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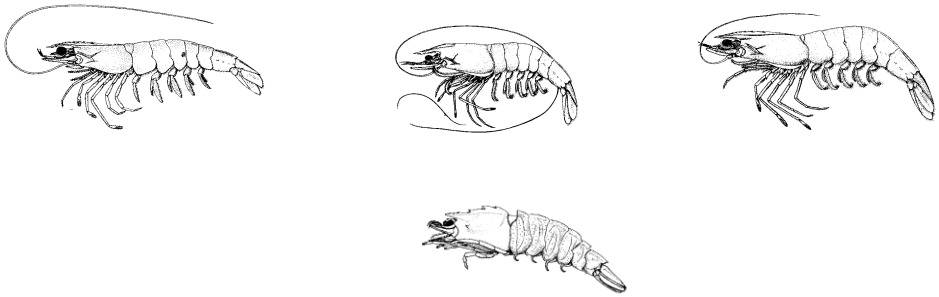
AMENDMENT 7 TO THE FISHERY MANAGEMENT PLAN FOR THE SHRIMP FISHERY OF THE SOUTH ATLANTIC REGION

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



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ABBREVIATIONS AND ACRONYMS

ACCSP	Atlantic Coastal Cooperative Statistics Program
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}
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CL	Carapace Length
CPUE	Catch per unit effort
CZMA	Coastal Zone Management Act
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_{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}
FMP	Fishery management plan
GFMC	Gulf of Mexico Fishery Management Council
MARFIN	Marine Fisheries Initiative
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act of 1972
MOU	Memorandum of Understanding
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
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
RSE	Rock Shrimp Endorsement
SAMFC	South Atlantic Fishery Management Council
SEFSC	Southeast Fisheries Science Center
SEIS	Supplemental Environmental Impact Statement
SERO	Southeast Regional Office

SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SPA	Penaeid Shrimp Permit
SRS	South Atlantic Rock Shrimp
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service

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

INCLUDING A DRAFT 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; rename the rock shrimp permit and endorsement to minimize confusion; require Vessel Monitoring System verification; and require the provision of economic data by shrimp permit holders.

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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;
- Require verification of an active and operational Vessel Monitoring System for renewal, reinstatement or transfer of a limited access rock shrimp endorsement; 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.

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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. The Council is concerned about vessels with limited access endorsements fishing in South Atlantic waters without an approved Vessel Monitoring System. Hence, an action to verify operation and activation of such a system is being proposed for renewal, reinstatement or transfer of a rock shrimp 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 limited access endorsements for those vessel owners who renewed their open access permit in the year in which they failed to renew their limited access endorsement. Require vessel owners eligible to have their vessel 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 a limited access 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. Rename 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 both an "open access permit" and a "limited access endorsement" to fish for rock shrimp in the EEZ off Georgia and Florida.

Preferred Alternative 2. Rename the limited access endorsement and the open access permit of the existing permit system as follows:
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 verification of Vessel Monitoring System.

Alternative 1 (No-action). Do not require verification of an active and operational VMS for renewal, reinstatement or transfer of a limited access rock shrimp endorsement.

Preferred Alternative 2. An application for renewal, reinstatement, or transfer of a rock shrimp limited access endorsement will not be considered complete until proof of activation and operational status of an approved VMS (for the vessel receiving the endorsement) has been verified by NMFS VMS personnel.

Action 6. 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 (2008), and would likely result in a proportionate loss of revenue generated by the rock shrimp fishery affecting the supporting infrastructure and surrounding communities. **Preferred 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 **Preferred 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 **Alternative 1 (No-action)** no endorsements would be reinstated, thus reducing potential fishery participation and effort, in turn causing in an indirect beneficial biological effect. **Preferred Alternative 2 and Alternative 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 remaining 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 (No-action)**. 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

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. **Preferred Alternative 2** and **Alternative 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. Rename 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 verification of Vessel Monitoring System

Biological Effects
Neither of the alternatives in this action would have a direct effect on the biological environment. Indirect effects could occur if compliance with the VMS requirement differs under the two alternatives and results in differences in compliance with closed areas.

Social/Economic Effects
Preferred Alternative 2 under **Action 5** will impact 21 vessels if **Preferred Alternative 2** under both **Actions 1** and **2** are also selected since these are the only alternatives that would likely allow these vessels to retain their endorsements. Under this scenario, the owners of these 21 vessels would have to purchase, install, and activate a VMS and provide proof of such in order to renew or transfer their endorsements. Under the potential new VMS requirement, these 21 vessel owners would either have to comply with the new requirement by purchasing, installing and activating a VMS on their vessel or not comply and thereby implicitly decide not to retain their endorsement. The decision each vessel owner makes will be based on the individual owner's assessment of the benefits and costs associated with each option.

Action 6. 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 nearly 2.6 million pounds per year for 2003-2007, with large interannual variability. In particular, landings in 2005 were less than 5% of the average, while landings in 2004 were nearly 255% 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 under 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. If an endorsement has not been renewed within one year after expiration the endorsement is considered **terminated**. Thus, the terms "terminated" and "non-renewable" are synonymous and may be used interchangeably. A vessel must land at least 15,000 pounds of rock shrimp in at least one year during any four consecutive years or the endorsement cannot be renewed. If an endorsement is transferred to another vessel before it expires, the four-year time period for the landings requirement restarts. In addition, a vessel monitoring system (VMS) is required on any vessels with a limited access endorsement that makes a trip in the South Atlantic [50 CFR 622.9(a)(1)].

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

The Council is considering several management measures to address the ability of vessels to retain their South Atlantic rock shrimp limited access endorsements. The Council is 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 vessel's endorsement in a timely manner to retain their eligibility. Specifically, for vessels to retain eligibility, the vessel owner 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 (FR Vol. 68 No. 11, January 16, 2003) 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.

VMS units are required on all vessels with a rock shrimp limited access endorsement when fishing in the South Atlantic. Currently, renewal and transfer of endorsements is not contingent on fulfilling this requirement. Requiring proof of functioning VMS before an endorsement is renewed, reinstated or transferred could increase compliance and reduce burden on enforcement.

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.

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 2004-2008. 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 will lose 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 endorsement has been terminated.

In total, 73 will or have been eliminated from the rock shrimp fishery under current regulations due to not meeting the 15,000-pound requirement, the renewal period, or both: this includes the 43 vessels mentioned above that will lose their endorsements in this year (2008) alone and the 30 vessels with non-renewable endorsements that have already been removed from the fishery. 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 endorsement holders do not understand the renewal process. This would reduce the fishery to the 105 vessels with currently active endorsements by the end of 2008, and even further as more endorsements come up for renewal. A change in the existing permit structure to more closely resemble the one intended in Amendment 5 could decrease the chance for fishermen to lose their fishing privileges due to confusion.

VMS units allow law enforcement to determine the location of a rock shrimp vessel with a limited access endorsement when on a trip in the South Atlantic. This ability helps uphold prohibitions against fishing in closed areas such as the *Oculina* Bank Habitat Area of Particular Concern (HAPC). Tying endorsement issuance with certification of operating VMS units is needed to increase compliance with the VMS requirement and improve enforcement of closed areas. This proposed action will support Management Objective 14 of the Shrimp FMP as amended (see **Section 1.4**): "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."

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 (Section 1.4): "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.

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

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 (SAFMC 2002) was developed to address issues in the rock shrimp fishery. 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 rock shrimp fishery and the infrastructure.

2 Actions and Alternatives

This environmental assessment explores the differences among a number of management alternatives for six 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, Rock 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 four 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).

Preferred Alternative 2. 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 five 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. **Preferred 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 vessel owners 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 40 vessels would lose their endorsements in the short-run and 27 additional vessels could lose their endorsements in future years under this alternative. Thus, this alternative could result in a permanent 32% reduction in fishery participation in the short-term and a possible 54% reduction in the long-term. 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 loss of revenue. Such loss of revenue would indirectly affect supporting infrastructure and surrounding communities. Additionally, there is currently no formal mechanism by which South Atlantic rock shrimp landings are compiled and reported to NOAA Fisheries Service Southeast Region's Permits Office for the purpose of determining whether endorsement holders have met the landings requirement and thus whether endorsements should or should not be renewed after each vessel's four-year time frame has ended. If the landing requirement is to be retained, such a mechanism will need to be created in the near future given the impending deadline for many vessels to meet the requirement.

Preferred Alternative 2 would remove the landing requirement allowing for the highest level of fishery participation of all the alternatives. Enabling 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 **Preferred Alternative 2. Preferred Alternative 2** would have short-term administrative impacts in the form of development and dissemination of outreach materials. In the long-term however, landings would no longer have to be tracked on an ongoing basis to determine which vessels have reached the 15,000-pound requirement, therefore administrative impacts under **Preferred Alternative 2** would be least of all the alternatives considered. **Alternative 3** would also require the creation of a system to compile landings information and implement ongoing monitoring in the long-term to determine which vessels would meet a 7,500-pound landing requirement, thus incurring a similar administrative burden to that of **Alternative 1 (No-action)**.

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

	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.
Biological	+	-	-
Economic	-	+ +	+
Social	-	+	+
Administrative	-	+	-

(+) beneficial; (++) significantly beneficial; (-) adverse; (--) significantly adverse; (+-) some beneficial and some adverse effects.

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).

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.
Under this alternative all endorsements lost due to not meeting the landing requirement by December 31, 2007, would be reinstated. Forty three vessels could have their endorsements reinstated under **Preferred Alternative 2**, allowing a total of 125 vessels to hold rock shrimp endorsements.

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.
Under **Alternative 3** three or possibly four 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 by 34%, resulting in an indirect beneficial biological effect. **Alternatives 2 and 3** would result in adverse biological effects, however **Preferred Alternative 2** would likely result in a higher level of fishery participation than **Alternative 3**. Under **Alternative 3** fishery participation would decrease by 32%. Of all the alternatives considered, **Preferred 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 much smaller number of endorsements to be reinstated than **Preferred 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.

	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 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	+	-	-

(+) beneficial; (++) significantly beneficial; (-) adverse; (--) significantly adverse;
(+-) some beneficial and some adverse effects

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 effects. **Preferred Alternative 2** and **Alternative 3** would have approximately the same level of administrative impacts, but the expected costs and burdens associated with **Preferred Alternative 2** would not outweigh the expected 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.

Shrimp Amendment 5 (SAFMC 2002) required a limited access rock shrimp permit while the proposed and final rule implemented 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 vessels with non-renewable endorsements, that did at one time hold a limited access endorsement and applied for an open access permit, none have met the 15,000-pound requirement.

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. Of the 30 currently terminated limited access endorsements, some of those vessel owners, when filling out the application form, did not understand that in order to renew their vessels' 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.

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. None of the 30 terminated/non-renewable endorsement would be reinstated under this alternative.

Preferred Alternative 2. Reinstate all limited access endorsements *for those vessel owners who renewed their open access permit in the year in which they failed to renew their limited access endorsement.* Require vessel owners eligible to have their vessel 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 a limited access 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. The process and notification to vessel owners of this action would be initiated by the Office of Sustainable Fisheries with the Permits Office via a certified letter informing them that they need only to fill out an application form and submit it to the Permits Office to receive their reinstated limited access endorsement. Furthermore, owners of vessels 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. If **Alternative 2** under **Action 1** is not implemented, all 30 of the currently terminated endorsements would remain terminated. If **Alternative 2** under **Action 1** and **Alternative 2** under **Action 2** are implemented, five of the 30 total terminated endorsements could be reinstated under this alternative.

Alternative 3. Extend the time allowed to renew rock shrimp endorsements to one calendar year after the effective date for this action.
Of the 30 currently terminated limited access endorsements five vessel owners, when filling out the application form, may not have understood that in order to renew their vessels' endorsement along with their permit they had to mark the boxes for *both* the permit and the endorsement. Therefore, some fishery participants may have submitted applications for only the permit, when they intended to also renew the endorsement. **Alternative 3** would give those five vessel owners who failed to renew their vessels' 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 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 Regional 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. **Preferred Alternative 2** and **Alternative 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 the most beneficial socioeconomic effects would be realized under **Preferred Alternative 2**, 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 **Preferred 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 **Preferred Alternative 2** the socioeconomic environment would be beneficially and directly affected if eligible endorsements are reinstated. Approximately five of the 30 vessels currently associated with terminated endorsements 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 full benefits of the action may not be realized 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 potential 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 to vessel owners specifying 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 that could result under **Preferred Alternative 2**. Other direct administrative effects would include cost and effort associated with determining which vessels 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 **Preferred Alternative 2**, without the guarantee that each vessel owner 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.

	Alternative 1 (No-Action). Do not reinstate lost endorsements.	**Preferred Alternative 2.** Reinstate all limited access endorsements for those vessel owners who renewed their open access permit *in the year in which they failed to renew their limited access endorsement*. Require vessel owners eligible to have their vessel 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	+	-	-

(+) beneficial; (++) significantly beneficial; (-) adverse; (--) significantly adverse;
(+-) some beneficial and some adverse effects

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 minimal biological effect, if any. Administratively, this alternative would create a burden comparable to that of **Alternative 3** but the likelihood of beneficial economic effects being realized under **Alternative 2** would be slightly higher since the process would be automatic. Any additional administrative burden or cost under **Alternative 2** is not expected to outweigh the benefits of its implementation.

2.4 Action 4. Rename 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. Renaming the permits 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 both a "limited access endorsement" and an "open access permit" 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.

Preferred Alternative 2. Rename the limited access endorsement and the open access permit of the existing permit system as follows:

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.

Rock Shrimp Permit (Carolinas Zone) holders (currently open access permit holders) may not apply for the Rock Shrimp Permit (South Atlantic EEZ) (currently limited access endorsement). Fishermen who currently possess valid (non-expired) open access rock shrimp permits (RS) or limited access rock shrimp endorsements (RSE) need not apply to receive a renamed permit because these renamed permits will be sent to current permit holders automatically. Permit holders that have expired permits but renewable RSEs will need to apply to receive a renamed Rock Shrimp Permit (South Atlantic EEZ). Permit holders that have an expired open access RS will need to apply to receive a renamed Rock Shrimp Permit (Carolinas Zone). Permit holders eligible for reinstatement will need to apply to have a Rock Shrimp Permit (South Atlantic EEZ) reinstated to them. Replacement permits would be issued with the same expiration date as the permit or endorsement for which the replacement is issued, and reinstated permits would be issued with an expiration date as the implementation date of the rule associated with this amendment.

Any limited access endorsements or open access permits that are not active on the date of implementation will not have replacements automatically issued. These vessel owners would need to apply to receive their vessels' replacement permits and/or endorsements.

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, **Preferred 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. The implementation date would be on or about the 27th day of the third month following publication of the final rule for this amendment. The Permits Office would conduct a one-time mass mail-out of replacement permits approximately two weeks before the date of implementation in order to allow enough time for the permits to reach the recipients before they are required to have them.

