$32,760	$22	$653	$84,433	$37,364	$301,145	2.0	19.6

Table 4.2-2. Landings and Revenue Statistics for 82 Remaining RSE Vessels Under Action 2, Alternative 1, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	10,489,940	$11,423,915	$44,040,541	$27,929,662	$77,744	$770,319	$14,077,056	$39,353,577	$98,319,237	N/A	N/A
Average / Vessel / Year	29,633	$32,271	$124,408	$78,897	$220	$2,176	$39,766	$111,168	$277,738	10.6	41.5

Table 4.2-3. Physical Characteristics and Selected Statistics for 82 Remaining RSE Vessels Under Action 2, Alternative 1.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	2	30	5	62	125	3,200	67	800
Maximum	5	4	80	38	91	1,200	35,000	198	125,000
Mean	3.5	3.8	56.9	18.8	77.2	597.5	16,424	132.1	63,468
St. Dev.	0.7	0.5	10.4	10.0	7.5	179.4	8,387	26.4	28,299

Table 4.2-4. Distribution of Additional Physical Characteristics for 82 Remaining RSE Vessels Under Action 2, Alternative 1.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	78.8	Freezer	91.3	Large	98.6
Fiberglass	12.3	Ice	8.7	Small	1.4
Wood	8.9				

Table 4.2-5. Landings and Revenue Statistics for 40 Vessels Losing Active/Renewable Endorsements under Action 2, Alternative 3, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	460,127	$610,815	$29,788,658	$4,529,279	$2,074	$87,671	$15,449,547	$5,140,094	$50,468,043	N/A	N/A
Average / Vessel / Year	2,739	$3,636	$177,313	$26,960	$12	$522	$91,962	$30,596	$300,405	1.7	17.7

Table 4.2-6. Landings and Revenue Statistics for 4 RSE Vessels not Meeting 15K Landing Requirement but Meet 7500 lb Landing Alternative, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	244,140	$348,083	$4,091,885	$1,489,988	$1,865	$31,864	$1,622	$1,838,071	$5,965,307	N/A	N/A
Average / Vessel / Year	12,207	$17,404	$204,594	$74,499	$93	$1,593	$81	$91,904	$298,265	5.4	32.6

Table 4.2-7. Landings and Revenue Statistics for 85 Remaining RSE Vessels Under Action 2, Alternative 3, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	10,654,655	$11,655,639	$46,949,262	$29,395,432	$79,608	$802,183	$14,078,678	$41,051,071	$102,960,802	N/A	N/A
Average / Vessel / Year	28,874	$31,587	$127,234	$79,662	$216	$2,174	$38,154	$111,250	$279,027	10.4	41.5

Table 4.2-8. Physical Characteristics and Selected Statistics for 85 Remaining RSE Vessels Under Action 2, Alternative 3.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Minimum	1	2	30	5	62	125	3,200	67	800
Maximum	5	4	80	38	91	1,200	35,000	198	125,000
Mean	3.6	3.8	57.0	18.8	77.2	593.7	16,312	132.0	63,655
St. Dev.	0.7	0.5	10.3	9.9	7.3	177.3	8,282	26.1	28,016

Table 4.2-9. Distribution of Additional Physical Characteristics for 85 Remaining RSE Vessels Under Action 2, Alternative 3.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	79.7	Freezer	91.7	Large	98.7
Fiberglass	11.8	Ice	8.3	Small	1.3
Wood	8.5				

4.2.3 Social Effects

Under **Alternative 1 (No-action)**, endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement by December 31, 2007, would remain null and void. The endorsements would not be reinstated under this alternative, thus upholding the requirement implemented through Amendment 5 (SAFMC 2002). By not reinstating the lost endorsements, it is possible that fishermen who would like to re-enter the fishery would be unable to do so, thus making it more difficult for the fishery infrastructure to sustain itself due to continued reduced landing totals. As members of the Advisory Panel suggest, the selection of this alternative may place the fishery in jeopardy of collapse, deemed to be especially unnecessary due to the apparent abundance of rock shrimp biomass. There are communities throughout the South Atlantic and the Gulf that would be especially impacted by this sort of selection, similar to those impacted under **Alternative 1 under Action 1**. Bayou LaBatre, Alabama, Seaford, Virginia and Tarpon Springs and Jacksonville, Florida are a few of the communities most likely impacted by the lost endorsements.

Under **Preferred Alternative 2** all endorsements lost due to not meeting the landing requirement by December 31, 2007, would be reinstated. Thus forty three (43) vessels could have their endorsements reinstated. This would allow fishermen to continue to fish or re-enter the fishery, potentially creating increased employment opportunities for captains and crew, and subsequently increase the number of land-based activities associated with the fishery, such as processors, dealers, and truckers (as most of the rock shrimp landed in the South Atlantic is transported to the northern Florida Panhandle for processing). As mentioned earlier, there are communities throughout the South Atlantic and the Gulf that would benefit by the selection of this alternative. Bayou LaBatre, Alabama, Seaford, Virginia and Tarpon Springs and Jacksonville, Florida, are a few of the communities which most likely will benefit by the reinstatement of the endorsements.

Alternative 3 would reinstate endorsements lost due to not meeting the rock shrimp landings requirement of 15,000 pounds in one of four consecutive calendar years for those vessels that landed at least 7,500 pounds of rock shrimp during one of four consecutive calendar years. Under **Alternative 3,** three (3) or possibly four (4) vessels, depending upon which alternative is implemented under **Action 3**, could have their endorsements reinstated. This would eliminate rock shrimp endorsements linked to vessels that landed less than 7,500 pounds within four consecutive calendar years. This alternative would benefit those that caught a smaller amount, although the numbers of those fishermen who would qualify still reflects a serious problem for the fishery. The data indicate that many communities experienced an overall decline in catch since 2003, a reflection of the change in the fishery rather than the need for a change in policy. The 7,500-pound criteria means that for certain fishermen that have moved away there is little chance of re-entry into the fishery, regardless if they perceive it to be a fishery of the future. The extent to which there is a difference between **Alternative 2** and **Alternative 3** is difficult to assess at this time as there is a real question of whether or not fishermen are able and wish to return to the rock shrimp fishery.

4.2.4 Administrative Effects

Alternative 1 (No-action) under this action would not reinstate any endorsements issued in 2003 that were subsequently lost due to not meeting the landing requirement by December 31, 2007. This alternative would maintain status quo administrative responsibilities. Under this alternative there would be no increase or decrease in administrative burden or cost. **Alternative 2** would incur a significant administrative burden in the form of increased costs and effort associated with searching the permit database for endorsements still within the active or renewable periods but are associated with vessels that did not meet the landing requirement in order to have their endorsements reinstated. After those endorsements are identified, the paperwork associated with reinstating the endorsements must be processed, and outreach materials in the form of letters and Fishery Bulletins informing industry participants of the Council's decision would be created. **Alternative 3** would reinstate endorsements lost due to not meeting the landing requirement for those who were issued endorsements in 2003 and landed at least 7,500 pounds of rock shrimp during one of four consecutive calendar years. Administrative effects of **Alternative 3** would be largely the same in degree and nature as **Alternative 2**, with the exception of a slightly decreased number of participants who would have their endorsements reinstated.

4.2.5 Council Conclusions

To be completed after June 2008 Council meeting.

4.3 Action 3 Alternatives

Alternative 1 (No-action). Do not reinstate lost endorsements.

Preferred Alternative 2. Reinstate all endorsements for those who renewed their permit in the year in which they failed to renew their endorsement. Require rock shrimpers eligible to have their endorsements reinstated to apply for a limited access endorsement within one year after the effective date of the final rule of for this amendment. Note: Eligible individuals need to have had an endorsement at one time.

Alternative 3. Extend the time allowed to renew rock shrimp endorsements to one calendar year after the effective date for this action

4.3.1 Biological Effects

National Environmental Policy Act (NEPA) regulations at 40 CFR §1508.8 (a) define direct effects as those "which are caused by the action and occur at the same time and place." NEPA regulations at 40 CFR §1508.8 (b) defines indirect effects "which are caused by the action and are later in time or farther removed by distance." None of the alternatives in this action would have a direct effect on the biological environment. Indirect effects on the biological environment could occur if the level of fishing effort changes as a result of the alternatives. Higher levels of effort could result in greater fishing mortality and greater bycatch mortality.

Alternative 1 (No-action) would reduce participation in the fishery to a maximum of 125 if all endorsements lost due to landings requirements are reinstated (**Action 2**) and all

renewable endorsements are renewed. This is the smallest number of potential participants of all the alternatives. Effort would be expected to be lowest under this alternative, and thus adverse biological impacts would be lowest.

Of the 30 non-renewable endorsement holders, five (5) renewed their open access permit in the year in which they failed to renew their limited access endorsement. Therefore, **Preferred Alternative 2** could allow a maximum of 130 endorsement holders to participate in the fishery, depending on the alternative chosen for **Action 2**. However, none of the five to be reinstated under this alternative would meet the 15,000-pound requirement and only one would meet the 7,500-pound requirement; therefore, this alternative may have no impacts depending on alternatives chosen for **Action 2**.

Alternative 3 could allow all 155 original endorsement holders to participate in the fishery, depending on the alternative chosen for **Action 2**. However, if the 15,000-pound requirement is retained (**Action 1, Alternative 1**), 95 vessels (70 with currently active or renewable endorsements and 25 with currently terminated endorsements) would not meet the requirement, leaving only 60 potential vessels. This alternative would have the greatest potential for biological impacts because it would allow the greatest number of fishermen to obtain endorsements. However, not all vessels with reinstated endorsements would choose to become active in the rock shrimp fishery.

4.3.2 Economic Effects

This particular action is intended to deal with the same basic issues as **Action 4**, except that **Action 4** is intended to propose a potential long-term solution to these issues whereas **Action 3** is intended to correct certain unintended effects in the short-term. According to various reports, some industry participants have been confused by the current federal permit structure associated with the South Atlantic rock shrimp fishery. Specifically, all participants in the federal South Atlantic rock shrimp fishery must possess the open access permit. Thus, a vessel harvesting rock shrimp from the EEZ off of North and South Carolina must possess this permit. However, those vessels operating in the EEZ component of the fishery off of east Florida and Georgia must also possess the limited access endorsement. In effect, the endorsement is "attached" to the permit at the present time, and thus the endorsement cannot be possessed without the permit. In Amendment 5 (SAFMC 2002), which created the limited access program for the EEZ fishery off of east Florida and Georgia, the Council discussed implementation of a limited access "permit" rather than an endorsement. However, the regulations implemented the permit/endorsement structure noted above. As a result, this has apparently created confusion for some participants in the limited access fishery as they may have been under the impression that only one permit was needed to legally operate in the fishery.

Another potential source of this confusion is the format of the federal permit application form. Specifically, check boxes for open access permits and limited access permits/endorsements are located in separate sections of the form and thus are not directly "linked" on the form. Note that the check boxes for open access permits are listed first on the form. As such, it is possible that permit applicants needing both the limited access endorsement and the open access permit may see the box for the open

access rock shrimp permit first and think this is the only box they need to check in order to obtain the permit/endorsement they believe they need to legally operate in the fishery. But in fact, they need to check that box but also the box further down on the form for the limited access rock shrimp endorsement.

Current evidence suggests that, of the 30 endorsements that have been terminated, at least five vessel owners may have made this error as they possessed an open access permit on their vessel and, at one time, possessed an active rock shrimp endorsement. When they renewed their open access permit, and did so within the one year period during which they could and should have renewed their limited access endorsement, they failed to do so. And since they did not renew their endorsement within one year after the endorsement expired, the endorsement has since been terminated. Therefore, if the Council selects **Alternative 1 (No-action)**, these vessels will have permanently lost their limited access endorsements and these endorsements would therefore be retired from the fishery. In effect, because of a paperwork error, these vessels have permanently lost their ability to operate in the limited access portion of the fishery. Further, they have lost the market value of these endorsements. Current information suggests that the current market value of these endorsements is approximately $5,000. Not taking into account the Council's choices under **Actions 1 and 2**, the current cap on the number of limited access endorsements would remain at 125.

Table 4.3-1 indicates that, with respect to their physical and operational characteristics, these five vessels are very comparable to the average commercially active vessel with an active or renewable endorsement. Further, all five are large vessels with on-board freezing capacity, and three are steel-hulled. However, Table 4.3-2 indicates that, over the 2003 to 2007 time period, these vessels' participation in the South Atlantic rock shrimp fishery has been very limited. Further, this information shows that these vessels have been highly dependent on revenues from Northeast non-shrimp fisheries, particularly the Atlantic sea scallop fishery. Thus, in the short-run, although **Preferred Alternative 2** would reinstate these five vessels' endorsements, thereby increasing the maximum number of endorsements in the fishery to 130, it is unlikely to increase production in the rock shrimp fishery to any great extent, particularly given current economic conditions in the rock and penaeid shrimp fisheries as opposed to the scallop fishery. However, these vessels would also regain the current market value of their endorsements. At $5,000 per endorsement, vessels would regain a total of $25,000 with respect to the market value of these endorsements. Therefore, the direct, short-term economic benefits are minimal under **Preferred Alternative 2**. However, it should be noted that these are highly productive vessels which have averaged over $390,000 per year in total revenues over the past five years. Should economic conditions in the future, this productive capacity could return to the rock shrimp fishery, which would lead to more significant economic benefits in the long-term under **Preferred Alternative 2**. An improvement in economic conditions would also increase the market value of the reinstated endorsements and thus the long-term benefits as well, though a continued decline in the fishery's economic condition would lead to the opposite.