The only exception to this would be for vessels that have an open access rock shrimp permit immediately before implementation day, but do not have a limited access rock shrimp endorsement because vessel owners at the time failed to renew their limited access endorsement but did renew their open access permit (if **Preferred Alternative 2** under **Action 3** is implemented). These vessels are those we consider to have lost their limited access endorsement due to confusion about the requirement to apply to renew both their open access permit and their limited access endorsement. These vessel owners would be eligible to have their limited access endorsement reinstated to them under **Alternative 2** in **Action 3**, and therefore would not be part of the one-time mail-out.

Vessel owners whose vessels are eligible for reinstatement under **Action 3** would be sent a certified letter informing them of this action, along with any other requirements they must meet in order to have their vessels' limited access endorsement reinstated.

Regulations implementing this amendment would also need to be changed to call for a freeze on all open access permit and limited access endorsement transfers and/or renewals between the effective date of this provision in the final rule and the date of implementation of the new permits. Complete applications to transfer or renew limited access endorsements or open access permits would need to be received by the Permits Office 30 days before the effective date of the freeze on all transfers and renewals. Notice of this requirement would be drafted and disseminated prior to this provisions' effective date. Regulations would also need to specify that all old limited access endorsements and open access permits will no longer be valid as of the implementation date even though the expiration date on the physical permits and endorsements may be for a later date. 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 3** under **Action 3** is implemented.

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

	Alternative 1 (No Action). Continue to require an "open access permit" to fish for rock shrimp in the EEZ off the Carolinas and a both a "limited access endorsement" and an "open access permit" to fish for rock shrimp in the EEZ off Georgia and Florida.	**Preferred Alternative 2.** Rename the limited access endorsement and the open access permit of the existing permit system as follows: A. Rock Shrimp Permit (South Atlantic EEZ) – allows fishing throughout the South Atlantic EEZ B. Rock Shrimp Permit (Carolinas Zone) – allows fishing in the EEZ off North and South Carolina.
Biological	No effect	No effect
Economic	-	+-
Social	-	+
Administrative	No effect	-

(+) beneficial; (++) significantly beneficial; (-) adverse; (--) significantly adverse;
(+-) some beneficial and some adverse effects

2.4.2 Conclusion

Alternative 1 (No-action) would not rename 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. **Preferred 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 verification of Vessel Monitoring System.

A vessel monitoring system (VMS) is required when a rock shrimp vessels with a limited access endorsement is on a trip in the South Atlantic [50 CFR 622.9(a)(1)]. Currently, renewal and transfer of endorsements is not contingent on fulfilling this requirement. Requiring proof of a functioning VMS before an endorsement is renewed, reinstated or transferred could increase compliance and reduce the burden on enforcement.

VMS units allow law enforcement to determine the location of a rock shrimp vessel with a limited access endorsement when on a trip in the South Atlantic. This ability helps uphold prohibitions against fishing in closed areas, such as the *Oculina* Bank Habitat Area of Particular Concern (HAPC). Tying endorsement issuance with certification of operating VMS units is needed to increase compliance with the VMS requirement and improve enforcement of closed areas.

Alternative 1 (No-action). Do not require verification of an active an operational VMS for renewal, reinstatement or transfer of a limited access rock shrimp endorsement.

Under **Alternative 1 (No-action)** any law enforcement issues regarding closed areas as they relate to the rock shrimp fishery would persist.

Preferred Alternative 2. An application for renewal, reinstatement, or transfer of a rock shrimp limited access endorsement will not be considered complete until proof of activation and operational status of an approved Vessel Monitoring System (for the vessel receiving the endorsement) has been verified by NMFS VMS personnel.

Preferred Alternative 2 would help to ensure that vessels in the South Atlantic rock shrimp fishery are able to be monitored for compliance with current prohibitions on fishing in certain protected areas within the South Atlantic region. In order to show that a vessel has on board a Vessel Monitoring System (VMS), which has been activated and deemed operational, the installer would be required to fill out a VMS activation certification form to be submitted to the NOAA Fisheries Service Office for Law Enforcement. It is estimated that this would create an approximate 15-minute time burden on the vessel owners. As many as 21 rock shrimp vessels could be affected under this alternative, and would have to either purchase a VMS unit for their vessel, or give up their vessels' endorsement. Currently of those 21 vessels without VMS, 14 have active endorsements and seven of them are renewable.

The cost of the least expensive VMS unit on the market is $3,100.00, which is the maximum amount reimbursed (by the VMS Reimbursement Program) to the vessel owner if they are purchasing a VMS unit for the first time. Vessel owners who purchase a more expensive VMS unit will only be reimbursed the initial $3,100.00. The cost of installation is not included in the reimbursement program and in most cases costs an average of $200 depending upon where the vessel is located in relation to the installer. In very unique situations, a vessel owner, if located a great distance away from the nearest installer, would be responsible for costs associated with travel and lodging for the installer. Additionally, some VMS units require an activation/deactivation fee to turn the service on or off which may cost $50.00 to $55.00. These costs as well as the purchase of a VMS unit for the second time are not covered by the VMS Reimbursement Program. Purchasers would need to apply for reimbursement. NOAA Fisheries Service would incur a cost of approximately $651,000 for purchasing the units if all 21 vessel owners decide to buy them.

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

	Alternative 1 (No Action). Do not require verification of an active and operational VMS for renewal, reinstatement or transfer of a limited access rock shrimp endorsement	**Preferred Alternative 2**. An application for renewal, reinstatement, or transfer of a rock shrimp limited access endorsement will not be considered complete until proof of activation, and operational status of an approved VMS for the vessel receiving the permit has been verified by NOAA Fisheries Service VMS personnel
Biological	-	+
Economic	No Effect	-
Social	-	+
Administrative	No Effect	-

(+) beneficial; (++) significantly beneficial; (-) adverse; (--) significantly adverse;
(+-) some beneficial and some adverse effects

2.5.1 Comparison of Alternatives

Alternative 1 (No-action) is not expected to have any significant biological effects, however if enforcement of protected areas is not possible for vessels that do not have an operational VMS on board there is a chance that non-compliant vessels may cause some adverse biological effects if they deploy trawl gear within the protected areas. No economic impacts are expected under **Alternative 1 (No-action)**. Under **Preferred Alternative 2** there would be only minor economic impacts on fishermen purchasing a VMS unit for the first time since their purchase price will be reimbursed up to $3,100.00. NOAA Fisheries Service would incur a cost of approximately $651,000 for purchasing the units if all 21 vessel owners decide to buy them. Outside of the reimbursement, the vessel owners would be responsible for instillation fees, which average approximately

$200.00, any repair costs, and possible activation/deactivation fees imposed by various VMS vendors. More significant economic impacts would be created for vessel owners not purchasing a VMS unit for the first time, for which they would not be reimbursed. Additionally, a software update for all Thrane & Thrane TT-3026/M VMS units has recently been mandated for all vessels required to have a VMS. Vessels that do not comply with this requirement are in violation regardless of species being targeted, and the vessels' VMS system cannot be verified for transfer, renewal, or reinstatement of an endorsement. In order to update the unit's software the vendor must be contacted and the unit sent to them for analysis and software updates. In order to renew a rock shrimp endorsement, VMS units made by this vendor will need to be updated to be considered fully operational, and thus comply with terms of renewal, transfer, or reinstatement under **Preferred Alternative 2**. All costs associated with the software update are the responsibility of the vessel owner.

Of the total 21 vessels without VMS, several (approximately eight) are quite small (15-24 ft). This group of vessels may not have the technical capability to support a VMS system. When such vessels' rock shrimp endorsements are up for renewal, the vessel owners may not be able to renew due to this technological deficiency. In which case, these boat owners would lose the market value of their endorsements ($5,000 per boat, or $40,000 in total). Given their size, it is highly unlikely these boats would ever participate in the fishery and so the loss of future income from the fishery is not germane. If these endorsements are not renewed or transferred to other vessels with a VMS, they would eventually be terminated and lost from the fishery. Thus, it is possible that the number of endorsements in the fishery could be reduced from the previously noted maximum of 130, based on the currently preferred alternatives under **Actions 1, 2, 3, and 4**, to 122.

Social impacts of **Preferred Alternative 2** might include an increased wariness amongst vessel owners who may feel the government is further encroaching, restricting, or monitoring their use of a public resource.

Alternative 1 (No-action) would not create any additional administrative burden or cost. **Preferred Alternative 2** under this action would incur moderate administrative effects. In the near-term the VMS Certification Form would need to be made available to fishery participants who are wishing to renew, transfer, or have their rock shrimp endorsement reinstated. Currently there exists a VMS activation certification form for the reef fish fishery in the Gulf of Mexico, which would be adapted for use in the rock shrimp fishery of the South Atlantic. Therefore, **Preferred Alternative 2** would have PRA implications, and would therefore require the filling and processing of appropriate paperwork by NOAA Fisheries Service to comply with current PRA requirements. The form would have to be renewed through the PRA process every five years after it is implemented. The form would be made available on the NOAA Fisheries Service web site, and at the Southeast Regional Permits Office. The Permits Office would then have to check their database against that of the VMS Office containing all rock shrimp vessels that do and do not have proof of activation of an operational VMS unit. Only after the Permits Office has verified the owner of a subject vessel has submitted proof of having

an activated and operational VMS in the form of the VMS activation certification form previously mentioned, will the endorsement be renewed, transferred, or reinstated.

Those vessels that do not have the updated software required for the Thrane & Thrane VMS model will not be able to be verified as having an activated and operational VMS. Additionally, there would be an approximate 15-minute time burden associated with the vessel owner having to fill out the VMS activation certification form. If **Preferred Alternative 2** is implemented, various types of outreach materials would be prepared and disseminated in order to notify rock shrimp fishery participants of the requirement, further adding to the administrative burden and cost.

2.5.2 Conclusion

Alternative 1 (No-action) would not require proof of an active an operational VMS for renewal, reinstatement or transfer of a limited access rock shrimp endorsement. Indications currently are that the *status quo* may be insufficient to prevent trawling for rock shrimp in areas where bottom fishing is prohibited such as the *Oculina* Bank HAPC. Even though a VMS is currently required for a vessel to hold a limited access endorsement, not all vessels possessing an endorsement are currently equipped with VMS and thus the potential exists for these vessels to fish in South Atlantic waters without such monitoring equipment. **Preferred Alternative 2** would ensure that any vessel whose endorsement is reinstated, renewed or transferred is indeed equipped with an approved VMS thus directly addressing the Council's intent to prohibit bottom fishing within vulnerable areas in the South Atlantic.

2.6 Action 6. 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 fisheries' 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 to yield statistical estimates with a high level of confidence. To remedy this lack of economic fishery data, **Action 6** of this amendment proposes to amend the FMP to include a requirement for vessels with South Atlantic rock shrimp permits and/or 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/or 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.

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

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. **Preferred 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.

2.6.1 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 they are 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 6.

	Alternative 1 (No Action). This would not allow collection of economic data from all shrimp permit holders.	**Alternative 2.** Require all shrimp permit holders to provide economic data.	**Preferred Alternative 3.** 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	-	-

(+) beneficial; (++) significantly beneficial; (-) adverse; (--) significantly adverse;
(+-) some beneficial and some adverse effects

2.6.2 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 59-597 feet (18-182 m) deep with highest concentrations occurring at 112-180 feet (34-55 m). 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. 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

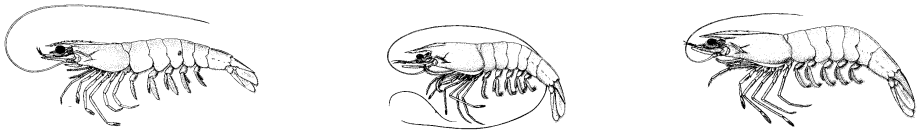
Much of the information in this section is taken from reviews of shrimp biology found in the original Shrimp FMP, subsequent amendments, and additional source references cited therein. The original Shrimp FMP also describes Council concerns and recommendations to protect shrimp habitat. The description below focuses on rock shrimp biology. **Action 6** 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 content 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. 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 0.7-0.9 inches (17-24 mm) carapace length (CL), and males reach maturity by

0.65-0.9 inches (18-24 mm) 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 in 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 98 feet (0 to 30 m), to support successful larval settlement, recruitment, and reattachment of asexual fragments. Proposed Critical Habitat areas, therefore, comprise all waters in the depths of 98 feet (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 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (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 130 feet (40 m) depth contour [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 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 30 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). 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). 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).

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 120 feet (36.6 m) and 156 feet (47.5

m) and between 200 feet (61 m) and 240 feet (73 m) (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.

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 75-80 feet (23-24 m) 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. There 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 70-foot (21 m) 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 1-7/8 inches (4.8 cm), 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 11, 2006, 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 (FR Vol. 70 No. 327, Final Rule implementing Shrimp Amendment 6). 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 example, 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 focus 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 were 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, 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. 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.

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

[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.

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)[2].

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)[3]
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] 2007 trip ticket data for South Carolina and North Carolina was provided by the North Carolina Department of Environment and Natural Resources and the South Carolina Department of Natural Resources respectively.

[3] 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.[4]

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

*2007 data are preliminary

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

[4] With the exception of 150lbs in 2003 and 22lbs 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.

number of trips is only a very rough estimate of effort, and thus landings per trip is similarly only a rough estimate of abundance, landings per trip was 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 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, the importance of which is

discussed in **Section 3.4.2.4** under the description of 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. 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," which indicates 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 four 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 lbs. (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 four-year cycle, the four-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 Permit Information Management System (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 fishery participants' 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	# of Vessels	Currently Active or Renewable[5]	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**

[5] 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

This section provides a detailed description of potentially affected entities. 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.

Vessels with Rock Shrimp Limited Access Endorsements and Commercially Active

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 (22 m) 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 (16.7-18 m), 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[6].

	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 with 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				

[6] 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.[7]

	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) with 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

[7] 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.[8]

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

[8] 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. Landings and Revenue Statistics by Landing Year, All Commercially Active RSE Vessels, 2003-2007 - Continued.

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 occurred 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 2003 through 2007, the only noticeable difference is that a higher proportion of vessels that were specifically active in the rock shrimp fishery tended to have steel hulls with on-board freezing capacity, and a lower proportion had wood hulls and used 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) with Limited Access Rock Shrimp Endorsements and SRS Landings between 2003 and 2007.[9]

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				

[9] 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 3.4-15, 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.[10]

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

[10] 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. and Revenue Statistics by Landing Year, RSE Vessels with SRS landings, 2003-2007 - Continued.

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

Vessels with Active or Renewable Rock Shrimp Endorsements

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 eight vessels were not engaged in commercial fishing. Again, all eight 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)
# 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
St. 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
St. 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. Landings and Revenue Statistics by Landing Year, Vessels with Active or Renewable RSEs, 2003-2007 - Continued.

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

Vessels with Terminated Rock Shrimp Endorsements

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% came 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)
# 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
St. 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. Landings and Revenue Statistics by Landing Year, Vessels with Terminated RSEs, 2003-2007 - Continued.

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

Vessels with Open Access Rock Shrimp Permits and South Atlantic Penaeid Permits

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 and 255 in 2004 and 2007, respectively.

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.

All Vessels with South Atlantic Penaeid or Rock Shrimp Permits/Endorsements

Finally, as previously noted, many vessels possess two or all three of these permits/endorsements. The total number of vessels that possess one or more South Atlantic penaeid or rock shrimp permits/endorsements is 694. Information regarding these vessels' physical and operational characteristics is presented in Tables 3.4-42 and 3.4-43. Since the vast majority of these vessels possess penaeid shrimp permits, these vessels' physical and operational characteristics are nearly identical to those with penaeid shrimp permits on average. That is, this fleet of vessels is very heterogeneous with respect to its physical characteristics. For example, approximately 65% of the vessels are large while 35% are small. Less than 40% have on-board freezing capacity while nearly 60% rely on ice for storage purposes. With respect to their hulls, the fleet is approximately evenly split between steel, wood, and fiberglass. On average, this group of vessels is somewhat smaller, older, less technologically advanced and uses less crew and gear relative to vessels that only possess limited access rock shrimp endorsements.

The same logic applies to these vessels' participation in and distribution of landings and revenues across commercial fisheries. Specifically, 648 of these 694 vessels, or more than 93%, were active in commercial fishing at some point between 2003 and 2007. Further, information in Table 3.4-44 indicates that revenues from the Gulf shrimp, Northeast non-shrimp, and South Atlantic penaeid shrimp fisheries have accounted for 36%, 31% and 24% of these vessels' total revenues on average between 2003 and 2007, respectively, which again is very similar to the distribution for vessels with penaeid

shrimp permits. The average total revenue per vessel during this time was approximately $185,000, which is comparable to vessels with penaeid shrimp permits though 35% less than vessels that possess a limited access rock shrimp endorsement.

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 Rock 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	10,401,633	$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 Rock 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	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. Landings and Revenue Statistics by Landing Year, All Commercially Active Open Access Rock Shrimp Vessels, 2003-2007 - Continued.

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

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. Physical Characteristics and Selected Statistics for All Vessels with Rock or Penaeid Shrimp Permits/Endorsements.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
Number of vessels	484	374	322	692	694	692	614	641	601
Minimum	1	1	11	2	12	5	5	6	10
Maximum	7	4	130	87	131	1,720	48,000	232	160,000
Total	1,497	1,300	17,072	18,236	43,228	316,446	5,086,822	59,147	22,936,570
Mean	3.1	3.5	53.0	26.4	62.3	457.3	8,284.7	92.3	38,164.0
Standard Dev	0.9	0.9	14.7	11.2	17.0	200.7	8,554.5	44.9	33,827.0

Table 3.4-43. Distribution of Additional Physical Characteristics for All Vessels with Rock or Penaeid Shrimp Permits/Endorsements.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Steel	35.4	Ice	59.8	Large	64.4
Wood	33.9	Freezer	39.5	Small	35.6
Fiberglass	30.4	Live Well	.7		
Aluminum	.3				

Table 3.4-44. 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

Recent Economic Condition of the South Atlantic Shrimp Fisheries

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-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 example, 4-5% 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 more than a $1 higher at 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 suggests 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.[11] 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[12]

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 3.4-45, 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.

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

[12] 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 3.4-45. 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 landing 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 3.4-46, 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 3.4-46. 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 3.4-46. 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 significantly 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 firms 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.[13] 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 3.4-47.[14] 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.

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

[13] 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.

[14] 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 3.4-47. 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).[15] 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

[15] 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.[16] 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

[16] 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 buying.[17]

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 open access rock shrimp permits or five limited access rock shrimp endorsements. The list is as follows:

[17] 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**
- **Tarpon Springs**

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 are relative, meaning that an abundant rock shrimp catch to community, such as Jacksonville, may be less important than it would be to a community that catches less but relies 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 3.4-48). 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.[18]

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 3.4-49 and Figure 3.4-1). Sneads Ferry had 25 vessels with federal permits in 2001 (Jepson *et al.* 2006). There were over 340 state commercial fishing vessel registrations for Sneads Ferry and among those there were 228 standard commercial fishing licenses. The community also had two recreational sell licenses and there was some seafood employment in other areas with 16 persons employed in fish and seafood and two in marinas (Jepson *et al*. 2006).

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

Table 3.4-48. 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 3.4-49. 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

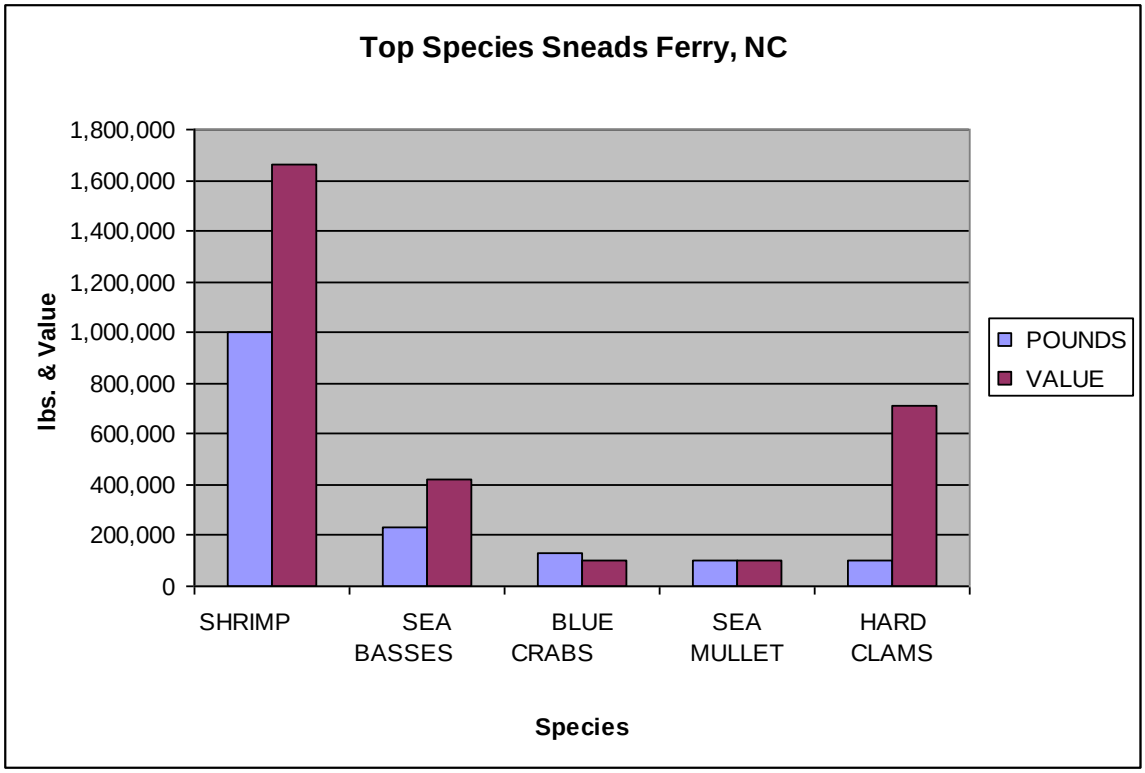


Figure 3.4-1. Value and pounds of top five species in Sneads Ferry, NC, for 2006 (Source: North Carolina Division of Marine Fisheries, Fishery Statistics Division).

In 2007 there were 14 open access rock shrimp permits, three 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 for rock shrimp and penaeid species. Currently, there are two active endorsements, no renewable endorsements, one terminated endorsement and one 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 expand 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 of 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.[19]" 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 two 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. Unemployed dropped from 7.8% in 1990 to 1.8% in 2000 (Table 3.4-50). 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 saw 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 indicates 120 people employed in several categories with 56 in fish and seafood, 40 in boatbuilding, 16 in fishing and eight 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 3.4-51 and Figure 3.4-2 show the top five landed species in Wanchese.

[19] www.nccommerce.com

Table 3.4-50. 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 3.4-51. 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

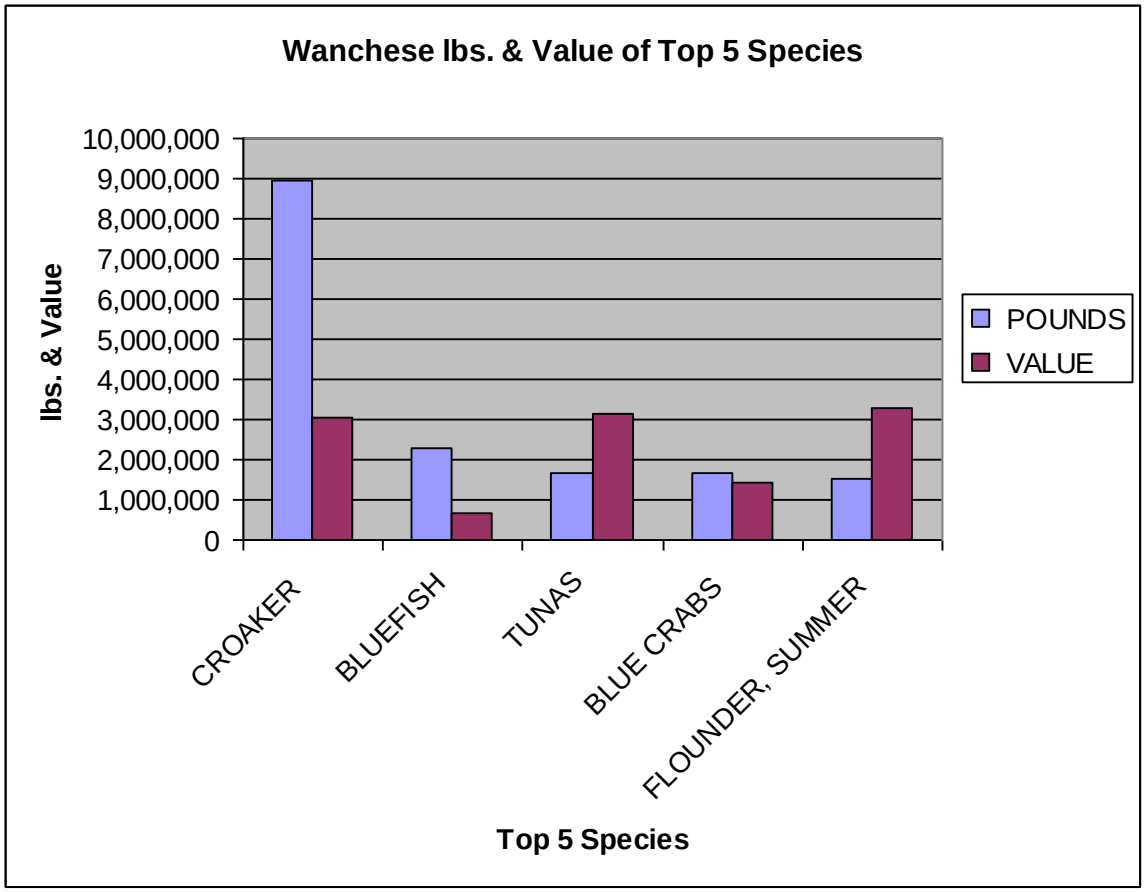


Figure 3.4-2. Value and pounds of top five species in Wanchese, NC, for 2006 (Source: Accumulated Landings System (ALS) Database).

In 2007 there were five open access rock shrimp permits, no limited access rock shrimp endorsements and nine 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 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 3.4-52).

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 eight 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 3.4-53 and Figure 3.4-3).

Table 3.4-52. 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 3.4-52. Brunswick, GA, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial Census) - Continued.

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 3.4-53. 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

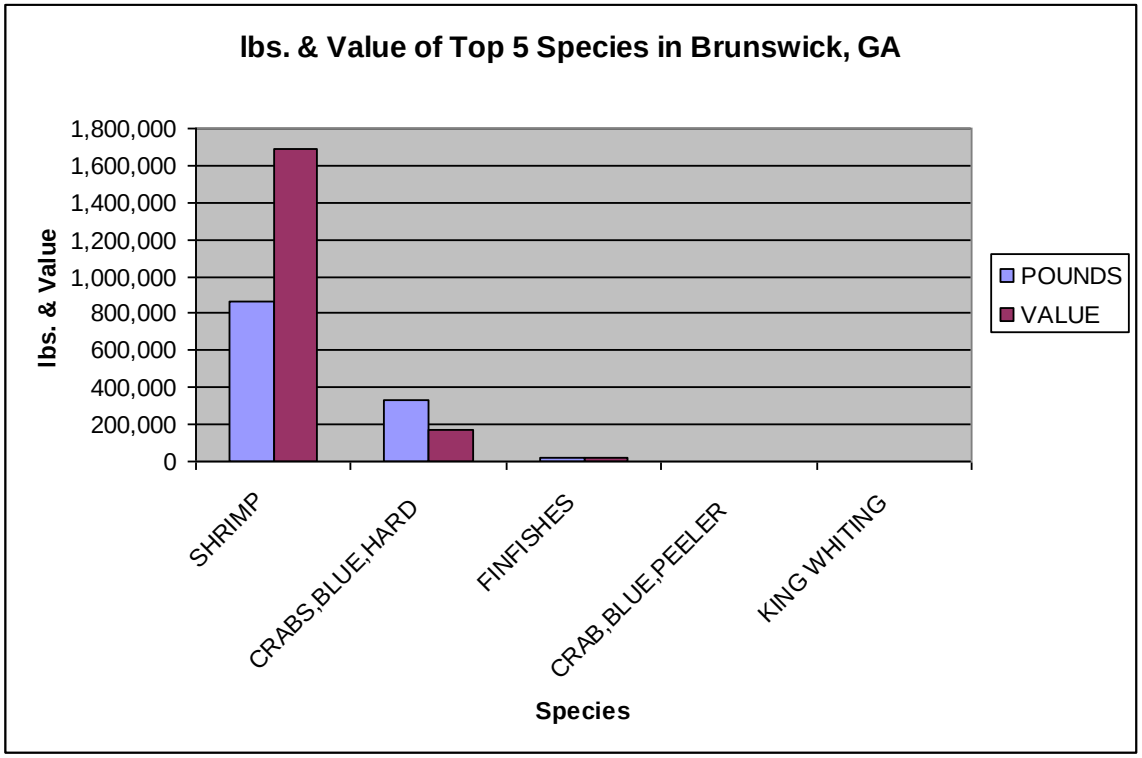


Figure 3.4-3. Value and pounds of top five species in Brunswick, GA for 2006 (Source: Accumulated Landings System (ALS) Database).

As of 2007, Brunswick's shrimp fishery had seven open access rock shrimp permits, five limited access rock shrimp endorsements, and 25 penaeid shrimp permits. Brunswick shrimpers have three active endorsements, one renewable endorsement, one terminated endorsement and no 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.[20]

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.[21] 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.[22] 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. Unemployment has also dropped from 4.60 to 3.10% (Table 3.4-54). Average wage and

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

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 3.4-55 and Figure 3.4-4).