With respect to **Alternative 3**, the economic impacts of this alternative are less certain and could be equivalent to the impacts under **Alternative 1**, **Preferred Alternative 2**, or somewhere in between. The reason for this uncertainty is that it depends on the actions of various entities. First, these vessels would have to be notified about this opportunity by someone, presumably the Southeast Region's Permits Office. Further, these vessels' owners would need to then submit an application to renew their currently terminated endorsement. When and if this happens cannot be predicted with any degree of accuracy and thus the outcome under **Alternative 3** may not be known for nearly two years. Presumably, if these vessel owners place any value on their endorsements and their ability to participate in the rock shrimp fishery in the future, they would take advantage of this opportunity as soon as possible. However, since the desires of these vessels' owners, current or future, cannot be predicted or known, it is not possible to predict the benefits of **Alternative 3** with a high degree of certainty.

It must also be emphasized that the actual impacts under **Preferred Alternative 2** depend on the alternative the Council selects under **Action 2** in the short-run, and possibly the alternative the Council selects under **Action 1** in the long-run, since four of these vessels have not harvested at least 7,500 pounds of South Atlantic rock shrimp in one of the last four calendar years and none of them have harvested at least 15,000 pounds of South Atlantic rock shrimp in at least one of the last four calendar years. As such, even if these five vessels' endorsements were reinstated under Action 3, four or all five could immediately lose their endorsements as a result of not meeting the selected landings requirement. Therefore, in order for this action to have the intended effects, the Council must select alternatives under **Actions 1 and 2** that would work in conjunction with rather than against the objectives they hope to achieve under this action.

It is worth pointing out that, of the 30 vessels with terminated endorsements, the information in Table 3.4-6 indicates that five of these vessels have met the current 15,000-pound landing requirement and six vessels would have met the 7,500-pound landing requirement under **Alternative 3** for **Action 2**. At first glance, it may appear that reinstating these vessels' endorsements would be a preferable means of achieving the Council's objectives relative to the alternatives being considered under **Action 3**. However, a further review of the data indicates that none of the vessels that met the current landing requirement were commercially active in any fishery during 2007 and three of those vessels are no longer documented by the Coast Guard. It is possible that these vessels will never participate in commercial fishing again. Those same five vessels are five of the six vessels that would meet the 7,500-pound landing alternative. The other vessel that would meet the 7,500-pound landing alternative is one the five vessels whose endorsement would be reinstated under **Preferred Alternative 2** under **Action 3**. With respect to meeting the Council's objective of allowing sufficient productive capacity in the fishery in order to support the onshore infrastructure, it would seem to make more sense to reinstate the endorsements of vessels that are highly productive and still commercially fishing as opposed to vessels that may have completely retired from commercial fishing.

Table 4.3-1. Physical Characteristics and Selected Statistics for 5 Terminated RSEs Potentially Reinstated under Action 3, Alternative 2.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Number of vessels	2	2	2	5	5	5	2	5	5
Minimum	3	4	65	6	66	400	7,000	101	40,000
Maximum	4	4	75	30	82	720	28,000	190	100,000
Total	7	8	140	108	379	2,795	35,000	734	320,000
Mean	3.5	4.0	70.0	21.6	75.9	559.0	17,500	146.8	64,000
St. Dev.	0.7	0.0	7.1	9.4	6.4	139.5	14,849	39.9	25,100

Table 4.3-2. Landings and Revenue Statistics for 5 Terminated RSEs Reinstated under Action 3, Alternative 2, 2003-2007 Combined.

Statistic	SRS landings	SRS Revenue	Gulf shrimp Revenue	SA penaeid shrimp Revenue	Gulf non-shrimp Revenue	SA non-shrimp Revenue	Northeast non-shrimp Revenue	Total SA Shrimp Revenue	Total Revenue	% of Revenue from SRS	% of Revenue from SA shrimp
Total	79,425	$116,359	$1,183,164	$647,500	$0	$7,496	$5,457,451	$763,859	$7,411,970	N/A	N/A
Average / Vessel / Year	4,180	$6,124	$62,272	$34,079	$0	$395	$287,234	$40,203	$390,104	1.7	10.0

4.3.3 Social Effects

Under **Alternative 1 (No-action)** current regulations would be upheld and all endorsement lost due to a failure to renew in a timely manner, improperly filling out the renewal form, or misunderstanding the renewal process would not be reinstated. Five (5) vessels could lose their rock shrimp endorsements. It has been suggested that the loss of the five vessels, though spread out throughout the region, could negatively impact local fisheries by eliminating the potential for supplying catch relating to the apparent demand for product and in some areas the need for employment opportunities for captains and crew. However, there is no way to predict how the inclusion of these five boats in the overall relevance of the fishery itself is likely to benefit various communities or socio-economic networks.

Under **Preferred Alternative 2** all endorsements lost due to the misunderstanding mentioned above would be reinstated if participants renewed their permit in the year in which they failed to renew their endorsement *and* they did at one time hold an endorsement. Furthermore, fishery participants eligible to have their endorsements reinstated would be required to apply for a limited access endorsement within one year after the effective date of the final rule. This would benefit local fishermen as it would give them the opportunity to re-engage in the fishery and thus support local dealers and processors, as well as captains and crew. The numbers of those that can be renewed only reflects a small portion of a community's fleet participation, and apparently reflects a desire to give fishermen a "break" and allow them to continue to fish and assist in the production of a healthy local fishery.

Alternative 3 would give those fishermen who failed to renew their endorsements in a timely manner, improperly filled out the renewal form, or misunderstood the renewal process another chance to submit a complete application form to the Southeast Regional Administrator. This would provide those vessel owners who were not able to apply or reapply for their endorsements ample time to do so following the correct process. It is expected that **Alternative 3** would allow as many as five (5) vessel owners the option to gain back their fishery participant status in the limited entry program if they wish to do so by submitting a complete application to the Southeast Regional Administrator. Again, this would allow fishermen to re-engage in the fishery and all of the positive attributes of the this will follow, such as increased employment, etc.

4.3.4 Administrative Effects

Under **Alternative 1 (No-action)** current rock shrimp endorsement renewal regulations would be upheld and all endorsements lost due to a failure to renew in a timely manner, improperly filling out the renewal form, or misunderstanding the renewal process would not be reinstated. No increase in administrative burden or cost would be expected as a result of choosing **Alternative 1**.

Alternative 2 would reinstate all endorsements for those who renewed their open access permit in the year in which they failed to renew their limited access endorsement.

Furthermore, it would require that rock shrimpers who are eligible to have their endorsements reinstated, apply for a new limited access endorsement within one year after the effective date of the final rule for this amendment. **Alternative 2** would be the most administratively burdensome option under **Action 3**. Adverse impacts would be associated with an increase in time and effort needed to search the permit database for those permit holders who renewed their open access permit, but in the same year did not renew their endorsement, and verify that they at one time did actually hold a valid endorsement for the fishery. Additionally, due to the requirement that each vessel associated with an endorsement that is eligible to be reinstated must also apply for a limited access endorsement within one year after the effective date of the final rule associated with this amendment, NOAA Fisheries Service Permit Office with the Office of Sustainable Fisheries will be responsible for developing and sending out a reminder letter informing potential applicants of the application due date, processing the required applications for endorsements, and sending out the new endorsement. ***Note:*** if **Preferred Alternative 2** under **Action 5** is chosen, the application would not be for a limited access endorsement but rather the newly named "Rock Shrimp Permit (South Atlantic EEZ)." Other administrative tasks associated with this Alternative may include the production of outreach materials regarding the Council's decision, coordination with NOAA Fisheries Service Office of Law Enforcement, and the creation of an updated application form should the **Preferred Alternative** under **Action 5** be chosen.

Alternative 3 would incur similar administrative affects as **Alternative 2**, but since it does not target the select group of vessels that **Alternative 2** does, it would most likely require a higher number of endorsement applications to be processed by NOAA FISHERIES SERVICE Permits Office personnel.

4.3.5 Council Conclusions

To be completed after June 2008 Council meeting.

4.4 Action 4 Alternatives

Alternative 1. (No-action). Continue to require an "open access permit" to fish for rock shrimp in the EEZ off the Carolinas and a "limited access endorsement" to fish for rock shrimp in the EEZ off Georgia and Florida.

Alternative 2. Create two types of permits for the rock shrimp fishery and specify that a vessel can only have one permit:

A. Rock Shrimp Permit (South Atlantic EEZ) – would allow fishing throughout the South Atlantic EEZ

B. Rock Shrimp Permit (Carolinas Zone) – would allow fishing in the EEZ off North and South Carolina

4.4.1 Biological Effects

The alternatives in this action are purely administrative and would have no impacts on the biological environment.

4.4.2 Economic Effects

The direct economic effects of this action would be minimal, though positive in nature. According to various reports, some industry participants have been confused by the current federal permit structure associated with the rock shrimp fishery. Specifically, all participants in the South Atlantic rock shrimp fishery must possess the open access permit. Thus, a vessel harvesting rock shrimp from the EEZ off of North and South Carolina must possess this permit. However, those vessels operating in the EEZ component of the fishery off of east Florida and Georgia must also possess the limited access endorsement. In effect, the endorsement is "attached" to the permit at the present time, and thus the endorsement cannot be possessed without the permit. In Amendment 5 (SAFMC 2002), which created the limited access program for the EEZ fishery off of east Florida and Georgia, the Council discussed implementation of a limited access "permit" rather than an endorsement. However, the regulations implemented the permit/endorsement structure noted above. As a result, this has apparently created confusion for some participants in the limited access fishery as they may have been under the impression that only one permit was needed to legally operate in the fishery.

Another potential source of this confusion is the format of the federal permit application form. Specifically, check boxes for open access permits and limited access permits/endorsements are located in separate sections of the form and thus are not directly "linked" on the form. Note that the check boxes for open access permits are listed first on the form. As such, it is possible that permit applicants needing the limited access endorsement in addition to the open access permit may see the box for the open access rock shrimp permit first and think this is the only box they need to check in order to obtain the permit/endorsement they believe is needed legally operate in the fishery. But in fact, they need to check that box but also the box further down on the form for the limited access rock shrimp endorsement.

As discussed in the impacts of **Action 3**, current evidence suggests that at least five vessel owners may have made this error as they possessed an open access permit on their vessel and, at one time, possessed an active rock shrimp endorsement. When they renewed their open access permit, they apparently failed to renew their endorsement at the same time. And since they did not renew their endorsement within one year after the endorsement expired, the endorsement has since been terminated. As a result, at this time, these paperwork errors have resulted in a permanent reduction in the maximum size of the fleet and thus potential productive capacity in the fishery, contrary to the Council's intentions and desires. In the long-term, such restrictions could also restrict actual participation and thus production in the fishery. The Council does not want to see this situation replicated currently or in the future given the potential for such impacts.

In addition, it is also the case that permit applicants must pay $10 for each additional permit or endorsement for which they apply beyond the first, which costs $25. So, for example, the total application fee for a vessel that currently applies for both the open access rock shrimp permit and the limited access rock shrimp endorsement would be $35.

Thus, by retaining the status quo under **Alternative 1 (No-action)**, confusion over the rock shrimp permit structure would likely continue. As a result, unintended adverse effects on potential and, in the long-term, actual productive capacity and production could occur as a result of endorsements being terminated because of vessel owners' confusion over the permit application structure and process. Furthermore, each owner of a vessel with an endorsement would continue to pay $35 each year for the combination of the open access permit and limited access endorsement.

Contrariwise, it is the Council's hope that **Preferred Alternative 2** will institute a simplified permit structure and ameliorate confusion with the current permit structure and application process. Under this alternative, a vessel would only need one permit or the other rather than both. That is, vessels only eligible to operate in the EEZ off of North and South Carolina would still only need the open access permit, and thus these vessels would not be affected by this action. However, vessels currently possessing a limited access endorsement would only have to apply for one permit, the limited access permit, in the future. This would simplify the application process for these vessel owners and hopefully avoid any unintended short or long-term reductions in the fleet size and thus productive capacity. Furthermore, a minimal savings of $10 per year would accrue to each endorsement holder. Given that the maximum number of endorsements expected to exist in the fishery after this Amendment is 130, then the maximum annual savings to the fishery as a whole would be $1,250. Of course, these savings would continue to accrue each year in the future as long as applicants are required to pay application fees for their permits.

4.4.3 Social Effects

Alternative 1 (No-action) would maintain the current regulations where an "open access permit" allows fishing for rock shrimp in the EEZ off the Carolinas and a "limited access endorsement" allows fishing for rock shrimp in the EEZ off Georgia and Florida. In order to obtain a limited access endorsement, one must first obtain the open access permit. It appears that some fishermen, when filling out the application form intending to renew a limited access endorsement, did not understand that in order to renew their endorsement along with their permit they must mark the boxes for both the permit and the endorsement. Therefore, some fishery participants submitted renewal applications for only the permit, when they intended to also renew the endorsement. This alternative has the potential to allow undue confusion to persist among fishermen regarding this issue. Selection of the **Alternative 1**would not clarify the issue associated with the permit and endorsement application protocol. This would mean that those who were confused by the process would not be able to continue fishing and potentially reduce the amount necessary for supporting the fishery. This may impact the Jacksonville area more than others.

Alternative 2 would address persistent confusion stemming from the use of the terms "limited" vs. "open" from being incorrectly interpreted in a spatial context. As such "limited access" would indicate a smaller fishing area whereas "open access" would refer to the range of the species in the South Atlantic EEZ. By taking away the terms "limited" and "open," the previously described confusion may be minimized. The two permits

would be issued independent of each other; in other words, shrimpers would not need the "Rock Shrimp Permit (Carolinas Zone)" in order to obtain the "Rock Shrimp Permit (South Atlantic EEZ)." Each vessel would either be linked to one or the other, but not both. It is unclear whether there would be any impact on the fishery or the associated communities by selecting either alternative. Simple discussion amongst key fishery participants should allow for dissemination and clarification of information. Education is key to clarification and if fishermen are to understand the necessary permit that they need then they should engage in discussion about the appropriate manner in which to fill out forms related to their specific interests. This might be most readily apparent in the Carolinas as opposed to Florida.

4.4.4 Administrative Effects

Alternative 1 (No-action) would not change the names given to South Atlantic rock shrimp fishing authorization instruments. This alternative would create no additional administrative burden or cost, however it may perpetuate fishery participant confusion regarding the current nomenclature.

Alternative 2 would change the current name of the open access rock shrimp permit to "Rock Shrimp Permit (Carolinas Zone)," and the limited access endorsement name would be change to "Rock Shrimp Permit (South Atlantic EEZ). This alternative would produce a significant impact on the administrative environment. First NOAA Fisheries Service Permits Office Permits would need to determine who possesses an active (valid and not-expired) endorsement or permit on a predetermined future date following publication of the final rule implementing this amendment (Implementation Date). Only participants who meet those criteria would be issued replacement permits through a one-time mass mailing. Permit holders would receive one or the other type of permit, not both. Therefore, which type of permit each person would be issued would also need to be determined. Participants eligible for endorsement reinstatement under **Action 3** would be sent a certified letter drafted and mailed by the Permits Office and the Office of Sustainable Fisheries informing those participants, among other things, they are eligible to apply for reinstatement of their endorsement in the form of a "Rock Shrimp Permit (South Atlantic EEZ)."

The rock shrimp permit application form would need to be changed by the Permits Office to reflect the new permit names. **Alternative 2** would also require a substantial revision to current South Atlantic rock shrimp regulations to include a restriction on any permit or endorsement transfers immediately before the Implementation Date. Additionally, Regulations would state applications not completed by the effective date of the final rule, or applications to transfer an endorsement that are initially submitted after the effective date of the final rule will not be processed. The regulations would also include language explaining the old limited access endorsement and open access permit will no longer be valid as of the Implementation Date, regardless of the expiration dates on the permits themselves. This will require a considerable level of coordination with the Office of Sustainable Fisheries, the Permits Office and the Office of Law Enforcement. The old endorsement and permit would be taken out of the permit database, and would no longer appear on the public website listing current permits. The Office of Sustainable Fisheries

would be responsible for the development and dissemination of outreach materials such as letters, web pages, and fishery bulletins informing fishery participants of the changes under this proposed action.

4.4.5 Council Conclusions

To be completed after June 2008 Council meeting.

4.5 Action 5 Alternatives

Alternative 1 (No-action). Do not require collection of economic data from any shrimp permit holders.

Alternative 2. Require all South Atlantic shrimp permit holders to provide economic data.

Preferred Alternative 3. Require all South Atlantic shrimp permit holders to provide economic data if selected to do so.

4.5.1 Biological Effects

The alternatives in this action are purely administrative and would have no impacts on the biological environment.

4.5.2 Economic Effects

As previously noted, very limited historical information on vessel costs and profitability is available for the South Atlantic fishery as a whole or certain components thereof, such as the rock shrimp fishery. The only relatively recent information available on costs and profitability is for shrimp trawlers in South Carolina. Given the reduced importance of the South Carolina fleet within the overall fishery and the fact that very few vessels form South Carolina participate in the limited access rock shrimp fishery, those data is not only outdated but undoubtedly not representative of the vessels potentially impacted by the actions in this particular Amendment. NOAA Fisheries Service attempted to voluntarily collect information on South Atlantic shrimp vessels' costs and net revenues in 2005. For a variety of reasons, this project was only partially successful in its attempts to collect the desired data (i.e. the achieved sample size was considerably smaller than the desired sample size). It was determined that the collected information was likely not representative of the fishery as a whole or specifically of vessels participating in the federal component of the fishery. Time and limited resources were used inefficiently as a result, not only the agency's, but industry participants that did cooperate with the survey.

Given the lack of such data, it is difficult for the Council to conduct regulatory impacts analyses that meet the requirements of MSA, NEPA, the Regulatory Flexibility Act, E.O. 12866, and other federal statutes. More specifically, the recently revised version of MSA explicitly states that all FMPs must indicate all economic information necessary to meet the requirements of the Act. Furthermore, the lack of such data compromises the accuracy of scientific research and regulatory impact analyses and, as such, can lead to the provision of potentially misleading information and guidance which can in turn lead to less than optimal fishery management decisions by the Council and NOAA Fisheries

Service. Such decisions can in turn lead to, not only unforeseen, nut unintended adverse economic and social impacts on fishery participants.

With respect to economic effects, industry participants would experience no direct effects under **Alternative 1 (No-action)**. However, the problems noted above would continue to persist, which is contrary to the Council's objectives and current federal mandates. Furthermore, indirect adverse impacts could be imposed on industry participants as a result of inaccurate scientific research and policy guidance. Under **Alternative 2** or **Preferred Alternative 3**, no direct cash expense would be imposed on industry participants. However, there is an opportunity cost associated with any time burden created by additional reporting requirements. Typically, the opportunity cost is approximated using the average wage or salary of the affected persons. Since vessel owners/captains would be responsible for submitting the economic survey forms, it would be most appropriate to use the average wage of first line supervisors/managers in the fishing, forestry, and farming industries. As of May 2006, which is the most currently available information, the Bureau of Labor Statistics reported that the mean wage of persons in this occupation group was $19.33 per hour[32]. Given that the time burden associated with the annual economic survey has been estimated at approximately 45 minutes, the annual opportunity cost per vessel would be approximately $14.50.

As previously noted, there are only 694 unique vessels that hold one or more of the three current types of South Atlantic shrimp permits/endorsements. Furthermore, this data collection program will be combined with the one currently in place for vessels holding Gulf shrimp moratorium permits (i.e. it will be a joint data collection program). The program must be set up this way in order to avoid the potential for duplicating burden on vessels that hold both Gulf shrimp moratorium permits and one or more South Atlantic shrimp permits/endorsements. The likelihood of such duplication is significant since, when both groups of vessels were compared, it was determined that 293 vessels with South Atlantic shrimp permits/endorsements also have Gulf shrimp moratorium permits. Therefore, in truth, the potential implementation of this new data collection requirement under either **Alternative 2** or **Preferred Alternative 3** would only impact approximately 400 additional vessels at most that are unique to the federal South Atlantic shrimp fisheries.

Given this estimate of approximately 400 additional vessels falling under this data collection program, the annual opportunity cost to the fleet would be approximately $5,800 if all vessels were required to complete the survey each year (i.e. a census) as would be the case under **Alternative 2**. However, if only a sample of vessels are required to submit the form each year, as is the case under **Preferred Alternative 3**, then the total cost would only be a proportion of that amount, depending on the chosen sampling rate (i.e. if the sampling rate was 30%, then the annual opportunity cost would be $1,740). From a scientific perspective, a census is not necessary to generate statistically reliable results. As long as the sample is random, it should be sufficient to generate statistically reliable and representative results. By itself, and regardless of

[32] http://www.bls.gov/news.release/ocwage.t02.htm

whether all vessels or only a sample of vessels are required to complete the survey each year, the opportunity costs associated with the program are probably trivial compared to these vessels' other direct and indirect costs. Furthermore, it is highly likely that the indirect benefits of **Preferred Alternative 3** would outweigh the opportunity costs imposed on vessels, particularly if only a sample are required to respond each year.

4.5.3 Social Effects

Overall, there is limited impact from this Action on any community or state where fishermen target shrimp. There are those states where increased numbers of permitted fishermen exist, such as Florida, but there is a real question as to the socio-cultural impact of not filling out the shrimp information requested in relation to how it might impact the fishery or the community at large.

Alternative 1 (No-action) would not implement a mandatory data collection program and the current lack of cost and profitability data would continue to persist for the South Atlantic shrimp fisheries. Ultimately there would be no impact on a community except for the fact that policy decisions may derive from debate about data interpretations which might overlook the utility of this perspective in the policy process.

Alternative 2 would amend the Shrimp FMP to include a requirement that all holders of South Atlantic rock shrimp permits and penaeid shrimp permits provide economic data on an annual basis. Such data collection would alleviate critical data gaps for future analyses and would enhance NOAA Fisheries Service's compliance with Executive Order 12866, which requires an assessment of the net economic benefits associated with all federal regulations. The data collected would be expected to enhance the preparation of Regulatory Flexibility Act documentation, which requires an assessment of the impacts of federal regulations on the profitability of small entities. This alternative would affect all South Atlantic rock shrimp and penaeid shrimp permit holders, 400 vessels that are unique to the federal South Atlantic shrimp fisheries, and those effects would be in the form of an annual time and paperwork burden. This alternative would also have Paperwork Reduction Act (PRA) implications, and would therefore require the filling and processing of appropriate paperwork to comply with the Act's requirements. **Alternative 2** would minimally impact fishermen by forcing them to take the time to fill out the forms and if time is money this would be an unfunded task/requirement performed by the fishermen. This may anger fishermen and make them skeptical of why NOAA Fisheries is interested in this information.

Preferred Alternative 3 would require the collection of economic data from a random sample of rock shrimp and penaeid shrimp fishery participants on an annual basis. This alternative would affect an annual random sample of South Atlantic rock shrimp and penaeid shrimp permit holders, and those effects would be in the form of an annual time and paperwork burden for those chosen to participate. The random sample would be taken from a combined group of Gulf moratorium shrimp permit holders, South Atlantic rock shrimp permit holders, and South Atlantic penaeid shrimp permit holders, 400 of which are unique to the federal South Atlantic shrimp fisheries. **Alternative 3** would also require the creation and maintenance of a data collection and management system

for data gathered from the South Atlantic shrimp fisheries, which would significantly affect the administrative environment. This alternative would have Paperwork Reduction Act implications, and would therefore require the filling and processing of appropriate paperwork to comply with the Act's requirements. Selection of **Alternative 3** would have a lesser impact than **Alternative 2** as it would only impose on those selected. The latter would likely experience the same impacts mentioned under **Alternative 2**.

4.5.4 Administrative Effects

Alternative 1 (No-action) would produce no administrative affects in the short-term. However, if accurate economic data for the fishery are not collected on a consistent basis it is likely that either over or under regulation of the fishery could occur, which would be detrimental to the fishery and the resource, and burdensome on the administrative environment if corrective measures have to be taken on an ongoing basis. Any collection of information under **Alternatives 2 or 3** is expected to produce a significant administrative effect since the South Atlantic shrimp fisheries currently have no such data collection or management system in place. In the short term, collecting economic data will require the development of a standardized data collection instrument and a random sampling method, the development of a data management system, funding for such a system, as well as the production of outreach materials to industry participants regarding the new data collection requirement. In the long-term, staff to analyze the collected data and generate reports on a continuing basis would need to be secured and funded. Personnel and staff time will also be required for the annual data collection effort and management/storage of data gathered. The overall administrative burden created by **Alternative 3** would be the least of all three alternatives under **Action 4** because the volume of data collected and managed would be less than that of **Alternative 2**, but would likely be sufficient to effectively inform future fishery management decisions.

4.5.5 Council Conclusions

To be completed after June 2008 Council meeting.

4.6 Cumulative Effects

As directed by the National Environmental Policy Act (NEPA), federal agencies are mandated to assess not only the indirect and direct impacts, but the cumulative impacts of proposed actions as well. NEPA defines a cumulative impact as *"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time"* (40 C.F.R. 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect is when the combined effects are greater than the sum of the individual effects.

The Council on Environmental Quality (CEQ) offers guidance on conducting a Cumulative Effects Analysis (CEA) in a report titled "Considering Cumulative Effects under the National Environmental Policy Act." The report outlines 11 items for consideration in drafting a CEA for a proposed action.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.
2. Establish the geographic scope of the analysis.
3. Establish the timeframe for the analysis.
4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.
5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their relation to regulatory thresholds.
6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.
7. Define a baseline condition for the resources, ecosystems, and human communities.
8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.
9. Determine the magnitude and significance of cumulative effects.
10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
11. Monitor the cumulative effects of the selected alternative and adapt management.

Note: Action 5 of this amendment is the only action concerning the penaeid shrimp fishery, and is purely administrative in nature. Therefore, no cumulative effects on the penaeid shrimp stock or associated biophysical environment are expected as a result of this action. For this reason, the focus of the biological section of this CEA is on the South Atlantic rock shrimp biophysical environment.

4.6.1 Biological

SCOPING FOR CUMULATIVE EFFECTS

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The CEQ cumulative effects guidance states that this step is done through three activities. The three activities and the location in the document are as follows:

I. The direct and indirect effects of the proposed actions (**Section 4.0**);
II. Which resources, ecosystems, and human communities are affected (**Section 3.0**). The species affected by the actions in this amendment is rock shrimp
III. Which effects are important from a cumulative effects perspective (**information contained in this CEA**).

2. Establish the geographic scope of the analysis.

The immediate impact area would be the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West. Specifically, offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters (59-597 ft) in depth with highest concentrations of rock shrimp occurring between

35 and 55 meters (115-180 ft). This applies for all areas from North Carolina through the Florida Keys. EFH includes the shelf current systems near Cape Canaveral, Florida, which provide major transport mechanisms affecting planktonic larval rock shrimp. These currents keep larvae on the Florida shelf and may transport them inshore in spring. In addition, the Gulf Stream is an EFH because it provides a mechanism to disperse rock shrimp larvae.