Table 3.4-54. 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 3.4-55. 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

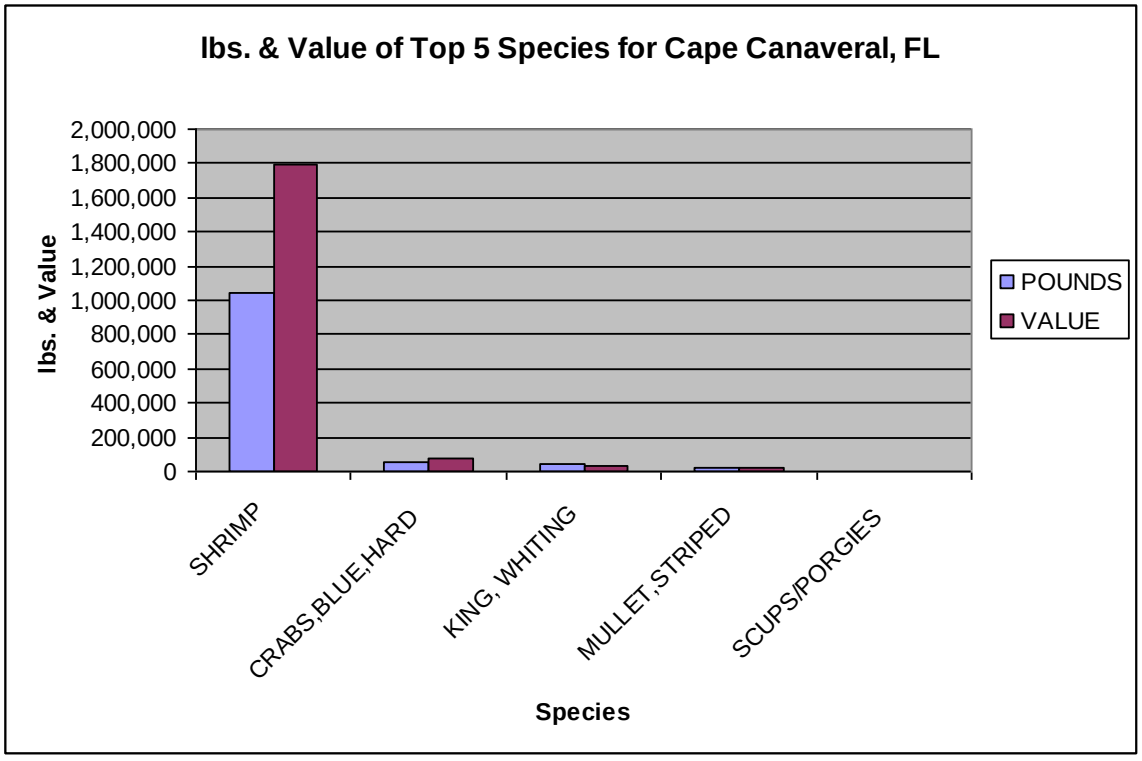


Figure 3.4-4. Value and pounds of top five species in Cape Canaveral, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Currently, there are no open access, limited endorsement or South Atlantic penaeid shrimp permits for Cape Canaveral. In 2003, there were six 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 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 3.4-56). 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 (Table 3.4-57 and Figure 3.4-5).

Table 3.4-56. 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 3.56. Fernandina Beach, FL, demographic data from 1990-2006 (Source U.S. Census Bureau Decennial Census) - Continued.

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 3.4-57. 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

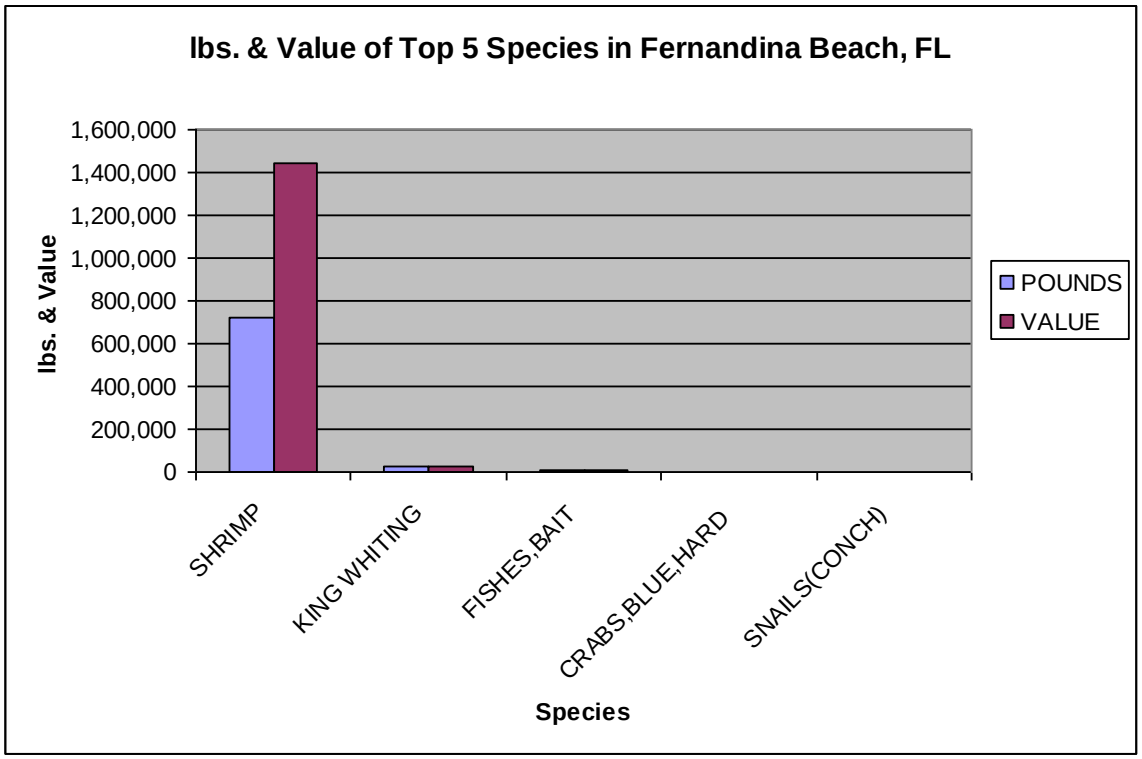


Figure 3.4-5. Value and pounds of top five species in Fernandina Beach, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

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 open access permits, eight limited access endorsements and 11 South Atlantic penaeid shrimp permits. There are currently eight active endorsements, and no 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's 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.[23]

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

Jacksonville has seen a moderate increase in population while unemployment has remained steady (Table 3.4-58). 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 (Table 3.4-59 and Figure 3.4-6).

Table 3.4-58. 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 3.4-59. 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

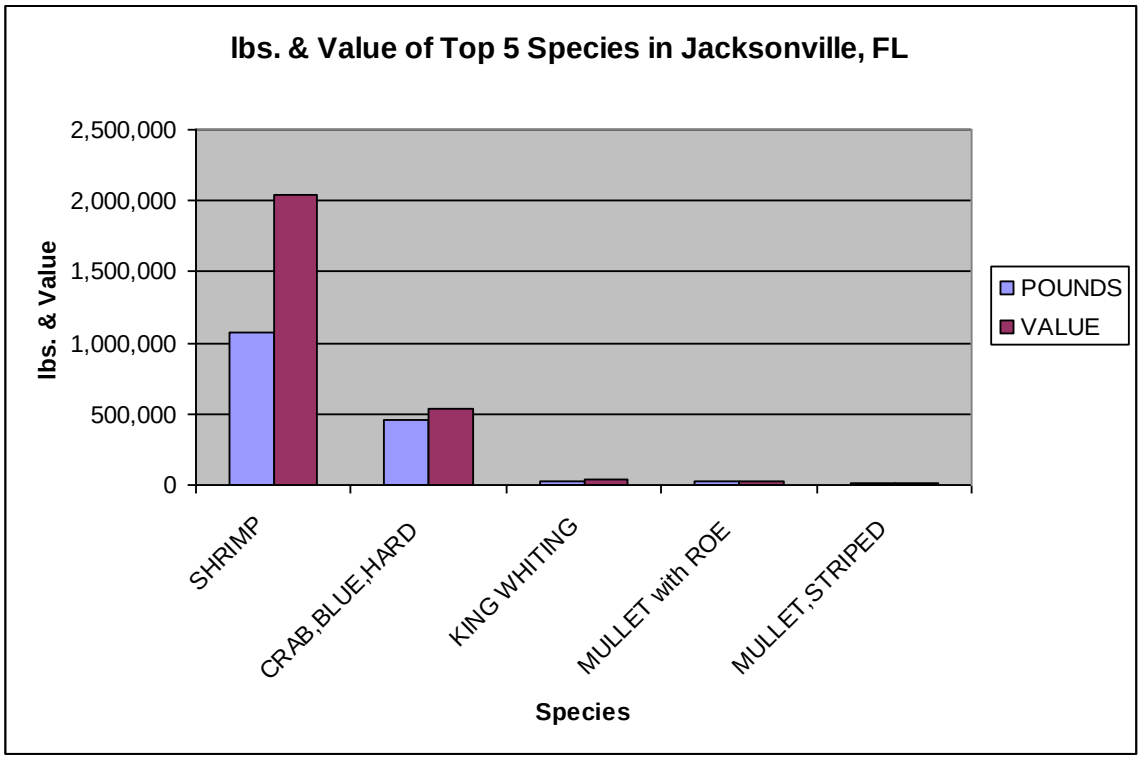


Figure 3.4-6. Value and pounds of top five species in Jacksonville, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Similar to Fernandina Beach and Fernandina, Jacksonville Beach and Jacksonville are also combined when discussing permits and endorsements. There are 10 open access permits, 18 limited access endorsements, 32 South Atlantic shrimp permits. There are eight active endorsements, six renewable endorsements, four terminated endorsements and no 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, has not grown much in population over the past three decades. The percent of the population in the labor force and unemployment have both remained fairly constant since 1990 (Table 3.4-60). 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. 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.[24] 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.[25]" 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 3.4-61 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.[26]" 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 3.4-60. 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

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

Table 3.4-60. Key West, FL, demographic data from 1990-2000 (Source U.S. Census Bureau Decennial Census) - Continued.

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 3.4-61. 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

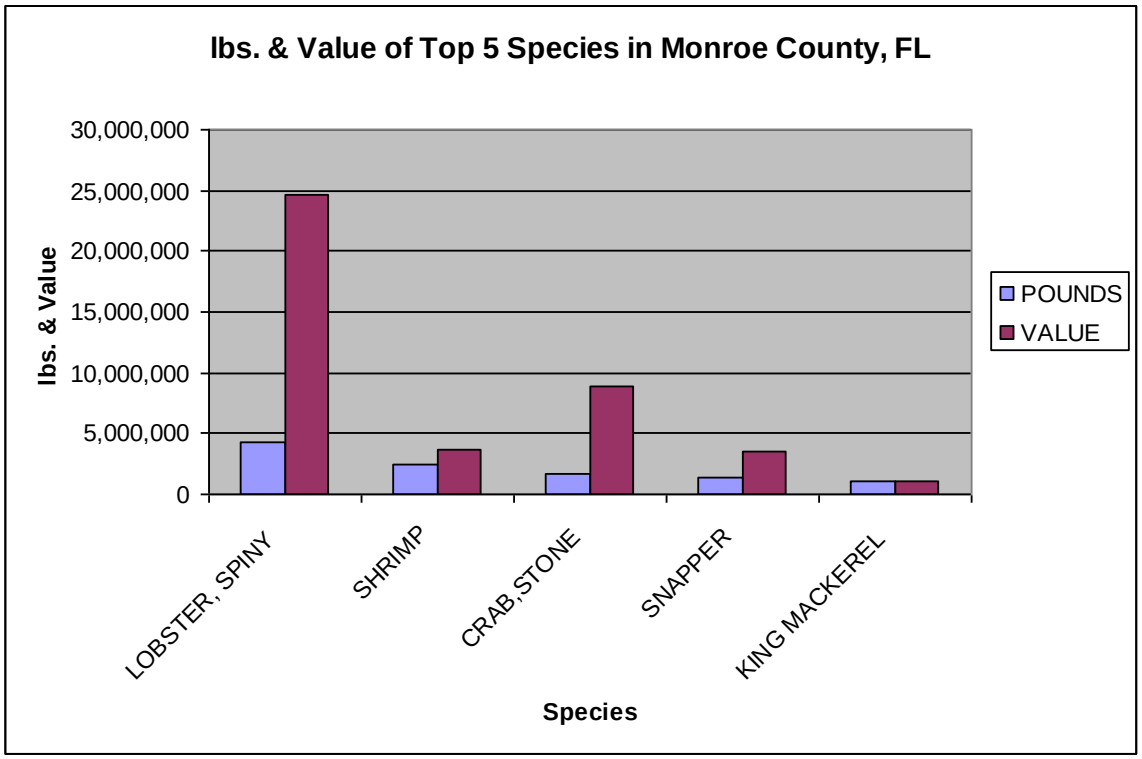


Figure 3.4-7. Value and pounds of top five species in Monroe County, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Currently, there are nine open access permits, one limited access endorsement, and 11 South Atlantic shrimp permits. There is one active endorsement, no 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 3.4-62). 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 3.4-63 and Figure 3.4-8) but various benthic and pelagic species were also landed.

Table 3.4-62. 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 3.4-63. 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

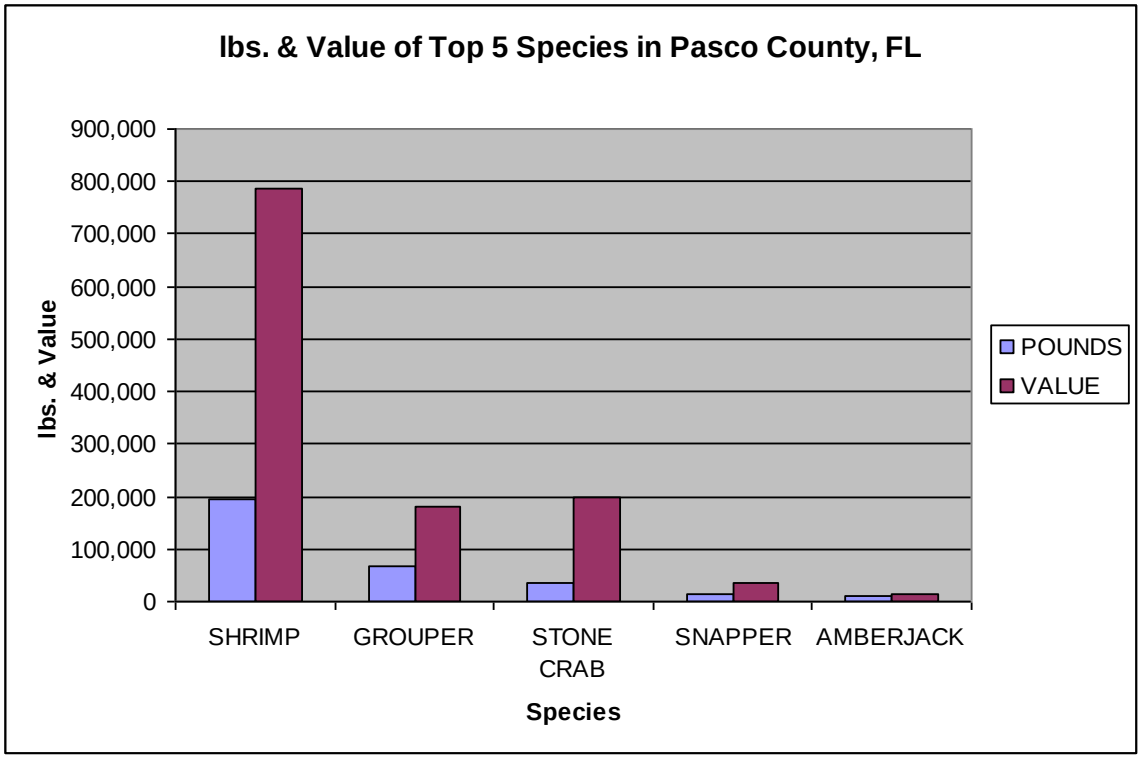


Figure 3.4-8. Value and pounds of top five species in Pasco County, FL, for 2006 (Source: Accumulated Landings System (ALS) Database).