3. Establish the timeframe for the analysis.

It would be advantageous to go back to a time when there was a natural, or some modified (but ecologically sustainable) condition. However, data collection for many fisheries began when species were already fully exploited. Therefore, the timeframe for any analysis should be initiated when data collection began for the subject fishery. In determining how far into the future to analyze cumulative effects, the length of the effects will depend on the species. Shrimp Amendment 7 would reinstate rock shrimp endorsements due to not meeting the landing requirement, or failure to renew in a timely manner and/or not filling out the application properly. These actions would be expected to take place upon the final rule becoming effective and could result in a very slight increase in fishing effort in the near-term. The South Atlantic rock shrimp fishery is quite volatile, demonstrating significant ups and downs in terms of landings, revenues, and vessel participation from one year to the next. Therefore, analysis of effects should extend beyond the time when the endorsements would be reinstated. Monitoring should continue indefinitely for the rock shrimp fishery to ensure that management measures are adequate for preventing overfishing of the stock.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern (the cumulative effects to the human communities are discussed in Section 4.0).

Listed are other past, present, and reasonably foreseeable actions occurring in the South Atlantic region. These actions, when added to the proposed management measures, may result in cumulative effects on the biophysical environment.

I. Fishery-related actions affecting rock shrimp

A. Past

The reader is referred to **Section 1.2 History of Management** for past regulatory activity for the rock shrimp fishery. These include the requirement of a Rock Shrimp Permit, prohibitions on trawling to limit the impact of the rock shrimp fishery on Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC), defining EFH for the South Atlantic shrimp resource, reporting requirements, and the establishment of the rock shrimp limited access program. The most recent regulatory action was implemented through Shrimp Amendment 6, which: 1) transferred authority to make appropriate revisions to the Bycatch Reduction Device (BRD) Testing Protocol to NOAA Fisheries Service; 2) specified reductions in the total weight of finfish of at least 30% for new BRD's to be certified; 3) adopted the Atlantic Coast Cooperative Statistics Program Release, Discard and Protected Species Module as the preferred methodology to monitor and assess bycatch and until this module is fully funded, require the use

of a variety of sources to assess and monitor bycatch including, observers, logbooks, state cooperation, grants, and federal shrimp permits; 4) required BRDs on all rock shrimp trips in the South Atlantic; 5) required federal penaeid shrimp permits; 6) revised status determination criteria for penaeid shrimp; and 7) revised status determination criteria for rock shrimp. Shrimp Amendment 7 addresses issues which have arisen from the establishment of limited access program through Shrimp Amendment 5 in 2002.

B. Present

In this amendment the Council has recommended: 1) eliminating the 15,000-pound landing requirement; 2) reinstating endorsements lost due to not meeting the 15,000-pound landing requirement by December 31, 2007; 3) reinstating endorsements lost due to failure to renew; 4) creating two separate rock shrimp permits and changing the current names of the permits and; 5) requiring the collection of economic data from penaeid and rock shrimp fishery participants.

C. Reasonably Foreseeable Future

The Council is developing the Fishery Ecosystem Plan of the South Atlantic Region as well as the first Comprehensive Ecosystem Amendment. Together they will focus on conserving deepwater coral and EFH through the establishment of five deepwater coral HAPCs, and by addressing EFH mandates in the final rule to provide additional data for designated EFH and EFH-HAPCs.

II. Non-Council and other non-fishery related actions, including natural events affecting rock shrimp

A. Past

B. Present

C. Reasonably foreseeable future

In terms of natural disturbances, it is difficult to determine the effect of non-Council and non-fishery related actions on stocks of rock shrimp. Annual variability in natural conditions such as water temperature, currents, food availability, predator abundance, etc. can affect the abundance of young shrimp. This natural variability in year class strength is difficult to predict as it is a function of many interactive and synergistic factors that cannot all be measured (Rothschild 1986). Furthermore, natural factors such as storms, can potentially affect the survival of juvenile and adult shrimp; however, it is very difficult to quantify the magnitude of mortality it may have on a stock. Higher gas prices combined with highly variable environmental conditions have caused extreme highs and lows in shrimp landings and fishery participation from year to year. In 2004, South Atlantic rock shrimpers (85 participating vessels) landed 6,591,583 pounds of rock shrimp, compared to 2005, where a total of 21 rock shrimpers landed 109,281. 2007 was again a low year for landings: 240,550 pounds landed for 26 fishery participants. The highly volatile nature of the rock shrimp fishery is likely to persist through the reasonably foreseeable future, as gas prices continue to rise, and environmental factors remain difficult to predict.

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stresses. In terms of the biophysical environment, the resources/ecosystems identified in earlier steps of the CEA are the shrimp populations directly or indirectly affected by the regulations. This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components.

Rock shrimp are distributed worldwide in tropical and temperate waters. In the southeastern United States, the rock shrimp fishery is based entirely on rock shrimp (*Sicyonia brevisrostris*). The center of abundance occurs off northeast Florida south to Jupiter Inlet (SAFMC 1996). Small quantities of rock shrimp are also found off North Carolina, South Carolina, and Georgia, however, there exists no sustainable commercially harvestable quantities of rock shrimp in those areas comparable to the fishery prosecuted in the EEZ off the coast of eastern Florida (SAFMC 2002). Rock shrimp occur in deeper waters than the associated three penaeid shrimp species.

During the period 1984 to 1996, landings of rock shrimp increased substantially (SAFMC 1996). Much of this increase was attributed to increased effort within the fishery. However, there does seem to be a cyclical pattern to the abundance of rock shrimp that is driven primarily by environmental factors. The peak rock shrimping season generally runs from July through October (SAFMC 2002). Historically, the fishery did not begin until August or September (SAFMC 1996). To a degree, the amount and timing of effort in the rock shrimp fishery are dependent on the success of the white and brown shrimp fisheries.

Using the MSY/OY figure of approximately 4.9 million pounds for this fishery, it can be seen that landings were above this reference point in 2004, below it in 2003 and 2006, and significantly below this value in 2005. In fact, available information suggests that, in terms of landings and revenues, 2005 was the worst year on record since rock shrimp became a targeted species. And although landings, revenues, and even prices rebounded in 2006, vessel participation in both 2005 and 2006 was considerably less than during the previous decade. Although no definitive reasons can be provided at this time, it is likely that the extremely low level of landings in 2005 are a function of biological factors (e.g. relatively low abundance), economic factors (e.g. historically low rock shrimp prices, particularly relative to other potential target species, and high fuel prices, given that rock shrimp are harvested in more distant waters relative to penaeid species) and possibly natural disasters (e.g. the impact of Hurricane Katrina on vessels from ports in the Gulf of Mexico).

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds concern.

The goal of this step is to determine whether the South Atlantic rock shrimp stock is approaching a condition where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds can be identified for some resources, which are levels of impact beyond which the resources cannot be sustained in a stable state. Other thresholds are established through numerical standard, qualitative standards, or management goals. This CEA addresses whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

Shrimp populations

Quantitative definitions of overfishing and overfished for rock shrimp are identified in Shrimp Amendments 1 (SAFMC 1996), 4 (SAFMC 1998) and 6 (SAFMC 2004).

Maximum Sustainable Yield

Because rock shrimp live only 20 to 22 months, landings fluctuate considerably from year to year depending primarily on environmental factors. MSY/OY for rock shrimp is the mean total landings for the South Atlantic during 1986 through 2000 (4,912,927 pounds heads on) (SAFMC 2002).

Optimum Yield

OY is equal to MSY. The intent is to allow the amount of harvest that can be taken by U.S. fishermen without reducing the spawning stock below the level necessary to ensure adequate reproduction. This is appropriate for an annual crop like rock shrimp when recruitment is dependent on environmental conditions rather than female biomass. A relatively small number of mature shrimp can provide sufficient recruits for the subsequent year's production (SAFMC 1996).

Overfished Definition

The South Atlantic rock shrimp resource is overfished when overfished a parent stock size less than ½ B_{msy} for two consecutive years. High fecundity enables rock shrimp to rebound from a very low population size in one year to a high population size in the next when environmental conditions are favorable (SAFMC 1996). The established definition of "overfished" for rock shrimp is in essence, "overfishing" leading to an overfished condition, not an overfished definition (SAFMC 2002).

Overfishing Definition

Overfishing is a rate that leads to annual landings larger than two standard deviations above MSY (14,687,775 pounds heads on) for two consecutive years.

7. Define a baseline condition for the resources, ecosystems, and human communities concern.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects.

Shrimp are annual crops that fluctuate considerably from year to year depending primarily on environmental factors. Population size is regulated by environmental condition, and while fishing certainly reduces the population size over the course of the season, fishing is not believed to have any impact on subsequent year class strength unless the spawning stock has been reduced below a minimum level by environmental conditions (SAFMC 1993). Because of this, one could consider the baseline to be reset every year.

DETERMINING THE ENVIRONMENTAL CONSEQUENCES OF CUMULATIVE EFFECTS

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

The relationship between human activities and biophysical ecosystems within the context of this CEA is solely related to extractive activities and the installment of regulations as outlined in Table 4.7-1.

Table 4.7- 1. The cause and effect relationship of fishing and regulatory actions in the South Atlantic rock shrimp fishery.

Time period/dates	Cause	Observed and/or Expected Effects
1991	SAFMC allowed concurrent closure of EEZ adjacent to closed state waters after cold winter kills. Restricted trawling areas and mesh size, and defined MSY, and OY for white shrimp, and established overfishing criterion for white shrimp. (South Atlantic Shrimp FMP)	Reduced fishing effort during times of lower stock abundance. Reduced bycatch of unmarketable fish.
1996	Require federal rock shrimp permit, trawling area limited. (SAFMC 1996)	Enhanced existing federal regulations for coral and snapper grouper by protecting EFH, coral, and the Oculina Bank HAPC from trawl related damage.
1996	Required use of BRDs in all penaeid shrimp trawls in the South Atlantic EEZ. (SAFMC 1996b)	BRDs reduced bycatch, and standardized BRD certification criteria and testing protocol.

Table 4.7-1. Cont'd.

1998	Defined EFH and EFH-HAPCs for South Atlantic shrimp resource. Required VMS in the rock shrimp fishery. (SAFMC 1998a)	Created protections for South Atlantic shrimp EFH, and increased vessel monitoring capabilities in the rock shrimp fishery, which help to inform future management actions.
1998	Expanded the Oculina HAPC to include the area closed to rock shrimp harvest. (SAFMC 1998c)	No person may use bottom longline, bottom trawl, dredge, pot or trap, anchors and chains, or grapples and chains. No one may fish for rock shrimp or possess rock shrimp in or from the area on board a fishing vessel, or possess *Oculina* coral.
1999	Established a reporting requirement and designated biological reference points. (SAFMC 1999)	Enhanced and supplemented existing data for the shrimp fishery, and helped to inform future management actions.
2002/2003	Established rock shrimp limited access program, required vessel operators permit, established minimum mesh size for tail bag, required use of VMS in rock shrimp limited access fishery. (SAFMC 2002)	Reduced number of latent permits in the rock shrimp fishery, and helped rock shrimpers avoid catching small unmarketable shrimp. Use of VMS enhanced enforcement of the limited access rock shrimp fishery.
2004	Specified reduction in total weight of finfish of at least 30% for new BRDs to be certified; adopted the ACCSP release, discard and protected species module; and required BRDs on all rock shrimp trips in the South Atlantic. (SAFMC 2004)	Reduced the level of catch allowed for a BRD to be certified, thereby reducing bycatch overall; will be able to more accurately assess bycatch mortality; and reduce bycatch in the rock shrimp fishery.
2008	Under development. Do away with current rock shrimp landing requirement for limited access endorsement; reinstate endorsement lost due to not meeting the rock shrimp landing requirement, reinstate endorsements lost due to failure to renew, change endorsement and permit names; and require the collection of economic data.	Expected to help maintain the rock shrimp fishery at a sustainable level, while still preventing overexploitation of the fishery. Expected to clarify any confusion about the endorsement vs. permit names and application process, and ensure the collection of economic data to fill large economic data gaps for the rock shrimp fishery.

9. Determine the magnitude and significance of cumulative effects.

Past, present and reasonably foreseeable actions probably have not and would not have a significant, adverse effect on the shrimp resource. As stated throughout the CEA, the abundance of the shrimp stock in the South Atlantic EEZ is largely determined by environmental variables which have short-term effects (less than three years in duration). Habitat loss may have an adverse effect on shrimp landings, however the connection has not been made between the loss and degradation of habitat essential to shrimp survival and shrimp landings in the South Atlantic. Thus the magnitude of each of these effects is undeterminable without further studies.

Management actions in Shrimp Amendment 7 would be expected to yield minimal cumulative effects on the biological environment. Those impacts could take the form of increased pressure on the target species, and bycatch species, as well as resuspension of sediments and physical habitat destruction caused by shrimp trawls. If all fishery participants chose to fully participate in the fishery after having their endorsements reinstated, current fishing effort would be maintained rather than reduced, under the No-action Alternatives for actions 1-3 in this amendment. This would result in a very small cumulative impact relative to all other impacts of the entire rock shrimp fishery.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

The cumulative effects on the biophysical environment are expected to be negligible. Therefore, avoidance, minimization, and mitigation are not necessary.

11. Monitor the cumulative effects of the selected alternative and modify management as necessary.

The effects of the proposed action are, and will continue to be, monitored through collection of data by NOAA Fisheries Service, States, stock assessments and stock assessment updates, life history studies, and other scientific observations.

4.6.2 Cumulative effects on Protected Species

Cumulative effects, as defined under the Endangered Species Act (ESA), refer to any known unrelated, future, non-federal activities reasonably certain to occur within the action area that are likely to affect listed or proposed species. Future federal action requiring separate consultation (unrelated to the proposed action) are not considered in the CEA section.

ESA-listed species that occur within areas where the shrimp fishery operates and that may be impacted by unrelated, future, non-federal activities reasonably certain to occur within the action area include:

<u>Marine Mammals</u>

For listed whales occurring within the action area, the potential for adverse effects from the southeast Atlantic shrimp fishery executed within the action area are unlikely. However, these whale species may incur negative impacts from other sources such as disease, vessel strikes, entanglements in other fishery's gear and habitat degradation due

to chemical and noise pollution, as well as marine debris. These impacts may cause adverse effects on a population's overall recovery. For detailed descriptions on cumulative impacts to listed whale species found in the action area see Waring et al. (2002).

Sea Turtles

To fully assess the recovery of sea turtles, the full range of human and natural phenomena need to be considered. Hurricanes may have potentially negative effects on the survival of eggs or on nesting habitat itself if the beach is greatly reduced. Human-related activities pose multiple threats such as: entanglement in fishing gear; diminished nesting success due to coastal development and artificial lighting on nesting beaches; degradation of the marine habitat by chemical pollution and marine debris; and the direct (legal or illegal) taking of eggs or individual turtles. The impacts of many of these activities are under-monitored, particularly on the international level. NOAA Fisheries Service has estimated that thousands of sea turtles of all species are incidentally or intentionally caught or killed annually by international activities (NOAA Fisheries Service 2001).

Some anthropogenic mortality that contributed to the decline of sea turtles has been mitigated since sea turtles were listed under ESA. Examples include the use of turtle excluder devices in shrimp trawlers, reduction or closure of certain fisheries that use entangling nets, and prohibiting the harvest of eggs and nesting females in the U.S. as well as other areas (for further information on sea turtle impacts see NOAA Fisheries Service 2001).

Fish

Smalltooth sawfish are extremely vulnerable to overexploitation because of their tendency to become entangled in nets, their restricted habitat and low rate of population growth. Smalltooth sawfish are vulnerable to incidental capture in various fisheries including gillnet, otter trawl, trammel net, seine, and to a lesser degree, hand line (NOAA Fisheries Service 2000). Due to this species' dependence on coastal habitat, loss and degradation of coastal habitat by urban development, agriculture and channel dredging have also contributed to their decline. Marine pollutants may also negatively impact the smalltooth sawfish, particularly because of its slow growth and late maturation.

4.6.3 Socioeconomic

A description of the human environment and associated key fishing communities is contained in **Section 3.4** and incorporated herein by reference. A description of the history of management of the shrimp fishery is contained in **Section 1.2** and is incorporated herein by reference. Participation in and the economic performance of the fishery have been effected by a combination of regulatory, biological, social, and external economic factors.

Given the variety of factors that affect fisheries, persistent data issues, and the complexity of trying to identify cause-and-effect relationships, it is not possible to

differentiate actual or cumulative regulatory effects from external cause-induced effects. For each regulatory action, expected effects are projected. However, these projections typically only minimally, if at all, are capable of incorporating the variety of external factors and evaluation in hindsight is similarly incapable of isolating regulatory effects from other factors.

It can be stated that the regulatory environment for all fisheries has become progressively more complex and burdensome, increasing, in tandem with other adverse influences, the pressure on economic losses, business failure, occupational changes, and associated adverse pressures on associated families, communities, and industries. Some reverse of this trend is possible and expected. However, certain pressures would remain, such as total effort and total harvest considerations, increasing input costs, import induced price pressure, and competition for coastal access.

Detailed descriptions of the expected social and economic impacts of the actions in this amendment are contained elsewhere in **Section 4.0**, and in **Sections 5.0 and 6.0**, and are incorporated herein by reference. The actions contained in this amendment are expected to result in a slightly higher number of fishery participants than if the actions were not implemented. Changing the permit names would likely result in greater clarity regarding the application and permit issuance process amongst fishery participants, helping to maintain a sustainable level of fishery participation and associated infrastructure. Within the group of fishermen who would have their endorsements reinstated, it can be assumed that some portion of that group will fully participate in the fishery and benefit from revenue gained therein, while others may choose to not take advantage of the reinstated permit, or may only participate occasionally. Thus, cumulative socioeconomic effects may be proportionate to the level at which any one fisherman chooses to participate in the fishery.

The collection of economic data action would have a beneficial cumulative effect by filling crucial data gaps which would enable fishery managers to recognize economic trends over time, and assess the overall health of the fisheries economic base on a continuing basis. Information gathered and analyzed through the collection of economic data could be used in the future to better inform future shrimp fishery management decisions.

At this time there exist no South Atlantic shrimp fishery management actions to consider in the reasonably foreseeable future.

4.7 Bycatch Practicability Analysis

Bycatch is defined as fish harvested in a fishery, but not sold or retained for personal use. This definition includes both economic and regulatory discards, and excludes fish released alive under a recreational catch-and-release fishery management program. Economic discards are generally undesirable from a market perspective because of their species, size, sex, and/or other characteristics. Regulatory discards are fish required by regulation to be discarded, but also include fish that may be retained but not sold.

Agency guidance provided at 50 CFR 600.350(d)(3) identifies ten factors to consider in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable. These are:

1. Population effects for the bycatch species;
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem);
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects;
4. Effects on marine mammals and birds;
5. Changes in fishing, processing, disposal, and marketing costs;
6. Changes in fishing practices and behavior of fishermen;
7. Changes in research, administration, and enforcement costs and management effectiveness;
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources;
9. Changes in the distribution of benefits and costs; and
10. Social effects.

The Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

The South Atlantic rock shrimp fishery is concentrated in an area off northeast Florida south to Jupiter Inlet. The fishery is prosecuted primarily by commercial otter trawl gear. Management measures regulating harvest in the fishery include requirement of bycatch reduction devices (BRDs), a minimum mesh-size restriction, a limited access program, and area closures (east of 80°W longitude, between 27°30'N and 28°30'N latitude, in depths less than 100 fathoms). The primary purpose of the area closures is to minimize the impacts of the rock shrimp fishery on essential bottom habitat, including the fragile coral species located in the *Oculina* Bank Habitat Area of Particular Concern (HAPC). These closures are enforced using vessel monitoring systems (VMS) (SAFMC 2002).

Section 3.2.2.1 describes the magnitude and composition of bycatch in the rock shrimp fishery based on a preliminary report of observer coverage of the southeastern Atlantic rock shrimp fishery from September 2001 through September 2006 (Appendix C). Samples from 221 successful tows (eight vessels with 838.3 hours of trawling) were analyzed for species

composition by weight and numbers. By weight, 49% of the total catch throughout the study period was composed of finfish. Weight extrapolations from the species composition samples indicated dusky flounder was the finfish caught in the greatest number (13% of the total catch), followed by the inshore lizardfish (11%), spot (5%), and horned sea robin (2%). Rock shrimp represented the second largest component of the catch by weight (19%). Non-shrimp crustaceans comprised 18%: the iridescent swimming crab was the non-shrimp crustacean caught in the greatest number (7%) followed by the longspine swimming crab (6%) and the blotched swimming crab (3%). Non-crustacean invertebrates (8%), penaeid shrimp (4%), and debris (2%) comprised the smallest portion of the total catch. Highest catch per unit effort (CPUE) for rock shrimp was in 26-45 fathoms, while CPUEs for finfish, invertebrates and other crustaceans were highest in 0-25 fathoms.

4.7.1 Population Effects for the Bycatch Species

The population effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. One important difference in the effects of the shrimp trawl fishery and directed fisheries on finfish is fishes taken in shrimp trawls are generally small and young. Juveniles are more expendable in one respect because they occur in high numbers, and relatively few actually survive to adulthood. But the reproductive potential of a stock can be compromised if fish are not provided sufficient opportunities to reproduce before they are exposed to fishing or bycatch mortality. The risk of stock collapse increases markedly if the fish are subject to fishing or bycatch mortality before they mature (Myers and Mertz 1998).

The current level of bycatch in the penaeid shrimp trawl fishery continues to be substantial despite these advancements in bycatch reduction. However, bycatch mortality is incorporated in assessments of finfish stocks if estimates are available (e.g., weakfish and sharks). Additionally, the sustainability of finfish species taken as bycatch in shrimp trawls does not appear to be threatened by this source of mortality (Nance 1998).

Little is known about the status of those finfish (e.g., dusky flounder, inshore lizardfish, spot, and red goatfish) and invertebrate (e.g., iridescent swimming crab, longspine swimming crab, and blotched swimming crab) species present in rock shrimp trawl bycatch in the greatest numbers. None of these species have undergone (or are likely to undergo) formal stock assessments because most, with the exception of spot, are not targeted in commercial or recreational fisheries. Data are inadequate to conduct a formal, coast-wide assessment of spot. But fishery managers believe a combination of BRD and minimum size limit requirements is sufficient to protect this stock until such an assessment can be completed (ASMFC 2004).

Observed increases in nesting levels of the Kemp's ridley sea turtles exemplify the significant beneficial impact of TEDs on the survival and recovery of several sea turtle populations. The total annual mortality of Kemp's ridley turtles has been reduced by 44-50% since 1990, when TEDs became more widely used in U.S. waters. Once the most critically endangered sea turtle, Kemp's ridley increased nesting levels from 700-800 nests per year in the mid-1980s to over 6,000 nests in 2000. Recent modifications to the TED rule, which were designed to better

protect larger species of sea turtles, are expected to decrease shrimp trawl related mortality by 94 and 96% for loggerheads and leatherbacks, respectively (68 FR 8456; February 21, 2003).

During five years of observer coverage in the Southeast Atlantic rock shrimp fishery (Appendix C), 11 sea turtles (six loggerhead, two Kemps ridley, three unidentified) were captured in trawls. Three escaped through TEDs, nine were released alive and conscious, and two were released in unknown condition.

As noted in Section 3.2.3, NOAA Fisheries Service determined in a 2002 Biological Opinion that shrimp trawling in the southeastern United States under the proposed revisions to the sea turtle conservation regulations and as managed by the South Atlantic and Gulf of Mexico Shrimp FMPs is not likely to jeopardize the continued existence of endangered green, leatherback, hawksbill or Kemp's ridley sea turtles, or threatened loggerhead sea turtles.

Anecdotal information suggests bycatch of the coral, *Oculina varicosa*, in the rock shrimp trawl fishery was negatively affecting that species. *Oculina* coral fragments may continue to survive after an impact (Brooke and Young 2003, 2005). The likelihood impacted corals could be smothered by sediments, or sufficiently removed from the current's influence as to deprive them of nutrients, is greatly increased. Researchers estimate past fishery-related impacts, primarily from trawl gear, have reduced the amount of intact *Oculina* coral habitat remaining within the *Oculina* Experimental Closed Area (Reed *et al.* 2007). The Vessel Monitoring System (VMS) requirement implemented through Amendment 5 to the Shrimp FMP (SAFMC 2002) is expected to improve compliance with the prohibition on rock shrimp trawling within the *Oculina* HAPC.

4.7.2 Ecological Effects Due to Changes in Bycatch

Rock shrimp discards in the fishery have not been quantified. Anecdotal reports indicate economic discards of unmarketable juvenile rock shrimp have increased as the temporal and spatial distribution of the fishery has changed over time. Vessels fish earlier in the year and have moved south relative to historical fishing. However, the mesh-size restrictions implemented through Amendment 5 (SAFMC 2002) were intended to address this problem. Consequently, the ecosystem effects of rock shrimp discards (if any) are likely to be minimal.

4.7.3 Changes in Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

If affected finfish are shrimp predators, reductions in bycatch due to BRDs may result in increased predation on shrimp. During NOAA Fisheries Service's offshore bycatch surveys on commercial vessels from 1992-1996, only 14 of 161 fish species were identified as predators on penaeid shrimp. These are the Atlantic croaker, sand seatrout, spotted seatrout, silver seatrout, ocellated flounder, inshore lizardfish, bighead searobin, smooth puffer, red snapper, lane snapper, Spanish mackerel, rock sea bass, dwarf sand perch, and Atlantic sharpnose shark (Nance 1998).

Predator-prey relationships largely depend on the size structure of predator and prey populations. Juvenile fish that are too small to prey on large shrimp may be able to do so later if their exclusion from trawl gear allows them to grow larger. However, it is also possible some fish will reduce predation on shrimp as they grow and their dietary habits change (Nance 1998).

Changes in the bycatch of non-shrimp invertebrates (e.g., crustaceans and mollusks) also could have ecosystem effects. These species have ecological functions in addition to serving as prey for other invertebrates and fishes. For example, some species, like barnacles and hydrozoans, condition habitat for other organisms by providing a growing surface or by contributing to the bioturbation of bottom sediments.

4.7.4 Effects on Marine Mammals and Birds

Bycatch of marine mammals and seabirds is not considered to be a problem in the South Atlantic rock shrimp fishery. As noted in Section 3.2.3, the southeastern U.S. Atlantic shrimp trawl fishery is classified as a Category III fishery, meaning the annual mortality and serious injury of a stock resulting from the fishery is less than or equal to one percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (68 FR 135; July 15, 2003).

No documented seabird-gear interactions were recorded on 1,310 trips in the Gulf of Mexico and southeastern Atlantic penaeid and rock shrimp fisheries between February 1992 and December 2003 (E. Scott-Denton, NOAA Fisheries, personal communication). However, the potentially high level of bycatch in the rock shrimp fishery could be affecting some seabird species. Cook (2003) notes the availability of discards and offal has been linked to population increases in a number of species.