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. There are eight open access permits, five limited access endorsements and nine South Atlantic penaeid shrimp permits. Two of the limited access endorsements are active and two are renewable number. There are no terminated or potentially reinstated endorsements. This being said, the county appears to be reliant on shrimp more than all the other species comprising the top five purchased by dealers.

Tarpon Springs Community Description

Tarpon Springs is located about 25 miles northwest of Tampa, adjacent to a well-protected anchorage near the mouth of the Anclote River. The town has roots in the commercial sponge-diving industry and still supports the largest natural sponge operation in the country. Tarpon Springs was incorporated in 1887 in Hillsborough County, but became part of Pinellas County in 1911. According to city historians, from 1905 to 1945, and again during the 1980's, a local fleet of 180 sponge boats worked from Apalachicola to Key West, bringing in $3 million annually to the local economy. A commercial fishing industry developed around 1920, with several fish houses and wholesale retail operations that continue today near the Sponge Docks. There were as many as eight fish houses operating in Tarpon Springs.

The year 2000 census enumerated 21,066 persons in Tarpon Springs, a 17 % increase from 1990 (Table 3.4-64). Today, there are three active sponge factories and four active

wholesale fish houses in Tarpon Springs. Local fleet participants report that the number of active fishing vessels has decreased by half in the past ten years, going from approximately 100 to 50 vessels. They attribute the decrease to regulatory pressures, diminishing docking space, and the recent national and regional economic downturn. Most vessel owners feel that it is too expensive to rent docking space in the immediate area, and free space (that is, attached to fish house properties) is decreasing due to the increasing value and sale of waterfront property. Meanwhile, the number of recreational vessels moored at the local marinas has increased significantly. The town now has seven marinas that allow only recreational clientele. This number has increased over the past ten years, and marina owners now feel pressure to expand their docking space. One marina owner stated that he could not keep up with the number of recreational vessels coming into the community. Grouper are the top species landed in Pinellas County (Table 3.4-65 and Figure 3.4-9).

Table 3.4-64. Tarpon Springs, FL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Tarpon Springs, FL	**1990**	**2000**
Population	17,906	21,003
Education Attainment	High School graduate or higher, no college degree	Some College, no degree
White	16,277	18,918
Black or African American	1,439	1,292
American Indian & Alaska Native	39	61
Asian, Native Hawaiian & Other Pacific Islander	124	232
Some Other Race	77	171
Hispanic or Latino (or any race)	323	909
Total Housing Units	9,116	10,759
Vacant	1,718	1,692
Median Gross Rent	$355	$528
Median Housing Value	$80,700	$107,100
Median Household Income	$25,380	$38,251
Per Capita Income	$13,557	$21,504
Unemployment %	6.90%	4.10%
Employment by Industry (Top 5)		
Retail trade	24.10%	13.70%
Professional, scientific, mgmt. administrative, & waste mgmt. services	6.50%	14.40%
Educational, health & social services	16.10%	18.90%
Arts, entertainment, recreation, accommodation and food services	DO	9.80%
Construction	10.40%	8.80%
Finance, insurance, and real estate	6.40%	DO
DO= Dropped Out		

Table 3.4-65. Top five species by pounds caught in Pinellas County, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE
GROUPER	1	3,628,451	$8,898,020
MULLET WITH ROE	2	1,271,936	$1,278,168
SHRIMP	3	886,845	1,918,293
SHARKS	4	685,124	193,605
CRABS,BLUE,HARD	5	584,000	$643,708

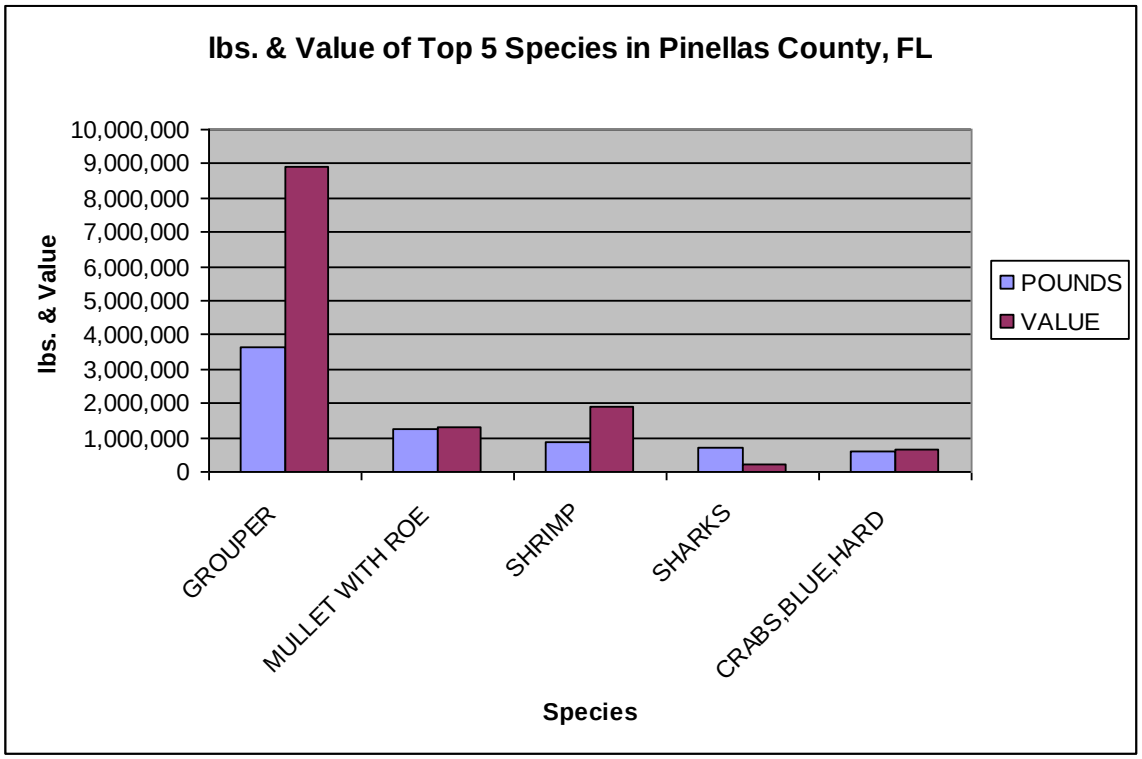


Figure 3.4-9. Value and pounds of top five species in Pinellas County, FL, for 2006.

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 3.4-66). The commercial fishing and processing industries are vital to the local economy with shrimp, oysters, crabs, and finfish being the primary products (Table 3.4-68 and Figure 3.4-10). 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. Access to the Gulf of Mexico is approximately 15 miles away 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 3.4-66. 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 28 open access rock shrimp permits, 31 limited access endorsements, and 31 South Atlantic shrimp permits. For the three communities there are 23 active endorsements, four renewable endorsements, four terminated endorsements, and only one 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 3.4-67).

Table 3.4-67. 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 3.4-68. 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

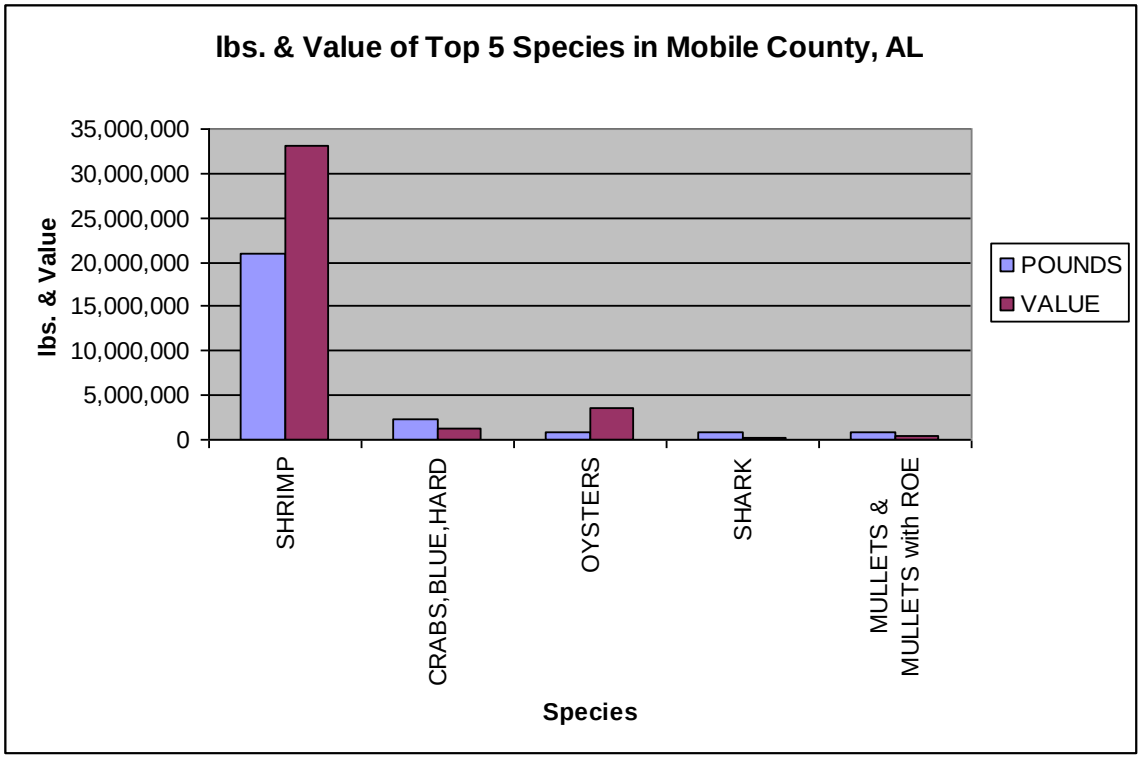


Figure 3.4-10. Value and pounds of top five species in Mobile County, AL, for 2006 (Source: Accumulated Landings System (ALS) Database).

Currently there are five open access rock shrimp permits, five limited access endorsements, and four 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

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."

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

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. 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 terminated endorsements are not allowed renewal) or 130 (if terminated 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 terminated endorsements are not allowed renewal) or 59 (if terminated endorsements are allowed renewal) participants in the rock shrimp fishery. The biological impacts would be intermediate to **Alternative 1 and Preferred Alternative 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-pound 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.[27] 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 not 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 which initially obtained their endorsements after 2003 would be able to meet 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 under

[27] 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.

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, revenue from South Atlantic rock shrimp landings has accounted for less than a half-percent of the vessels' average total revenue in the past five years, as would be expected since these vessels have not even landed 7,500 pounds of rock shrimp in a single year. Though these vessels show some dependency on the South Atlantic penaeid shrimp fishery, the vast majority of their revenue comes from the Gulf shrimp and Northeast non-shrimp fisheries. Still, these are relatively productive vessels that have averaged $268,000 in total revenue per year over the past five years. Though the short-term loss with respect to production in the South Atlantic rock shrimp fishery is likely to be minimal if these vessels lost their endorsements, approximately $17,000 in annual revenue, 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 alternatives 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-pound 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. 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 fleet's physical, operational, landings, and revenue characteristics under **Alternatives 1 and 3** would be very similar. 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 **Alternatives 1 and 3** 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 two to five 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 **Alternatives 1 and 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 annual revenue from South Atlantic rock shrimp landings are likely minimal at best (approximately $17,000) 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 the Council ultimately selects **Preferred Alternative 2** under **Action 3**, 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,[28] 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, fuel prices have increased at a faster rate over that same time period. Since the rock shrimp fishery is prosecuted in more distant, offshore waters, which in turn requires relatively greater fuel consumption, profitability in this fishery has probably continued to decline. 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.

[28] 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 (No-action)** 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 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 five vessels could also be affected if this alternative, along with **Preferred Alternative 2** or **Alternative 3 in Action 3** of this amendment were chosen. In contrast to **Alternative 1 (No-action)**, 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 58 vessels, only three more than **Preferred Alternative 2**. 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.

The selection of **Alternative 3** would likely have little impact compared to **Preferred Alternative 2** and have a much more positive impact than **Alternative 1 (No-action).** In comparison with **Preferred Alternative 2**, there would be a minimal impact because 1) data suggest that whether the criteria for inclusion is 15,000 pounds or 7,500 pounds, only three more vessels will qualify for participation thus making it unlikely that communities or social networks would be impacted by the increase in fleet size, and 2) in comparison with **Alternative 1 (No-action),** this alternative would have a positive impact 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 landing requirement versus the 7,500-pound 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 be expected to create a significant long-term administrative cost and burden since there is currently no formal mechanism by which South Atlantic rock shrimp landings are

compiled and reported to NOAA Fisheries Service Southeast Region's Permits Office for the purpose of determining whether endorsement holders have met the landings requirement and thus whether endorsements should or should not be renewed after each vessel's four-year time frame has ended. If the landing requirement is to be retained, such a mechanism will need to be created in the near future given the impending deadline for many vessels to meet the requirement.

Preferred Alternative 2 would remove the landing requirement altogether, which would incur an intermediate short-term 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 produce the greatest short-term and long-term 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 developing a mechanism by which South Atlantic rock shrimp landings are compiled and reported to NOAA Fisheries Service Southeast Region's Permits Office for the purpose of determining whether endorsement holders have met the landings requirement and thus whether endorsements should or should not be renewed after each vessel's four-year time frame has ended.

4.1.5 Council Conclusions

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, and since **Preferred Alternative 2** would produce beneficial socioeconomic impacts along with negligible biological impacts, the Council's intent is to remove the 15,000-landing requirement implemented under Shrimp Amendment 5.