4.7.5 Changes in fishing, processing, disposal and marketing costs

The potentially high bycatch in the rock shrimp fishery could adversely affect production by unnecessarily increasing drag time, culling time, and crew fatigue. Regulatory measures implemented to reduce bycatch have direct costs related to purchasing and installing new technology, or limiting where and/or when a vessel could operate. But such measures could result in long-term benefits if they increase the efficiency of shrimp trawl operations. BRD technology reduces shrimp trawl bycatch with minimal cost to shrimp fishermen.

4.7.6 Changes in Fishing Practices and Behavior of Fishermen

At least some participants in the rock shrimp fishery deny a bycatch problem exists. Consequently, regulatory requirements to reduce bycatch could provide a disincentive to responsible participation in the fishery. For example, fishermen could potentially ignore a BRD or closed season requirement, or violate the prohibition on trawling within the *Oculina* Bank HAPC. The VMS requirement is expected to improve compliance with seasonal closure regulations and ease the enforcement burden.

4.7.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Bycatch in southeastern shrimp trawl fisheries has been a priority issue for scientists and administrators for a number of years. This focus is likely to continue as the Council addresses future management needs in the fishery.

4.7.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

The U.S. Congress recognized the need to balance the costs of bycatch reduction with the social and economic benefits provided by the shrimp fishery when it mandated the study of shrimp trawl bycatch (and potential gear modifications) through the 1990 Magnuson-Stevens Act reauthorization. The resulting cooperative bycatch research program identified gear options that could reduce shrimp trawl bycatch with minimum loss of shrimp production.

While BRD and TED requirements certainly present direct costs to participants in the shrimp fishery, they could reduce overall costs by increasing efficiency. Additionally, studies suggest the use of BRDs or similar techniques to reduce finfish capture would not negatively affect shrimp production in the long-term if finfish exhibit even moderate selectivity against shrimp as prey (Nance 1998).

Decreases in bycatch mortality attributed to these technologies are believed to have contributed to the survival and recovery of at least some sea turtle populations and finfish stocks. The societal benefits associated with recovering these species are not easily quantified, but are believed to outweigh any short-term costs to penaeid shrimp fishermen related to the required bycatch reduction technology.

4.7.9 Changes in the Distribution of Benefits and Costs

Prior to the mandated use of bycatch reduction technology in the rock shrimp fishery, people perceived benefits and costs were not equitably distributed between the shrimp trawl fisheries and directed finfish fisheries, and between the shrimp trawl fisheries and the broader public. Commercial and recreational fishermen who target finfish taken incidental to the trawl fishery believe shrimp fishermen should share the regulatory burden needed to sustain declining fish stocks (Nance 1998). Some members of the public view bycatch as unnecessary waste. The mandated use of BRDs and TEDs was intended to address these perceived inequities while maintaining a productive, high value shrimp fishery.

4.7.10 Social Effects

Few data are available to adequately define the social effects of BRD and TED requirements. Shrimp fishermen could experience negative effects related to the costs of installing and using the devices and to feeling overregulated. They also could experience positive effects related to improved efficiency. The concerned public is likely to experience social benefits related to knowing that the organisms they value for aesthetic and existence reasons are better protected. However, some members of the public may believe bycatch is not sufficiently reduced through BRD and TED requirements.

4.7.11 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality in the South Atlantic rock shrimp fishery by using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, technological devices mandated for use in the South Atlantic shrimp trawl fishery are estimated to reduce finfish bycatch by at least 30% and to reduce sea turtle bycatch by as much as 97%. More data are needed to improve the reliability of information on the current level of bycatch, which generally continues to exceed the catch of

shrimp. However, no evidence exists to indicate the mortality of finfish caused by the rock shrimp trawl fleet (with BRDs and TEDs implemented) is having a significant adverse affect on finfish stocks. Therefore, the Council concluded that current management measures minimize bycatch and bycatch mortality to the extent practicable in the rock shrimp fishery.

4.8 Unavoidable Adverse Effects

This amendment would apply primarily to the rock shrimp fishery and to a lesser extent the penaeid shrimp fishery prosecuted within the South Atlantic Council's area of jurisdiction. The following summarizes potential short and long-term unavoidable adverse effects of the actions contained within Amendment 7.

Action 1. Removing the 15,000-pound rock shrimp landing requirement was to prevent the potential exclusion of as many as 43 vessels (who had their endorsements issued in 2003) that have not met the landing requirement and up to 5 additional vessels if Alternatives 2 or 3 in Action 3 are chosen as preferred. Additionally, there are another 27 vessels (which had their endorsements issued after 2003) that could potentially loose their endorsements as they have not yet met the landing requirement, and under current conditions, it is quite possible they may not meet the 15,000-pound landing requirement before the end of their four-year cycle. Removing the landing requirement would nullify the current landing requirement implemented through Amendment 5 (SAFMC 2002), and those vessels holding valid endorsements would remain in the fishery regardless of whether or not they have or continue to land 15,000 pounds of rock shrimp within any one of four consecutive calendar years. There are no expected unavoidable adverse effects, which may result from the implementation of this action.

Action 2. This action would only apply to those vessels that initially obtained an endorsement in 2003. Under this action all endorsements lost due to not meeting the landing requirement by December 31, 2007, would be reinstated. Forty three (43) vessels with active or renewable endorsements could have their endorsements reinstated under Alternative 2. Reinstating any number of endorsements would likely lead to an increase in fishing effort and therefore some minimal unavoidable adverse effects on the biological environment are expected. This action would also result in the same administrative effects listed under Action 3 of this amendment.

Action 3. This proposed action addresses the issue of endorsements lost due to not being renewed in a timely manner because of confusion involving the application form and process. The preferred alternative would reinstate all endorsements for those who renewed their open access permit in the year in which they failed to renew their limited access endorsement. It would also require rock shrimp fishery participants eligible to have their endorsements reinstated to apply for a limited access endorsement within one year after the effective date of the final rule for this amendment. Reinstating those endorsements would unavoidably and adversely affect the administrative environment which will need to produce outreach materials explaining the Council's decision to reinstate the endorsements for this specific group. NOAA Fisheries Service Permits Office will be responsible for executing the reissuance of the selected permits, as well as processing the required applications for the selected permitees.

Action 4. This action would change the names of the fishery authorization instruments as follows: the "open access permit" would become "Rock Shrimp Permit (Carolinas Zone)," and the "limited access endorsement" would become "Rock Shrimp Permit (South Atlantic EEZ)." Unavoidable adverse effects on the administrative environment under this action are expected to be significant. Upon implementation of this action the NOAA Fisheries Service Permits Office will be responsible for reprinting all valid permits, and developing outreach materials explaining the name change. The permits office will also have to change fishery codes in the permit database, and send notification of the change to rock shrimp dealers. Maps generated to depict permit coverage areas will also have to be updated to reflect the change.

Action 5. Action 5 of this amendment would require owners associated with vessels holding South Atlantic rock shrimp permits and penaeid shrimp permits to provide economic data upon request. Any collection of information action for these fisheries is expected to cause significant unavoidable adverse affects on the administrative environment since South Atlantic shrimp fisheries currently have no such data collection or management system in place. In the short term, collecting economic data will require the development of a standardized data collection instrument and a random sampling method, the development of a data management system, funding for such a system, as well as outreach materials for circulation to industry participants regarding the new data collection requirement. In the long-term, staff to analyze the data and generate reports on a continuing basis would require funding, as well as the annual data collection effort and management/storage of data gathered. Fishery participants will also be minimally affected since they would be subject to a time burden totaling the time it will take to gather the information and report it to data managers. This action will also require compliance with the PRA, which will involve a minimal adverse effect on the administrative environment.

4.9 Effects of the Fishery on the Environment

4.9.1 Damage to Ocean and Coastal Habitats

The proposed actions are expected to have a minimal if any effect on ocean and coastal habitats. No actions proposed in this amendment are expected to significantly change the status-quo regarding impacts on EFH or EHH-HAPCs for managed species in the South Atlantic region. Measures adopted in the Coral and Shrimp FMPs have restricted access by fishermen that has potential adverse impacts on EFH. These measures include the designation of the *Oculina* Bank HAPC and the Rock Shrimp Closed Area (see the Shrimp and Coral FMP/Amendment documents for additional information). The Council's Comprehensive Habitat Amendment (SAFMC 1998b) contains measures that expand the *Oculina* Bank HAPC and added two additional satellite HAPCs. Any additional impacts of fishing on EFH identified during the public hearing process will be considered, therefore the Council has determined no new measures to address impacts on EFH are necessary at this time. The Council's adopted habitat policies, which may directly affect the area of concern, are available for download through the Habitat/Ecosystem section of the Council's web site at

http://www.safmc.net/ecosystem/EcosystemManagement/HabitatProtection/HabitatPolicies/tabid/245/Default.aspx

NOTE: The Final EFH Rule, published on January 17, 2002, replaced the interim Final Rule of December 19, 1997 on which the original EFH and HAPC designations were made. The Final Rule directs the Councils to periodically update EFH and HAPC information and designations within fishery management plans. The Council's Comprehensive Ecosystem Amendment, scheduled for submission to the Secretary in 2008, contains information to address the mandates in the EFH Final Rule.

4.9.2 Public Health and Safety

The proposed actions are not expected to have any substantial adverse impact on public health or safety.

4.9.3 Endangered Species and Marine Mammals

The proposed actions are not expected to change the level of marine mammal or endangered species impacts from the status-quo. Waiting on ESA consultation.

4.10 Relationship of Short-Term Uses and Long-Term Productivity

The Council weighed the short-term impacts upon the fishery against the long-term productivity and stability of this fishery and concluded that the proposed actions would result in net benefits to society. Eliminating the 15,000-pound landing requirement would prevent a permanent 34% reduction in the fishery participation this year, and a possible 56% reduction in the long-term from occurring to ensure the sustainability of the fishery's infrastructure. Overall, Action 1 is expected to benefit the fishery in the long-term by allowing a viable level of participation, which would also support the fishery's infrastructure.

Action 2 of the amendment would affect those vessels that initially obtained a limited access endorsement in 2003 but did not meet the 15,000-pound requirement. Under this action 43 vessels may have their endorsements reinstated. This will create a short-term benefit to those vessels, and will benefit the fishery infrastructure in the long-term by maintaining the steady base of rock shrimp fishery participants needed to sustain the fishery. Though endorsements would be reinstated under this action, endorsements lost due to other circumstances would not be reinstated, thereby avoiding any overcapitalization of the fishery. Actions 1 and 2 are expected to perpetuate long-term productivity of the fishery while allowing the resource to be harvested at a sustainable level.

Under the preferred alternative for Action 3 limited access endorsements lost due to not submitting a complete endorsement renewal application in a timely manner will be reinstated for those who renewed their open access permit in the year in which they failed to renew their endorsement. This could affect 5 vessels in the rock shrimp fishery. In the short-term those affected vessels would be able to participate in the rock shrimp limited access fishery. This action would have a minimal impact on long-term productivity as it will increase fishery participation by a very small percentage.

Action 4 would change the name of the fishing authorization instrument for the rock shrimp fishery. This change is administrative in nature and is not expected to affect the relationship between short-term uses of the fishery and its resource, or their long-term productivity.

The collection of data requirement in this amendment is not expected to affect any short-term uses of the resource or fishery infrastructure. It will, however, provide vital information for economic analyses that may be used to implement future management measures, which may ultimately result in changes to long-term productivity of the fishery and the resource.

4.11 Irreversible and Irretrievable Commitments of Resources

Action 4 would also require an irreversible and irretrievable commitment of resources. NOAA Fisheries Service Permits Office will be responsible for allocating funding for the reprinting of permits with the new name, and mailing them to each fishery participant along with some outreach material explaining the change and the requirement that they also apply for a new limited access permit within one year of the amendment's implementation. They would also be responsible for allocating the time and personnel needed to change the permit codes in the NOAA Fisheries Service Permit database, mail out replacement permits, notify dealers of the name change, and coordinate with the Office of Law Enforcement.

Action 5 would implement a data collection requirement and would require an irreversible and irretrievable commitment of resources. No system currently exists for economic data collection in the South Atlantic shrimp fishery, therefore there is expected to be a significant outlay of resources to establish such a system, and a continuing annual outlay of resources to manage and analyze the data once it has been collected on a yearly basis.

No other actions in this amendment would require an irreversible and irretrievable commitment of resources.

4.12 Mitigation Measures

No actions in this amendment require establishing mitigation measures.

5 Regulatory Impact Review

5.1 Introduction

The NOAA Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a 'significant regulatory action' under the criteria provided in Executive Order (E.O.) 12866 and provides information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the expected impacts that this action would be expected to have on the rock shrimp fishery. Additional details on the expected economic effects of the various alternatives in this action are included in Section 4.0 and are incorporated herein by reference.

5.2 Problems and Objectives

The purpose and need, issues, problems, and objectives of the proposed Amendment are presented in Section 1.0 and are incorporated herein by reference. The Council's stated objective to be addressed by actions in this amendment is: "To ensure that sufficient effort remains active to sustain the fishery and the infrastructure."

5.3 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the proposed measures are stated in terms of producer and consumer surplus, changes in profits and employment in the direct and support industries. In addition, the public and private costs associated with the process of developing and enforcing regulations on fishing for rock shrimp in waters of the U.S. South Atlantic are provided.

5.4 Description of the Fishery

A description of the South Atlantic rock shrimp fishery is contained in Section 3.4 and is incorporated herein by reference.

5.5 Impacts of Management Measures

Details on the economic impacts of all alternatives are included in Section 4.0 and are included herein by reference. The following discussion includes only the expected impacts of the preferred alternatives.

[insert impacts analysis]

5.6 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any Federal action involves the expenditure of public and private resources which can be expressed as costs associated with the regulations. Costs associated with this amendment include:

Council costs of document preparation, meetings, public hearings, and information dissemination …….$

NOAA Fisheries administrative costs of document preparation, meetings and review .....$

Annual law enforcement costs.....unknown

TOTAL .....$

Law enforcement currently monitors regulatory compliance in these fisheries under routine operations and does not allocate specific budgetary outlays to these fisheries, nor are increased enforcement budgets expected to be requested to address any component of this action.

5.7 Summary of Economic Impacts

To be completed

5.8 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a 'significant regulatory action' if it is expected to result in: (1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order.

6 Initial Regulatory Flexibility Analysis

6.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA does not contain any decision criteria; instead, the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. In addition to analyses conducted for the RIR, the regulatory flexibility analysis provides: (1) a statement of the reasons why action by the agency is being considered; (2) a succinct statement of the objectives of, and legal basis for the proposed rule; (3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; (4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; (5) an identification, to the extent practical, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; and (6) a description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

In addition to the information provided in this section, additional information on the expected economic impacts of the proposed action are included in Sections 4.0 and 5.0 and is included herein by reference.

6.2 Statement of Need for, Objectives of, and Legal Basis for the Rule

The purpose and need, issues, problems, and objectives of the proposed rule are presented in Section 1.0 and are incorporated herein by reference. In summary, the purpose of this amendment is to [insert purpose]

6.3 Identification of All Relevant Federal Rules Which May Duplicate, Overlap or Conflict with the Proposed Rule

No duplicative, overlapping, or conflicting Federal rules have been identified.

6.4 Description and Estimate of the Number of Small Entities to Which the Proposed Rule will Apply

This proposed action is expected to directly impact commercial fishers. The SBA has established size criteria for all major industry sectors in the U.S. including fish harvesters. A business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $4.0 million (NAICS code 114111, finfish fishing) for all its affiliated operations worldwide.

6.5 Description of the Projected Reporting, Record-keeping and Other Compliance Requirements of the Proposed Rule, Including an Estimate of the Classes of Small Entities Which will be Subject to the Requirement and the Type of Professional Skills Necessary for the Preparation of the Report or Records

6.6 Substantial Number of Small Entities Criterion

6.7 Significant Economic Impact Criterion

The outcome of 'significant economic impact' can be ascertained by examining two issues: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All entities that are expected to be affected by the proposed rule are considered small entities so the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profit for a substantial number of small entities?

6.8 Description of Significant Alternatives

7 Fishery Impact Statement – Social Impact Assessment

7.1 Introduction

Mandates to conduct Social Impact Assessments (SIA) come from both the National Environmental Policy Act (NEPA) and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). NEPA requires Federal agencies to consider the interactions of natural and human environments by using a "...systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences...in planning and decision-making [NEPA section 102 (2) (a)]. Under the Council on Environmental Quality's (CEQ, 1986) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, a clarification of the terms "human environment" expanded the interpretation to include the relationship of people with their natural and physical environment (40 CFR 1508.14). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect or cumulative (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994).

Under the Magnuson-Stevens Act, fishery management plans (FMPs) must "…achieve and maintain, on a continuing basis, the optimum yield from each fishery" [Magnuson-Stevens Act section 2 (b) (4)]. When considering "…a system for limiting access to the fishery in order to achieve optimum yield …" the Secretary of Commerce and Regional Fishery Management Councils are to consider both the social and economic impacts of the system (Magnuson-Stevens Act section 303 (b) (6)). The Magnuson-Stevens Act requires that FMPs address the impacts of any management measures on the participants in the affected fishery and those participants in other fisheries that may be affected directly or indirectly through the inclusion of a fishery impact statement [Magnuson-Stevens Act section 303 (a) (9)]. National Standard 8 requires that conservation and management measures shall take into account the importance of fishery resources to fishing communities in order to provide for the sustained participation of such communities, and to the extent practicable, minimize adverse economic impacts in such communities (Magnuson-Stevens Action Section 301(a)(8).

7.2 Problems and Methods

Social impacts are generally the consequences to human populations that follow from some type of public or private action. Those consequences may include alterations to "...the ways in which people live, work or play, relate to one another, organize to meet their needs and generally cope as members of a society..." (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994). Social impact analyses can be used to determine possible consequences management actions may have on fishing dependent communities. In order to do a full social impact analysis it is necessary to identify community participants who depend upon the fisheries in that area and to identify the amount of dependency they have upon a

given fishery. Further it is necessary to understand the other opportunities for employment that exist within the community should fishery management measures become so restrictive that participants must switch their focus to other fisheries or other jobs outside of the fishing industry. Public hearings and scoping meetings may provide input from those concerned with a particular action, but they do not constitute a full overview of the fishery.

In attempting to assess the social impacts of the proposed amendment it must be noted that there is not enough data at the community level for these analyses to do a comprehensive overview of the fishery; therefore, analyses cannot predict all social impacts. Although research in communities is ongoing, at this time it is still not complete enough to fully describe possible consequences this amendment may have on individual fishing communities.

Today, more fisheries are managed by quotas and/or have restrictions on the number of participants. This limits the opportunities fishermen who fish for the species addressed by this amendment may have had in the past and may make it impossible to shift effort to other fisheries in response to further restrictions imposed by this amendment.

The information available for evaluating the possible impacts of this amendment is summarized in Section 3.4. There are not enough data on communities that may be dependent on these fisheries to fully describe the impacts of any change in fishing regulations on any one community. However, demographic information based on census data of key communities in the region is included to give some insight into the structure of these communities that operate in the rock shrimp fishery. The social impacts on the processing sector, the consumer, fishing communities, and society as a whole are not fully addressed due to data limitations. Data to define or determine impacts upon fishing communities are still very limited.

7.3 Social Impact Assessment Data Needs

Changes due to development and the increase of tourism infrastructure have been occurring rapidly in coastal communities of the South Atlantic make community descriptions more problematic. Recognizing that defining and understanding the social and economic characteristics of a fishery is critical to good management of the fishery, more comprehensive work needs to be done on all of the fisheries in the region.

One of the critical data needs is complete community profiles of fishing communities in the southeast region in order to gain a better understanding of the fishery and those dependent on the fishery. At this time, due to limited staff and resources, NOAA FISHERIES SERVICE is conducting research in a few Southeast communities at a time and in-depth community profiling will take several years to complete.

Completion of the community profiles will support more complete descriptions of the impacts that new regulations will have upon fishing communities. For each

community chosen for profiling, it will be important to understand the historical background of the community and its involvement with fishing through time. Furthermore, the fishing community's dependence upon fishing and fishery resources needs to be established. Kitner (2004) suggests that in order to achieve these goals, data need to be gathered in three or more ways. First, in order to establish both baseline data and to contextualize the information already gathered by survey methods, an in-depth, ethnographic study of the different fishing sectors or subcultures is needed. Second, existing literature on social/cultural analyses of fisheries and other sources in social evaluation research needs to be assessed in order to offer a comparative perspective and to guide the SIAs. Third, socio-economic data need to be collected on a continuing basis. Methods for doing this would include regular collection of social and economic information in logbooks for the commercial sector, observer data, and dock surveys.

The following is a guideline to the types of data needed:

1. Demographic information may include but is not necessarily limited to: population; age; gender; ethnic/race; education; language; marital status; children, (age & gender); residence; household size; household income (fishing/non-fishing); occupational skills; and association with vessels & firms (role & status).

2. Social Structure information may include but is not necessarily limited to: historical participation; description of work patterns; kinship unit, size and structure; organization & affiliation; patterns of communication and cooperation; competition and conflict; spousal and household processes; and communication and integration.

3. In order to understand the culture of the communities that are dependent on fishing, research may include but is not necessarily limited to: occupational motivation and satisfaction; attitudes and perceptions concerning management; constituent views of their personal future of fishing; psycho-social well-being; and cultural traditions related to fishing (identity and meaning).

4. Fishing community information might include but is not necessarily limited to: identifying communities; dependence upon fishery resources (this includes recreational use); identifying businesses related to that dependence; and determining the number of employees within these businesses and their status.

5. This list of data needs is not exhaustive or all inclusive, and should be revised periodically in order to better reflect on-going and future research efforts (Kitner 2004).

7.4 Note for CEQ Guidance to Section 1502.22

In accordance with the CEQ Guidance for 40 CFR Section 1502.22 of the NEPA (1986), the Council has made "reasonable efforts, in the light of overall costs and state of the art, to obtain missing information which, in its judgment, is important to evaluating significant adverse impacts on the human environment…" However, at this time the Council cannot obtain complete social and community information that will allow the full analysis of social impacts of the proposed action and its alternatives. There are an insufficient number of sociologists or anthropologists employed at this time (2008) and insufficient funds to conduct the community surveys and needed ethnographies that would allow full analysis.

7.5 E.O. 12898: Environmental Justice

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. Federal agency responsibilities under this Executive Order include conducting their programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons from participation in, denying persons the benefit of, or subjecting persons to discrimination under, such programs, policies and activities, because of their race, color, or national origin. Furthermore, each federal agency responsibility set forth under this Executive Order shall apply equally to Native American programs.

Specifically, federal agencies shall, to the maximum extent practicable; conduct human health and environmental research and analysis; collect human health and environmental data; collect, maintain and analyze information on the consumption patterns of those who principally rely on fish and/or wildlife for subsistence; allow for public participation and access to information relating to the incorporation of environmental justice principals in Federal agency programs or policies; and share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among Federal agencies and with State, local, and tribal governments.

The SAFMC conducted a series of five scoping meetings for this amendment in which the public was invited to provide input on actions contained therein. Comments received were considered during the development of Amendment 7, and no environmental justice issues were raised during the scoping process. No Native American programs would be affected by actions contained within this amendment; therefore no tribal consultation has been initiated.

Section 3.4.2 describes several areas in North Carolina, South Carolina, Georgia and Florida where South Atlantic shrimp fisheries have a local presence. These communities were identified as key communities involved in the South Atlantic shrimp fishery based on fishing permit and employment data. The demographic information reported for these communities were derived from census data. Although the Census Bureau does not

supply race or income data at the community level, such data is available for each County in which the fishing communities exist. Based on 2005 Census data none of the counties within which any of the subject fishing communities is located has a disproportionately high poverty rate[33] , or minority population[34]. The proposed actions would be applied to all participants in the fishery, regardless of their race, color, national origin, or income level, and as a result are not considered discriminatory. Additionally, none of the proposed actions are expected to affect any existing subsistence consumption patterns. Therefore, no environmental justice issues are anticipated and no modifications to any proposed actions have been made to address environmental justice issues.

[33] Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14 if a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps) (U.S. Census, 2008).

[34] A minority population is one either: (a) the minority population of the affected area exceeds 50% or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (U.S. Census, 2008).

8 Other Applicable Law

8.1 Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NOAA FISHERIES SERVICE is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect. The development of this amendment follows all conditions outlined under the APA.

8.2 Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act (CZMA) of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the South Atlantic Council to have management measures that complement those of the states, Federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. Based on the analysis of the environmental consequences of the proposed action in Section 4.0, the Council has concluded this amendment would improve Federal management of the South Atlantic shrimp fishery.

8.3 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 *et seq.*) requires that federal agencies must ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NOAA Fisheries Service to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are "not likely to adversely affect" threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat. An informal ESA Section 7 consultation was initiated for this amendment and concluded that……

8.4 Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the Federal government and the States, as intended by the framers of the Constitution. No

federalism issues have been identified relative to the actions proposed in this amendment and associated regulations.

8.5 Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NOAA FISHERIES SERVICE prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new FMP or that significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or if it has other major economic effects. Regulations associated with this amendment are not considered significant according to significance criteria listed in E.O. 12866.

8.6 Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that Federal agencies are protecting these ecosystems. More specifically, the Order requires Federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

South Atlantic Snapper Grouper FMP Amendment 13A eliminated all potential adverse impacts to the deepwater coral species *Oculina varicosa* in the Oculina Experimental Closed Area that are associated with bottom fishing gear, fulfills the intentions of E.O. 13089. As noted in Section 1.1 of that document, the use of bottom trawls, bottom longlines, dredges, fish traps, and fish pots is currently prohibited within the Oculina Experimental Closed Area and that prohibition would not be affected by the proposed actions. Other ESA listed coral species in the region occur in shallower water and are outside of the rock shrimp fishery operating area.

8.7 Executive Order 13158: Marine Protected Areas

E. O. 13158 was signed on May 26, 2000 to strengthen the protection of U.S. ocean and coastal resources through the use of Marine Protected Areas (MPAs). The Order defined MPAs as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of

MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources." The Council is addressing MPAs in Amendment 14 to the South Atlantic Snapper Grouper FMP.

8.8 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NOAA Fisheries) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This MMPA amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries and studies of pinniped-fishery interactions.

The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities. To legally fish in a Category I and/or II fishery, a fisherman must obtain a marine mammal authorization certificate by registering with the Marine Mammal Authorization Program (50 CFR 229.4) and accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans.

Fisheries that employ trawl gear such as the rock shrimp and penaeid shrimp fisheries are typically considered to be Category II fisheries (72 FR 66048, November 27, 2007).

8.9 Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act (MBTA) implemented several bilateral treaties for bird conservation between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and the former Union of Soviet Socialists Republics. Under the MBTA, it is unlawful to pursue, hunt, take, capture, kill, possess, trade, or transport any migratory bird, or any part, nest, or egg of a migratory bird, except as permitted by regulations issued by the Department of the Interior (16 U.S.C. 703-712). Violations of the MBTA carry criminal penalties. Any equipment and means of transportation used in activities in violation of the MBTA may be seized by the United States government and, upon conviction, must be forfeited to it.