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

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 (No-action)**. Even if the landing requirement is changed by choosing **Action 1**, **Preferred Alternative 2** or **Alternative 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 terminated endorsements are not allowed renewal) or 60 (if terminated 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 terminated endorsements are not allowed renewal) or 130 (if terminated 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 terminated endorsements are not allowed renewal) or 59 (if terminated 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-pound 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, 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[29] 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 updating the analysis was to determine how taking into account landings 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. 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.[30] 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 three 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, since six of the vessels that met the requirement sold some or all of their landings through a non-permitted dealer, this number is further reduced to only 76 vessels. Once these illegal landings are removed from their catch history, these six vessels 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 suggest 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

[29] 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 perfect solution to the problem either.

[30] 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.

lower requirement. However, again, the number is reduced to 83 vessels since those same six vessels would also not 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 one 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 extremely low rock shrimp landings was 2005. However, between 2004 and 2007, both 2005 and 2007 had extremely low landings. Thus, two of the last three years had very low 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 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 met the requirement during the 2004 to 2007 time period. As such, since 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. The aforementioned 43 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. The loss in annual revenues to the fishery as a whole would be approximately $200,000. 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 in the future. A continued economic decline in the fishery could offset any benefits to the remaining vessels that might result 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 revenue. The fishery as a whole would retain approximately $200,000 in annual revenue. 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.**[31] 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.**[32] Similarly, these benefits would not be evenly distributed across communities. These differential impacts are discussed in Section 4.2.3. 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

[31] 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.

[32] 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.

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 also 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, revenue from South Atlantic rock shrimp landings average $17,400 per year, representing more than 5% of their average total revenue. 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 six and eight 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 two or three 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 the Current 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. Fishermen that fish out of Florida, Alabama and North Carolina would potentially be impacted more than fishermen from other states. This also includes the impact on dealers and processors that rely on the catch of shrimp. 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 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 or possibly four 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 whether 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) 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. **Preferred Alternative 2** would incur a significant administrative burden in the form of increased costs and effort associated with processing paperwork for reinstating the 43 endorsements, and the production of outreach materials in the form of letters and Fishery Bulletins informing vessel owners of the Council's decision. **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 nature as **Preferred Alternative 2**, with the exception of a much lower number of participants who would have their endorsements reinstated.

4.2.5 Council Conclusions

Reinstating all endorsements lost due to not meeting the landing requirement of 15,000 pounds of rock shrimp in one of four consecutive calendar years is the Council's preferred course of action because of the increased likelihood it would help maintain fishery participation at an economically sustainable level while producing very minimal biological effects. Not reinstating endorsements lost due to not meeting the landing requirement or lowering the landing requirement by 50% in order for an endorsement to be eligible for reinstatement would have approximately the same level of administrative impacts. The expected costs and burdens associated with reinstating all endorsements, although significant, would not outweigh the expected benefits of implementing this alternative.

4.3 Action 3 Alternatives

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

Preferred Alternative 2. Reinstate all endorsements for those vessel owners who renewed their open access permit in the year in which they failed to renew their limited access endorsement. Require vessel owners eligible to have their vessel 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 vessels 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

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 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**. If the 15,000-pound requirement is retained (**Action 1, Alternative 1**), 75 vessels (70 with currently active or renewable endorsements and 5 with currently terminated endorsements) would not meet the requirement, leaving only 80 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 endorsements are located in separate sections of the form and thus are not directly "linked" on the form. 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 (i.e. the current number of active or renewable endorsements).

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 improve 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 (No-action)**, **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** for **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. In this case, there would be no limited access endorsements reinstated and the 30 vessels already eliminated from the fishery would not be allowed back in (unless an endorsement was transferred to them).

Under **Preferred Alternative 2,** five out of 30 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 anywhere between zero and five vessels which 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. Again, this would allow fishermen to re-engage in the fishery and all of the positive attributes of 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 (No-action)**.

Preferred 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 4** 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 **Preferred Alternative 2** 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 **Preferred Alternative 2** under **Action 4** be implemented. Furthermore, if **Preferred Alternative 2** under **Action 1** is not implemented, all 30 of the currently terminated endorsements would remain terminated. If **Preferred Alternative 2** under **Action 1** and **Preferred Alternative 2** under **Action 2** are implemented, five of the 30 total terminated endorsements would be reinstated under this alternative.

Extending the time allowed to renew rock shrimp endorsements under **Alternative 3** would incur similar short-term direct administrative effects as **Preferred Alternative 2** without the guarantee that each vessel owner who wants their endorsement to be reinstated would submit a completed application in a timely manner or fill it out properly.

4.3.5 Council Conclusions

In selecting **Alternative 2** as their preferred alternative, the Council intends to ensure that participation in the rock shrimp fishery will continue at a level that will sustain the fishery and its associated infrastructure over the long-term. In order to address this objective, the Council chose to focus on those rock shrimp fishermen who have demonstrated a commitment to staying in the fishery. The Council recognizes that some individuals simply misunderstood the endorsement renewal process and did not intent to let their vessels' endorsements expire. In the short-run, although **Preferred Alternative 2** would reinstate these vessels' endorsements, thereby increasing the maximum number of endorsements in the fishery, 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, the Council preferred **Alternative 2** over other alternatives considered because of the increased likelihood it would create an economic benefit to eligible fishermen while producing a minimal biological effect, if any. Furthermore, any additional administrative burden or cost under **Preferred Alternative 2** is not expected to outweigh the benefits of its implementation.

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 both a "limited access endorsement" and an "open access permit" to fish for rock shrimp in the EEZ off Georgia and Florida.

Preferred Alternative 2. Rename the limited access endorsement and the open access permit of the existing permit system as follows:

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 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 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 $1,300. 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 both an "open access permit" and a "limited access endorsement" allows vessels to fish 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 their vessel's 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 (No-action)** 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.

Preferred 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 rename the 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.

Preferred Alternative 2 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 pre-determined future date following publication of the final rule implementing this amendment (Implementation Date). The implementation date would be on or about the 27th day of the third month following publication of the final rule for this amendment. The Permits Office would conduct a one-time mass mail-out of replacement permits approximately two weeks before the date of implementation in order to allow enough time for the permits to reach the recipients before they are required to have them.

Permit holders would receive one *or* the other type of permit, not both. In order for a vessel to be issued a newly named Rock Shrimp Permit (South Atlantic EEZ) the vessel must currently have a limited access endorsement. Therefore, which type of permit each person would be issued would also need to be determined prior to the one-time mail-out. 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, that they are eligible to apply for reinstatement of their endorsement in the form of a "Rock Shrimp Permit (South Atlantic EEZ)." Any limited access endorsements or open access permits that are not active (valid and not expired) on the date of implementation will not have replacements automatically issued. These vessel owners would need to apply to receive their vessels' replacement permits and/or endorsements.

The rock shrimp permit application form would need to be changed by the Permits Office to reflect the new permit names. **Preferred 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. Complete applications to transfer or renew limited access endorsements or open access permits would be required to be received by the Permits Office 30 days *before* the effective date of the freeze on all transfers and renewals. Notice of this requirement would be drafted and disseminated prior to this provisions' effective date. The regulations would need to be updated to 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 and endorsements 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

Alternative 1 (No-action) would not rename the current rock shrimp permit and endorsement, allowing confusion to persist. Before Amendment 5 was implemented, the Council had proposed a two-permit system for the rock shrimp fishery. However, a permit and endorsement system was implemented instead. By adopting the preferred alternative, the Council will be addressing the initial objective of creating a limited access component for this fishery and doing so in a way that is more efficient than the current system. The Council feels that any short-term administrative costs or burdens resulting from this action would be outweighed by the benefits of its implementation.

4.5 Action 5 Alternatives

Alternative 1 (No-action). Do not require verification of an active an operational VMS for renewal, reinstatement or transfer of a limited access rock shrimp endorsement.

Preferred Alternative 2. An application for renewal, reinstatement, or transfer of a rock shrimp limited access endorsement will not be considered complete until proof of activation and operational status of an approved Vessel Monitoring System (for the vessel receiving the endorsement) has been verified by NMFS VMS personnel.

4.5.1 Biological effects

Neither of the alternatives in this action would have a direct effect on the biological environment. Indirect effects could occur if compliance with the VMS requirement differs under the two alternatives and results in differences in compliance with closed areas. The *Oculina* Bank HAPC is closed to shrimp trawling to protect *Oculina varicosa* coral growing in that area. Trawls break and move corals leaving rubble instead of standing corals. Not only does this kill the corals themselves, but also reduces habitat for invertebrates and fish (Reed et al. 2007). Unfortunately, incidences of fishing still occur

in the closed area. VMS allows law enforcement to track vessels in real time, greatly increasing the chance of apprehending violators.

Although rock shrimp vessels are required to have VMS, under **Alternative 1 (No-action)**, endorsements would be issued without proof of compliance. Unscrupulous individuals may circumvent the VMS requirement and fish in the closed areas. In this case, law enforcement would not be able to track those vessels to determine where they are fishing. **Preferred Alternative 2** could result in greater compliance and reduce the incidence of vessels fishing in restricted areas because enforcement would improve. A greater chance of apprehension generally results in fewer violations to a regulation. Less fishing in closed areas would result in lower impacts to the biological environment.

Some vessel owners that currently hold limited access endorsements do not have VMS because they are not actively fishing for rock shrimp in the South Atlantic. If proof of VMS on their vessel is required for renewal of the endorsement, they might choose to sell their endorsement rather than take on the cost of installing the VMS. In this case fishing effort could increase because anyone who would purchase an endorsement would be likely to begin actively fishing for rock shrimp. However, if no market exists for endorsements, effort may permanently be reduced due to termination of those endorsements.

4.5.2 Economic Effects

Under current regulations, vessels with limited access rock shrimp endorsements must have a functional VMS on board when on a trip in South Atlantic waters. Thus, if vessels with these endorsements are not fishing in South Atlantic waters, then the current regulations do not require them to have a VMS. For example, vessels with endorsements that are not fishing at all or are only fishing in waters outside the South Atlantic (e.g. Gulf of Mexico, Mid-Atlantic, etc.) would not need to have a VMS.

Alternative 1 (No-action) would not have any economic impacts on vessels with limited access endorsements. However, as with **Actions 1, 2, 3, and 4,** the economic impacts of **Preferred Alternative 2** under **Action 5** are dependent on the alternatives selected under these other Actions. Current information indicates that, of the 105 vessels with currently active endorsements, 14 do not have a VMS. Further, of the 20 vessels with currently renewable endorsements, seven vessels do not have a VMS. All five of the vessels that would or could have their endorsements reinstated under **Preferred Alternatives 2** under both **Actions 2** and **3** have a VMS, mainly because they have been operating in the limited access component of the Northeast sea scallop fishery which also has a VMS requirement. As such, none of these particular vessels would be impacted under **Preferred Alternative 2** for **Action 5**. Thus, of the 130 vessels with currently active, renewable, or reinstatable endorsements, 21 vessels do not presently have a VMS and could be impacted under **Preferred Alternative 2** of this Action.

For these 21 vessels, a pertinent question is: why do they not currently have a VMS? Are there certain characteristics of these vessels, their operations, or the history of their endorsement ownership that would explain why they do not have a VMS? Although

certain information specific to individual vessels cannot be revealed to the public due to confidentiality concerns, the information in Tables 4.5-1 through 4.5-3, in combination with other information, provides some insights.

Table 4.5-1. Physical Characteristics and Selected Statistics for 21 Vessels Needing VMS under Action 5, Alternative 2.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
# of vessels	11	10	12	21	21	21	17	13	15
Min.	2	2	45	5	14	15	5	85	50
Max.	4	4	73	38	90	1080	30,000	197	120,000
Total	34.5	38	668	460	1113.05	8811	176,085	1717	675,650
Mean	3.1	3.8	55.7	21.9	53.0	419.6	10,357.9	132.1	45,043.3
St. Dev	0.8	0.6	7.9	9.9	29.1	267.4	10,388.2	29.9	34,008.2

Table 4.5-2. Distribution of Additional Physical Characteristics for 21 Vessels Needing VMS under Action 5, Alternative 2.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Fiberglass	52.4	Freezer	64.7	Large	61.9
Steel	23.8	Ice	35.3	Small	38.1
Wood	23.8				

For example, the information in Tables 4.5-1 and 4.5-2 indicates that, relative to the universe of vessels with active or renewable endorsements, particularly those that have been commercially active, these 21 vessels differ considerably with respect to their physical and operational characteristics. Specifically, these particular vessels are smaller, older, and less powerful and less technologically advanced than other vessels with endorsements. A closer examination indicates that eight of the 21 vessels, or 38%, are in fact state-registered boats ranging from 14 to 24 feet (4-7 m) in length and thus are small enough to not be documented by the Coast Guard (i.e. they are less than five net tons). It is likely that these boats have little if any advanced electronic equipment on board.

Related, an analysis of these vessels' landings and revenue between 2003 and 2007 indicates that the 13 Coast Guard-documented vessels without VMS have been commercially active in fishing at some point during this time period. Conversely, none of the eight state-registered boats without VMS were active in commercial fishing. As such, under the current regulations, these eight boats are not required to have a VMS.

Table 4.5-3. Landings and Revenue Statistics for 21 Vessels Needing VMS under Action 5, 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	32,919	$47,091	$7,821,417	$1,068,307	$507	$20,688	$2,721,250	$1,115,398	$11,679,260	N/A	N/A
Average / Vessel / Year	599	$856	$142,208	$19,424	$9	$376	$49,477	$20,280	$212,350	.5	9.2

The information in Table 4.5-3 shows that the 13 commercially active Coast Guard-documented vessels were not as productive as the typical commercially active vessel with a rock shrimp endorsement. Specifically, these vessels averaged only about $212,000 in total revenue per year, or approximately 25% less than all commercially active vessels with a rock shrimp endorsement. These vessels are most dependent on revenue from the Gulf shrimp fishery, which accounts for two-thirds of their total revenue. Most of their other revenue (23%) comes from Northeast non-shrimp fisheries. Thus, compared to the fleet as a whole, these particular vessels are not nearly as involved in the Northeast sea scallop fishery, which in turn explains their lower level of productivity. However, of concern is the fact that more than 9% of their revenue comes from the South Atlantic penaeid shrimp fishery. This information indicates that some of these vessels have been operating in the South Atlantic penaeid shrimp fishery without a VMS, which is illegal under the current regulations.

Though not explicitly shown in the tables, the geographic distribution of these vessels is also germane with respect to why many do not currently have a VMS. Specifically, of the 13 Coast Guard-documented vessels without VMS, 10 are based in the Gulf of Mexico and one is based in the Mid-Atlantic. As such, like the eight commercially inactive state-registered boats, if they are only operating in fisheries within these particular regions, these vessels are also not required to have a VMS under the current regulations. However, the two other Coast Guard-documented vessels are based in the South Atlantic, again raising concerns as to whether they are illegally operating in South Atlantic waters without a VMS. It is also worth noting that, of the eight state-registered boats, while one is based in the Gulf of Mexico, the other seven are based in the South Atlantic. Should any of these seven boats become commercially active in South Atlantic waters, they would be required to have a functional VMS on board under the current regulations since, at present, there is no minimum vessel size exemption for the VMS requirement in the rock shrimp fishery.

Whether these 21 vessels currently without a VMS are impacted by **Alternative 2** is partly dependent on the alternatives selected under **Action 1** and **Action 2**. Specifically, in relation to **Action 2**, 10 of these 21 vessels initially obtained their endorsements in 2003. As such, under the current regulations, they were required to land at least 15,000 pounds of rock shrimp during at least one year between 2004 and 2007. However, none of these 10 vessels landed at least 15,000 pounds in at least one year between 2004 and 2007, nor did any of them land at least 7,500 pounds in at least one year between 2004 and 2007. Thus, if the Council was to select **Alternative 1** (not reinstate endorsements lost due to not meeting the 15,000-pound landing requirement at the end of 2007) or **Alternative 3** (only reinstate endorsements for vessels landing at least 7,500 pounds of rock shrimp in at least one year between 2004 and 2007) under **Action 2**, then none of these 10 vessels would be impacted under **Alternative 2** for **Action 5**. That is, since these 10 vessels would lose their endorsements under either of those two alternatives, the VMS requirement would become moot.

Similarly, with respect to **Action 1**, the other 11 vessels without a VMS obtained their endorsements after 2004 and thus would still have one or more years to meet the current

15,000-pound landing requirement. However, none of these 11 vessels have landed at least 15,000 pounds in at least one year as of yet, nor have any of them landed 7,500 pounds in at least one year at this time. And as previously noted, given the fishery's recent and likely future performance, it is likely they would not meet either landings threshold before the end of their four-year time period. Thus, if the Council was to select **Alternative 1** (retain the 15,000-pound landing requirement) or **Alternative 3** (change the landings requirement to 7,500 pounds) under **Action 1**, it is likely that none of these 11 vessels would be impacted under **Alternative 2** for **Action 5**. That is, since these 11 vessels would likely lose their endorsements under either of those two alternatives, the VMS requirement would be moot for them as well.

From the above, it can be concluded that **Alternative 2** under **Action 5** will only impact these 21 vessels if the Council selects **Preferred Alternative 2** under both **Action 1** and **Action 2** since these are the only alternatives that would likely allow these vessels to retain their endorsements. Assuming the Council selects **Preferred Alternative 2** under both **Action 1** and **Action 2**, the owners of these 21 vessels would have to purchase, install, and activate a VMS and provide proof of such in order to renew or transfer their endorsements.

Under the potential new VMS requirement, these 21 vessel owners basically have two choices: comply with the new requirement by purchasing, installing and activating a VMS on their vessel or not comply and thereby implicitly decide not to retain their endorsement. The decision each vessel owner makes will be based on the individual owner's assessment of the benefits and costs associated with each option. The following information would be critical in making such an assessment

Current information indicates that the most basic VMS deemed to be in compliance with existing requirements costs approximately $3,100. However, funds are currently available through NOAA Fisheries Service to offset (i.e. reimburse) this expense for first-time purchasers. More expensive units are available on the market. If a vessel owner chooses to purchase a more expensive unit, then the additional cost above $3,100 would be borne by the vessel owner. However, this additional out-of-pocket expense would be by choice and not due to the new requirement. Thus, it is assumed that the initial cost of the VMS would not create a direct, adverse economic impact on vessel owners. NOAA Fisheries Service would incur a cost of approximately $651,000 for purchasing the units if all 21 vessel owners decide to buy them.

In order to comply with the new requirement, the VMS would also need to be installed and activated. These costs are not reimbursable under NOAA Fisheries Service's program and thus would represent an out-of-pocket expense for vessel owners. Current information indicates that the average cost of installing a VMS is approximately $200,[33] and the cost of activation is approximately $50-$55. Thus, the average costs of

[33] Installation costs could be greater, possibly as much as $500 greater, if there is a considerable distance between the vessel's location and that of the closest marine electrician, in which case the vessel owner would likely have to pay for the electrician's travel expenses. However, this situation is expected to be the exception rather than the rule.

installation and activation is approximately $250-$255 per vessel. Over time, vessel owners will also incur maintenance costs. However, these will vary considerably across vessels and no information is currently available to estimate these expenses. Vessel owners will also be required to complete and submit a VMS installation and activation certification form to NOAA Fisheries Service. This form has a time reporting burden of 15 minutes, the opportunity cost of which is negligible (less than $5 per vessel).[34] Should these vessel owners decide to operate in South Atlantic waters, they would also have to turn the units on and thus would incur communication costs as well. But, such communication costs are the result of existing regulations, not the potential new requirement, and thus were already accounted for in Amendment 5. Thus, the total expected direct cost to vessel owners under this alternative is approximately $260 per vessel, or approximately 0.1% of the average annual revenue for the 13 commercially active Coast Guard-documented vessels. Even under the currently adverse economic conditions, these vessel owners would likely consider this additional expense to be minimal. For the owners of the state-registered boats, it is not possible to assess how significant this expense might be since they are not currently earning revenue from commercial fishing and no other information is available that might indicate their annual incomes. For the group as a whole, the total direct cost is estimated to be approximately $5,500.

However, for various reasons, some or all vessel owners could decide not to comply with the new requirement. If they do not comply, their endorsements would not be renewed. Under this scenario, these vessel owners would be giving up the market value of their endorsements, currently estimated to be $5,000 per endorsement, as well as their ability to derive income from the rock shrimp fishery in the future. Given their harvesting activities over the past five years, these vessels have not been at all dependent on landings and revenue from the rock shrimp fishery. Based on this information, it is likely that the value they place on the ability to derive income from the fishery in the future is minimal, assuming the endorsements remain with the vessels on which they are currently placed. For owners of multiple vessels, that assessment could change if the owners transferred them to one of their other vessels. Nonetheless, it would appear that the primary economic benefit of these endorsements is their market value. Current information suggests that this value is greater than the direct cost of complying with the potential new VMS requirement. Thus, based on economic factors alone, it is likely that most if not all vessel owners would choose to retain their endorsements, comply with the new requirement, and put a VMS on their vessel.

However, for owners of the eight state-registered boats, technological factors could affect their ability or willingness to comply with the new requirement. Given their size and relative, if not complete, lack of advanced electronics, installation of a compliant VMS unit could be difficult if not impossible on these particular boats. If this technological barrier is significant, these boat owners may "decide" to relinquish their endorsements rather than comply with the new requirement, though the decision would be by default if compliance is technologically impossible. In which case, these boat owners would lose

[34] The opportunity cost associated with time burdens is explained in detail in the analysis of alternatives under Action 6.

the market value of their endorsements ($5,000 per boat, or $40,000 in total). Given their size, it is highly unlikely these boats would ever participate in the fishery and so the loss of future income from the fishery is not germane.

These boat owners could, in effect, "avoid" the new requirement by transferring their endorsements to vessels with a VMS if they can find buyers in a timely manner. However, that option would only exist for a limited period of time since the transfer would need to be completed prior to the endorsement's renewal/expiration date. Once the endorsement expires, it cannot be transferred. This limited window of opportunity within which to find a potential buyer could potentially reduce the market value of these endorsements, particularly if all of these boat owners attempt to sell their endorsements within the same limited period of time.[35]

If these boats' endorsements are not renewed or transferred to other vessels with a VMS, they would eventually be terminated and lost from the fishery. Thus, it is possible that the number of endorsements in the fishery could be reduced from the previously noted maximum of 130, based on the currently preferred alternatives under **Actions 1, 2, 3,** and **4**, to 122. Though not expected given current information, the number of endorsements in the fishery could be reduced to as few as 109 if the owners of the Coast Guard-documented vessels also decide, possibly for other than purely economic reasons, not to comply with the potential new requirement and relinquish their endorsements. Regardless, a reduction in the number of endorsements in the fishery as a result of this potential new requirement would be inconsistent with the Council's goals for this Amendment.

4.5.3 Social Effects

Alternative 1 (No-action) would have no impact on the socio-cultural composition of the fishers' communities or those land-based places associated with rock shrimp fishing. This means that requiring VMS on vessels and having it in operation while fishing in South Atlantic waters is not likely to change the social composition of the community or the social networks associated with the communities or fishery. This having been said, by not monitoring the fishing behavior and locales, rock shrimp fishermen could harvest in sensitive, protected, areas and violate boundaries angering both agencies and fishermen alike.

By requiring people to maintain a VMS and utilize it in South Atlantic waters, **Preferred Alternative 2** has the potential to create apprehension among fishermen that the government is overly intruding into their fishing practices and may create animosity between agency and fishery participants. The idea that requiring VMS will have a socio-cultural impact is overstated when viewing this alternative/action as an individual

[35] Recent information suggests that more endorsements are being transferred to state registered boats (i.e., a trend seems to be occurring), and thus this issue could become more important by the time the potential new requirement is implemented. Anecdotal information suggests that this trend may be due to vessel owners selling or losing their Coast Guard-documented vessels as a result of the current, adverse economic conditions in the shrimp fishery. In turn, they have temporarily transferred the endorsements to state registered boats until they can obtain another Coast Guard-documented vessel that can operate in the fishery.

regulatory change, as the cost (most of which is reimbursable) or the burden of placing the VMS on the boat, specifically impacting smaller vessels in the fleet (from a standpoint of safety and the cumbersome nature of the equipment) is not likely to impact the fishing community or those social networks associated with the fishery. However, as discussed in the economic impacts section, the cumulative impact of selecting certain alternatives from previous actions can potentially place at least 21 vessels in a position where if the owner decides not to renew because of the VMS requirement, then a portion of the potential total fleet will be reduced, thus reducing the amount of shrimp landed and negatively impacting those shore-based processors and dealers that rely on the catch.

Considering them individually, there is little socio-cultural impact when selecting either of these two alternatives. The majority of the impacts associated with this set of alternatives relate to economic, administrative (enforcement) and fishery impacts, as the communities themselves and the social networks are not likely to be altered in a way that they socio-cultural composition of the community would be changed. However, it should be noted that when considering the cumulative impact of selecting previous alternatives from earlier actions, the likelihood of creating socio-economic impacts is increased as land-based businesses can be affected by the loss of catch and services for the fishery. This means that a loss in total effort and size of landings will impact processors and dealers who rely on the catch, as well as the local businesses, such as fish docks/marinas, stores and mechanics, who rely on this industry to make a portion of their income from the provision of certain types of services.

4.5.4 Administrative Effects

Alternative 1 (No-action) would not create any additional administrative burden or cost. **Preferred Alternative 2** under this action would incur moderate administrative effects. Under **Preferred Alternative 2** vessel owners would be required to produce proof that their vessel has on board a VMS, which has been activated and deemed operational. To comply with this requirement, the installer or owner, if self-installed, would be required to fill out a VMS activation certification form to be submitted to the NOAA Fisheries Service Office of Law Enforcement. .

In the near-term, the VMS Certification Form would be vetted through the PRA clearance process, and would need to be made available to fishery participants who are wishing to renew, transfer, or have their rock shrimp endorsement reinstated. The form would most likely be made available on the NOAA Fisheries Service web site, and at the Southeast Regional Permits Office. The Permits Office would then have to check their database against that of the VMS Office containing all rock shrimp vessels that do and do not have proof of activation of an operational VMS unit. Only after the Permits Office has verified whether the owner of a vessel has submitted proof of having an activated and operational VMS in the form of the VMS Certification Form previously mentioned, will the endorsement be renewed, transferred, or reinstated. Additionally, those vessels that do not have the updated software required for the Thrane & Thrane VMS model will not be able to be verified as having an activated and operational VMS. If **Preferred Alternative 2** is implemented, various forms of outreach materials would be developed

and disseminated in order to notify rock shrimp fishery participants of the requirement, further adding to the administrative burden and cost.

4.5.5 Council Conclusions

The Council is concerned that fishing vessels with limited access endorsements may have fished for rock shrimp in South Atlantic waters off Georgia and Florida without a VMS despite the requirement for the latter that was implemented, along with the limited access endorsement, in Amendment 5. In particular, indications that trawling for rock shrimp may have occurred in recent years within the *Oculina* Bank HAPC are worrisome. Consequently, by selecting Alternative 2 as their preferred, the Council intends to go a step further in ensuring that the VMS requirement applies to all vessels that have been or will be fishing for rock shrimp off Georgia and Florida. In addition, by selecting this alternative, the Council would also ensure that a vessel's VMS is indeed a NMFS-approved model, is properly maintained and operational.

4.6 Action 6 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.

4.6.1 Biological Effects

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

4.6.2 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 from South Carolina 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 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 that of industry participants that cooperated with the survey as well.

Given the lack of such data, it is difficult for the Council to conduct regulatory impact analyses that meet the requirements of MSA, NEPA, the Regulatory Flexibility Act, E.O. 12866, and other federal statutes. Further, the recently revised version of MSA explicitly states that all FMPs must indicate all economic information necessary to meet the requirements of the Act. The lack of such data also 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, but 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 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.[36] 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 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; refer to **Appendix G**). The program must be set up this way in order to avoid the potential for duplicating the time burden for vessels that hold a Gulf shrimp moratorium permit and one or more South Atlantic shrimp permits/endorsements. The likelihood of such duplication is significant since 293 vessels with South Atlantic shrimp permits/endorsements also have Gulf shrimp moratorium permits. Therefore, the potential implementation of this new data collection requirement under either **Alternative 2** or **Preferred Alternative 3** would only impact the 401 vessels that are unique to the federal South Atlantic shrimp fisheries.

Information describing these particular vessels' physical and operational characteristics is presented in Tables 4.5-4 and 4.5-5 while information regarding the distribution of their

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

landings and revenues is provided in Table 4.5-6. Similar to the entire fleet, these vessels are also fairly heterogeneous with respect to their physical characteristics. However, on average, they are smaller, older, less technologically advanced and use less crew and gear than the fleet as a whole, and even more so compared to vessels that possess a limited access rock shrimp endorsement. For example, nearly 56% of these vessels are small, only 10% have on-board freezing capacity, and less than 18% have steel hulls. Related, between 2003 and 2007, the average total revenue per vessel was only about $135,000, or 27% less than the fleet as a whole and 53% less than vessels that possess a limited access rock shrimp endorsement. Since these vessels do not possess a Gulf shrimp moratorium permit and thus cannot participate in the federal Gulf shrimp fishery, approximately 40% of their total revenue comes from both the South Atlantic shrimp and Northeast non-shrimp fisheries respectively, with 15% coming from South Atlantic non-shrimp fisheries.

Table 4.5-4. Physical Characteristics and Selected Statistics for Vessels with Rock or Penaeid Shrimp Permits/Endorsements Unique to South Atlantic.