Executive Order 13186 directs each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) to conserve those bird populations. In the instance of unintentional take of migratory birds, NOAA Fisheries Service would develop and use principles, standards, and practices that will lessen the amount of unintentional take in cooperation with the USFWS. Additionally, the MOU would ensure that National Environmental Policy Act (NEPA) analyses evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

A Memorandum of Understanding (MOU) is currently being developed, which will address the incidental take of migratory birds in commercial fisheries under the jurisdiction of NOAA Fisheries. NOAA Fisheries Service must monitor, report, and take steps to reduce the incidental take of seabirds that occurs in fishing operations. The United States has already developed the U.S. National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries. Under that plan many potential MOU components are already being implemented. Potential impacts on migratory birds resulting from actions contained within this amendment are analyzed in the EA. No adverse or beneficial impacts on migratory bird species are expected as a result of implementing measures in Shrimp Amendment 7.

8.10 National Environmental Policy Act

Concerned with the degree of damages incurred by human activity on the sensitive ecological environment in the United States, Congress passed, and President Richard Nixon signed into law, the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §§ 4321 *et seq*. NEPA sets the national environmental policy by providing a mandate and framework for federal agencies to consider all reasonably foreseeable environmental effects of their actions. In addition, it requires disclosure of information regarding the environmental impacts of any federal or federally funded action to public officials and citizens before decisions are made and actions taken. The analysis and results are presented to the public and other agencies through the development of NEPA documentation. The EA integrated into Amendment 7 to the South Atlantic Shrimp FMP serves as the documentation to satisfy the requirements of NEPA.

8.11 National Marine Sanctuaries Act

Under the National Marine Sanctuaries Act (NMSA) (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of the NOAA. The Act provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The two main sanctuaries in the

South Atlantic EEZ are Gray's Reef and Florida Keys National Marine Sanctuaries. Currently there are no marine sanctuaries within the traditional operating area of the South Atlantic shrimp fishery. Actions proposed in this amendment are not expected to have any effect on any surrounding marine sanctuaries.

8.12 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the federal government. The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The proposed collection of data requirement in Amendment 7, Action 4 does require the initiation of a PRA consultation process. All data collection methods and forms will meet or exceed requirements set forth in the PRA.

8.13 Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980 (5 U.S.C. 601 *et seq*.) requires Federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA NOAA Fisheries Service must determine whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities. If not, a certification to this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the Act requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the Federal Register in full or in summary for public comment and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Changes to the RFA in June 1996, enable small entities to seek court review of an agency's compliance with the Act's provisions.

8.14 Small Business Act

Enacted in 1953, the Small Business Act requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise.

8.15 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Act to require that a FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions.

No vessel would be forced to participate in the rock shrimp fishery under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment.

No concerns have been raised by people participating in the fishery nor by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions. Therefore, this amendment proposes neither procedures for making management adjustments due to vessel safety problems nor procedures to monitor, evaluate, or report on the effects of management measures on vessel or crew safety under adverse weather or ocean conditions.

9 List of Preparers

Name	Title	Agency	Division	Location
Myra Brouwer (SAFMC Lead)	Fishery Scientist	SAFMC	N/A	SAFMC
John Carmichael	Science and Statistics Program Manager	SAFMC	N/A	SAFMC
Rick DeVictor	Environmental Impact Scientist	SAFMC	N/A	SAFMC
Sue Gerhart	Fish Biologist	NOAA FISHERIES SERVICE	Gulf Operations	SERO
Rick Hart	Research Fish Biologist	NOAA FISHERIES SERVICE	SEFSC	Galveston
Kate Michie	Fishery Biologist	NOAA FISHERIES SERVICE	S. Atl./Carib. Operations	SERO
Roger Pugliese	Senior Fishery Biologist	SAFMC	N/A	SAFMC
Kate Quigley	Economist	SAFMC	N/A	SAFMC
Monica Smit-Brunello	Attorney Advisor	NOAA	GC	SERO
Brent Stoffle	Social Scientist	NOAA FISHERIES SERVICE	SEFSC	Miami
Mike Travis (NOAA FISHERIES SERVICE Lead)	Economist	NOAA FISHERIES SERVICE	Economics	SERO
Gregg Waugh	Deputy Executive Director	SAFMC	N/A	SAFMC

10 List Of Agencies, Organizations, And Persons To Whom Copies Of The Statement Are Sent

Responsible Agency

Amendment:
South Atlantic Fishery Management Council
4055 Faber Place, Suite 201
North Charleston, South Carolina 29405
(843) 571-4366 (TEL)
Toll Free: 866-SAFMC-10
(843) 769-4520 (FAX)
safmc@safmc.net

Environmental Assessment:
NOAA Fisheries Service,
Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5301 (TEL)
(727) 824-5320 (FAX)

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Marine Protected Areas Advisory Panel
SAFMC Coral Advisory Panel
SAFMC Habitat and Environmental Protection Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
Gulf and South Atlantic Fisheries Development Foundation
Gulf of Mexico Fishery Management Council
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

11 References

Adams, W. F., Wilson, C. 1995. The status of the smalltooth sawfish, *Pristis pectinata* Latham 1794 (Pristiformes: Pristidae) in the United States. Chondros 6(4): 1-5.

Alsop, III, F. J. 2001. Smithsonian Handbooks: Birds of North America eastern region. DK Publishing, Inc. New York, NY.

Atlantic States Marine Fisheries Commission (ASMFC). 2004. Review of the Fishery Management Plan for Spot (*Leiostomus xanthurus*). Available online at www.asfmc.org

Bigelow, H.B., Schroeder, W. C. 1953. Sawfishes, guitarfishes, skates and rays, pp. 1-514. In: Tee-Van, J., C.M Breder, A.E. Parr, W.C. Schroeder and L.P. Schultz (eds.). Fishes of the Western North Atlantic, Part Two. Mem. Sears Found. Mar. Res. I.

Brooke, S., Young, C. M. 2003. Reproductive ecology of a deep-water scleractinian coral, *Oculina varicosa*. Continental Shelf Research 23: 847-858.

Brooke, S., Young, C. M. 2005. Embryogenesis and larval biology of the ahermatypic scleractinian *Oculina varicosa*. Marine Biology 146(4): 665-675.

Bumpus, D. F. 1973. A description of the circulation on the continental shelf of the east coast of the U. S. Progress in Oceanography (6): 111-157.

CEQ (Council on Environmental Quality). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. http://ceq.eh.doe.gov/nepa/ccenepa/toc.pdf

Cobb S. P., Futch C. R., Camp D. 1973. The rock shrimp, *Sicyionia brevirostris*, Stimpson, 1871 (Decapoda: Penaeidae). Memoirs of the Hourglass Cruises Volume III, Part I. 38 p.

Cook, R. 2003. The magnitude and impact of by-catch mortality by fishing gear. *In*: Sinclair, M., Valdimarsson, G. (eds.). Responsible Fisheries in the Marine Ecosystem. CABI Publishing, United Kingdom.

Dennis, C. 1992. A summary of rock shrimp landings and effort information off Florida east coast from 1985-1991. NMFS Southeast Fisheries Science Center. MIA-91/92-97. 5 p.

Epperly, S. P., Teas, W. G. 2002. Turtle Excluder Devices – are the escape openings large enough? Fishery Bulletin 100: 466-474.

GMFMC (Gulf of Mexico Fishery Management Council) and SAFMC 9South Atlantic Fishery Management Council). 1982. Fishery Management Plan and Final Environmental Impact Statement for Coral and Coral Reefs of the Gulf of Mexico and South Atlantic. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 316 p.

Haby, M. G., Miget, R. J., Falconer, L. L., Graham, G. L. 2003. A review of current conditions in the Texas shrimp industry, an examination of contributing factors, and suggestions for remaining competitive in the global shrimp market. Texas Cooperative Extension Sea Grant College Program, TAMU_SG_03_701, January 2003, 26 p.

Hill, K. 2005. *Sicyonia brevirostris* (Rock Shrimp) Species Report, Smithsonian Marine Station at Fort Pierce. Available at: http://www.sms.si.edu/IRLSpec/Sicyon_brevir.htm

IAI, 2007

Interorganizational Committee on Guidelines and Principles for Social Impact Assessment. 1994. Guidelines and Principles for Social Impact Assessment. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Available online at http://www.nmfs.noaa.gov/sfa/social_impact_guide.htm

Jacob, S., Jepson, M., Pomeroy, C., Mulkey, D., Adams, C., Smith, S. 2001. Identifying Fishing Dependent Communities: Development and Confirmation of a Protocol. A MARFIN Project and Report to the NMFS Southeast Fisheries Science Center.

Jepson, M., Kitner, K., Pitchon, A., Wicke Perry, W., Stoffle, B. 2006. Potential Fishing Communities in the Carolinas, Georgia and Florida: An effort in baseline profiling and mapping. A Report to the South Atlantic Fishery Management Council and the National Marine Fisheries Service. 312 p.

Keiser, R. K. 1976. Distribution of the Rock Shrimp (*Sycionia brevirostris*) in coastal waters of the southeastern United States. South Carolina Marine Resources Research Institute, Charleston, SC. 19 p.

Keithly, W. R., Hamady, D., Kazmierczak, R. F., Travis, M. D. 2005. An economic analysis of the Southeast U.S. shrimp processing industry, responses to an increasing import base. *In*: Reconciling Fisheries with Conservation: The Challenge of Managing Aquatic Ecosystems. In press.

Keithly, W. R., Hamady, D., Kazmierczak, R. F., Travis, M. D. 2006. The Impacts of Imports, Particularly Farm-Raised Product, on the Southeast U.S. Shrimp Processing Sector. Report to the Gulf and South Atlantic Fisheries Foundation. 50 p.

Kennedy F.S., Crane J.J., Schlieder R.A., Barber D.G. 1977. Studies of the rock shrimp, *Sycionia brevirostris*. A new fishery on Florida's Atlantic Shelf. Florida Department of Natural Resources, Marine Research Laboratory, St. Petersburg, FL. 69 p.

Kitner 2004

Kraus et al. 1993

Myers, R. A., Mertz, G. 1998. The limits of exploitation: a precautionary approach. Ecological Applications 8(1): 165-169.

Nance, J. M. (Editor). 1998. Report to Congress. Southeastern United States Shrimp Trawl Bycatch Program. NOAA National Marine Fisheries Service, Southeast Fisheries Science Center Galveston Laboratory. 154 p.

NOAA Fisheries Service. 2001. Stock assessments of loggerhead and leatherback sea turtles and an assessment of the impact of the pelagic longline fishery on the loggerhead and leatherback sea turtles of the Western North Atlantic. U.S. Department of Commerce, National Marine Fisheries Service, Miami, FL SEFSC Contribution PRD-00/01-08, Parts I-III and Appendices I-VI.

NOAA Fisheries Service. 2002. Endangered Species Act – Section 7 Consultation. Biological opinion on shrimp trawling in the southeastern United States, under the Sea Turtle Conservation Regulations and as managed by the fishery management plans for shrimp in the South Atlantic and Gulf of Mexico. NOAA Fisheries, Silver Spring, MD.

Reed, J. K., Koenig, C. C., Shepard, A. N. 2007. Impact of bottom trawling on a deep-water *Oculina* coral ecosystem off Florida. Bulletin of Marine Science 81: 481–496.

Rothschild, B.J., 1986. Dynamics of marine fish populations. Harvard University Press, Cambridge, MA.

SAFMC (South Atlantic Fishery Management Council). 1988. Amendment 1 to the Snapper Grouper Fishery Management Plan. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1993. Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 184 p + appendices.

SAFMC (South Atlantic Fishery Management Council). 1996a. Amendment 1 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region (Rock Shrimp). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 118 p + appendices.

SAFMC (South Atlantic Fishery Management Council). 1996b. Amendment 2 (Bycatch Reduction) to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 108p + appendices.

SAFMC (South Atlantic Fishery Management Council). 1998a. Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (Amendment 3 to the Shrimp Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998b. Habitat Plan for the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998c. Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and Other Required Provisions in Fishery Management Plans of the South Atlantic Region (Amendment 4 to the Shrimp Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 151 p.

SAFMC (South Atlantic Fishery Management Council). 1999. Stock Assessment and Fishery Evaluation Report for the Shrimp Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 93 p + appendices.

SAFMC (South Atlantic Fishery Management Council). 2002. Amendment 5 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region (Rock Shrimp). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 139 p + appendices.

SAFMC (South Atlantic Fishery Management Council). 2004. Amendment 6 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 256p + appendices.

Sea Grant Louisiana. 2006. Rock Shrimp. Lagniappe Vol.30, No.9

Simpfendorfer, C. A. 2003. Abundance, movement and habitat use of the smalltooth sawfish. Final Report to the National Marine Fisheries Service, Grant number WC133F-02-SE-0247. Mote Marine Laboratory Technical Report (929).

Waring, G.T., Quintal, J. M., Fairfield, C. P., Editors. 2002. U.S. Atlantic and Gulf of Mexico Marine Stock Assessments-2002. NOAA Tech. Memo NMFS-NE-169. Department of Commerce, Woods Hole, Massachusetts. 318 p.

Wilson, D. C., McCay, B. J. 1998. How the Participants Talk About Participation in Mid-Atlantic Fisheries Management. Ocean and Coastal Management 41:41-61.

12 Finding of No Significant Impact (FONSI)

To be completed after June 2008 Council meeting

13 Index

To be completed after June 2008 Council meeting