	Crew Size	Number of Nets	Net Size (ft)	Vessel Age	Length	Horsepower	Fuel Capacity (gallons)	Gross Tons	Hold Capacity (pounds)
# of vessels	206	132	60	400	401	399	323	355	320
Min	1	1	14	2	12	5	5	6	10
Max	6	4	80	87	131	1,500	32,000	198	150,000
Total	554	377	2,560	11,890	22,202	159,565	1,173,079	25,201	8,628,970
Mean	2.7	2.9	42.7	29.7	55.4	399.9	3,631.8	71.0	26,965.5
St. Dev	0.8	1.2	13.4	10.9	16.5	174.9	4,384.2	40.1	28,796.6

Table 4.5-5. Distribution of Additional Physical Characteristics for Vessels with Rock or Penaeid Shrimp Permits/Endorsements Unique to South Atlantic.

Hull Type	Percent	Refrigeration	Percent	Vessel Size Category	Percent
Wood	48.5	Ice	89.5	Small	55.9
Fiberglass	33.5	Freezer	10.0	Large	44.1
Steel	17.8	Live Well	.5		
Aluminum	.2				

Table 4.5-6. Landings and Revenue Statistics, Commercially Active RSE, Open Access RS, and Penaeid Shrimp Vessels Unique to South Atlantic, 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	1,029,526	$1,182,605	$9,513,325	$80,567,145	$1,238,007	$30,504,097	$77,166,880	$200,172,059	$81,749,750	N/A	N/A
Average / Vessel / Year	697	$800	$6,437	$54,511	$838	$20,639	$52,210	$55,311	$135,434	.5	40.8

Given that approximately 400 additional vessels would be included 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 (for e.g., 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, and the sample size sufficiently large, the estimates derived from the data should be statistically reliable and representative. By itself, and regardless of 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.

4.6.3 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 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. **Preferred 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 **Preferred 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**.

4.6.4 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 in the future. Any collection of information under **Alternative 2 or Preferred Alternative 3** is expected to produce a significant administrative effect. In the short term, collecting economic data will require the development of a standardized data collection instrument and a random sampling method, the integration of a data management system with that of the Gulf of Mexico, 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 **Preferred Alternative 3** would be lower than that of **Alternative 2** because the volume of data collected and managed would be less than that under **Alternative 2**, but would be sufficient to effectively inform future fishery management decisions.

4.6.5 Council Conclusions

Requiring economic data collection from a subset of shrimp permit holders in the South Atlantic addresses the Council's management objective 9 under the Shrimp FMP and amendments. Economic data collection is a necessary component of effective management.

4.7 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 response to change and capacity to withstand stresses.
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 6** 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.

4.7.1 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 59 to597 feet (18-182 m) in depth with highest concentrations of rock shrimp occurring between 115 and 180 feet (35-55 m). 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, required 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) renaming the existing rock shrimp open access permit and limited access endorsement to minimize confusion; 5) requiring VMS verification for vessels with limited access endorsements and 6) requiring the collection of economic data from penaeid and rock shrimp fishery participants.

The Northeast Region of NOAA Fisheries Service has recently published a rule implementing a limited access program for the general fishery category. In order to fish for, possess, or land scallops in or from federal waters under general category rules, a vessel must be issued a limited access general category (LAGC) scallop permit. It is expected that some of the fishermen who would not qualify to receive an LAGC may also have at one time a rock shrimp limited access endorsement, and may wish to be considered amongst the group of fishermen under **Action 3** who would be eligible for reinstatement of their endorsements. Since the limited access program is in the early stages of implementation, data on

scallop fishermen who may want to reenter the rock shrimp fishery is currently incomplete.

With respect to the 130 vessels that have active, renewable, or reinstatable limited access rock shrimp endorsements, 12 of these vessels also possessed limited access permits and 24 vessels possessed general category (i.e. open access) permits for the Northeast sea scallop fishery in 2007 and in 2008 prior to the implementation of Amendment 11 to the Sea Scallop FMP (NEFMC, 2008). Before Amendment 11, vessels could possess either a limited access permit or a general category permit but not both at the same time. Under Amendment 11, vessels can possess both a limited access permit and limited access general category (LAGC) permit. Within the general category fishery, vessels can be issued either an IFQ scallop permit, a Northern Gulf of Maine scallop permit, or an incidental scallop permit, each with its own harvesting privileges and restrictions. The most currently available information indicates that 8 of the 12 vessels with limited access permits have also applied for a LAGC scallop permit, of which only one has been issued an IFQ scallop permit. Final decisions regarding the other seven vessels' applications have not yet been rendered. Further, 7 of the 24 vessels that previously possessed general category scallop permits have applied for an LAGC permit, of which 4 have been issued an IFQ scallop permit. Final decisions regarding the other three vessels' applications have not yet been rendered.

It is important to note that the application period for LAGC permits does not end until August 30, 2008 and thus additional vessels with rock shrimp endorsements may yet apply. However, it is also important to note that, in order to be eligible for an LAGC permit, a vessel had to land at least 1,000 pounds of scallops in at least one year between March 1, 2000 and November 11, 2004. As previously noted, the significant increase in scallop landings by vessels with rock shrimp endorsements began in 2005, after the requisite time period for gaining eligibility, and therefore it is quite possible that the other 17 vessels that recently possessed general category permits may not apply for or be eligible for an LAGC permit. As such, it is possible that these 17 vessels may increase their participation in the rock shrimp fishery in the near future if economic conditions allow.

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, (CHAPC) and by addressing EFH mandates in the final rule to provide additional data for designated EFH and EFH-HAPCs.

Within this network of CHAPCs the Council has proposed to designate a "Shrimp Fishery Access Area" where rock shrimp vessels would be allowed to legally deploy their gear if they have a NMFS approved VMS on board. The VMS requirement under the Comprehensive Ecosystem Amendment aligns with the

proof of VMS requirement being proposed in this amendment. Implementing either of these amendment actions would help ensure compliance with the other while incurring no additional cumulative impacts on the human environment.

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 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.

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 the parent stock size falls below 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 of 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	Required 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).	Designated 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; require proof of VMS for endorsement renewal or transfer; 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, improve enforcement of closed areas, 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.

4.7.2 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; NOAA Fisheries Service SEFSC 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.

4.7.3 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 affected 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 names of the open access permit and limited access endorsement 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. 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. Information gathered and analyzed through the collection of economic data could be used in the future to better inform future shrimp fishery management decisions.

The Northeast Region of NOAA Fisheries Service has recently published a rule implementing a limited access program for the general fishery category. In order to fish for, possess, or land scallops in or from federal waters under general category rules, a vessel must be issued a limited access general category (LAGC) scallop permit. It is expected that some of the fishermen who would not qualify to receive an LAGC may

also have had at one time a rock shrimp limited access endorsement, and may wish to be considered amongst the group of fishermen under **Action 3** who would be eligible for reinstatement of their endorsements. Since the limited access general category program is in the early stages of implementation, data on scallop fishermen who may want to reenter the rock shrimp fishery is currently incomplete.

With respect to the 130 vessels that have active, renewable, or reinstatable limited access rock shrimp endorsements, 12 of these vessels also possessed limited access permits and 24 vessels possessed general category (i.e. open access) permits for the Northeast sea scallop fishery in 2007 and in 2008 prior to the implementation of Amendment 11 to the Scallop FMP (NEFMC, 2008). Before Amendment 11, vessels could possess either a limited access permit or a general category permit but not both at the same time. Under Amendment 11, vessels can possess both a limited access permit and limited access general category (LAGC) permit. Within the general category fishery, vessels can be issued either an IFQ scallop permit, a Northern Gulf of Maine scallop permit, or an incidental scallop permit, each with its own harvesting privileges and restrictions. The most currently available information indicates that 8 of the 12 vessels with limited access permits have also applied for a LAGC scallop permit, of which only one has been issued an IFQ scallop permit. Final decisions regarding the other seven vessels' applications have not yet been rendered. Further, 7 of the 24 vessels that previously possessed general category scallop permits have applied for an LAGC permit, of which 4 have been issued an IFQ scallop permit. Final decisions regarding the other three vessels' applications have not yet been rendered.

It is important to note that the application period for LAGC permits does not end until August 30, 2008 and thus additional vessels with rock shrimp endorsements may yet apply. However, it is also important to note that, in order to be eligible for an LAGC permit, a vessel had to land at least 1,000 pounds of scallops in at least one year between March 1, 2000 and November 11, 2004. As previously noted, the significant increase in scallop landings by vessels with rock shrimp endorsements began in 2005, after the requisite time period for gaining eligibility, and therefore it is quite possible that the other 17 vessels that recently possessed general category permits may not apply for or be eligible for an LAGC permit. As such, it is possible that these 17 vessels may increase their participation in the rock shrimp fishery in the near future if economic conditions allow.

4.7.4 Administrative

The cumulative impacts of the preferred alternatives contained within this amendment when considered with those of past, present, and reasonably foreseeable actions would be significant in the short-term, and minimal in the long-term. Prior to and upon implementation of actions in Amendment 7, several forms of outreach materials in the form of letters, Fishery Bulletins, web sites, and notices will need to be developed to inform vessel owners of changes to current requirements in the fishery. Additionally, **Actions 1-4** would require early coordination with offices of Law Enforcement, VMS Monitoring, Permits, General Counsel and Sustainable Fisheries to change current regulatory text, implement the actions, and enforce new rock shrimp fishery

requirements. This would compound the present workload in several regional offices that are carrying out duties associated with management measures already implemented for other fisheries throughout the region. The process of changing the names of the current fishing authorization instruments for the rock shrimp fishery would require the most time, and coordination among the different divisions within NOAA Fisheries Service. Tasks associated with changing the permit and endorsement names are outlined in detail in **Sections 2.4** and **4.4** of this document and are hereby incorporated by reference. However, these burdens would be short-lived since the change-over would occur over the course of three months, and would be completed after the one-time mail-out of replacement permits.

4.8 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.

4.8.1 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). However, 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 greatly 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.

4.8.2 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.

4.8.3 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.

4.8.4 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 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (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.

4.8.5 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.

4.8.6 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.

4.8.7 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.

4.8.8 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.

4.8.9 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.

4.8.10 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.

4.8.11 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.

4.9 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 (who had their endorsements issued after 2003) that could potentially lose 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, 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 the preferred alternative under 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 vessels with active or renewable endorsements could have their endorsements reinstated under **Preferred 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 result in the same administrative effects listed under **Action 3** of this amendment (Section 4.3.4) and is hereby incorporated by reference.

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 vessel owners 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 would need to produce the certified letter to be sent to each of the five affected

vessel owners notifying them that they are eligible to have their endorsement reinstated. NMFS 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 from the "open access permit" to the "Rock Shrimp Permit (Carolinas Zone)," and the "limited access endorsement" to the "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 NMFS Permits Office will be responsible for reprinting all valid permits, and developing outreach materials explaining the name change. The permits office will also have 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. Under this action, an application for renewal, reinstatement, or transfer of a rock shrimp limited access endorsement will not be considered complete until proof of activation, and operational status of an approved VMS for the vessel receiving the endorsement has been verified by NOAA Fisheries Service VMS personnel. Unavoidable adverse effects on the human environment are expected to be moderate for those who would need to purchase a VMS unit for the first time, and significant for those vessel owners who would not be purchasing a VMS unit for the first time. The administrative burden would include the time associated with verifying a VMS unit is operational and processing the VMS certification form. Additionally, it is expected that those vessel owners who would need to fill out the VMS certification form would be burdened with an approximate 15-minute time burden to fill out the form, which may also be considered an unavoidable adverse affect.

Action 6. Under this action, owners of vessels holding South Atlantic rock shrimp permits and penaeid shrimp permits would be required 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. Vessel owners 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.

4.10 Effects of the Fishery on the Environment

4.10.1 Damage to Ocean and Coastal Habitats

The proposed actions are expected to have 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 had potential adverse impacts on EFH. These measures included 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) contained measures that expanded 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.

4.10.2 Public Health and Safety

The proposed actions are not expected to have any substantial adverse impact on public health or safety.

4.10.3 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*.

4.11 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 effect the relationship between short-term uses of the fishery and its resource, or their long-term productivity.

The proof of operational VMS requirement under **Action 5** could affect short-term uses of the resource if the 21 affected vessels are unable to provide proof that they have on board an operational VMS unit when they apply for renewal, transfer, or reinstatement of a limited access endorsement. Therefore, these endorsements could be permanently lost if they are not transferred to other vessels able to provide proof of an operational VMS unit. The loss of those endorsements could ultimately affect the long-term productivity of the fishery through potentially decreased landings.

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.

4.12 Irreversible and Irretrievable Commitments of Resources

Action 4. **Preferred Alternative 2** would require an irreversible and irretrievable commitment of resources. NOAA Fisheries Service Permits Office would 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.

Preferred Alternative 2 under **Action 5** would likely incur irreversible and irretrievable commitments of resources for the 21 vessel owners affected by this action if they choose to purchase and have a VMS unit installed on their vessels. There could be minor economic impacts on fishermen purchasing a VMS unit for the first time; their purchase price will be reimbursed up to $3,100.00. Outside of the reimbursement, the vessel owners would be responsible for installation fees (which could range from $200.00 to $700.00), any repair costs, and possible activation/deactivation fees imposed by various VMS vendors. More significant economic impacts would be created for vessel owners not purchasing a VMS unit for the first time, for which they would not be reimbursed.

Preferred Alternative 2 under **Action 5** would incur moderate irreversible and irretrievable commitments of resources for the administrative environment. In the near-term the VMS Certification Form would be vetted through the PRA clearance process, and would need to be made available to fishery participants who are wishing to renew, transfer, or have their rock shrimp endorsement reinstated. The form would be made available on the NOAA Fisheries Service web site, and at the Southeast Regional Permits Office. The Permits Office would then have to check their database against that of the VMS Office containing all rock shrimp vessels that do and do not have proof of activation of an operational VMS unit. Only after the Permits Office has verified the owner of a subject vessel has submitted proof of having an activated and operational VMS in the form of the VMS activation certification form previously mentioned, will the endorsement be renewed, transferred, or reinstated.

Action 6 would implement a data collection requirement and would require an irreversible and irretrievable commitment of resources. Therefore there is expected to be a small annual outlay of resources to manage and analyze the data once it has been collected

No other preferred alternatives chosen for each of the actions in this amendment would require an irreversible and irretrievable commitment of resources.

4.13 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 pursuant to Executive Order (E.O.) 12866, as amended. The RIR: (1) provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) 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) 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 provides the information needed to determine whether the proposed regulations constitute a "significant regulatory action" under the criteria provided in E.O. 12866 and serves as the basis for determining if the actions will have a significant economic impact on a substantial number of small entities as per the requirements of the Regulatory Flexibility Act (RFA). This RIR analyzes the expected impacts of these actions on the rock and penaeid shrimp fisheries. Additional details on the expected economic effects of the various alternatives under each 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 proposed measures should be stated in terms of producer and consumer surplus, changes in profits and employment in the direct and support industries. However, given the competitive nature of the market for shrimp and the fact that shrimp prices are largely driven by imports, potential changes in domestic production due to changing regulations are not expected to affect prices and thus consumer surplus. Further, given the lack of production cost data, which one of the proposed actions seeks to address, estimates of producer surplus and profits are not currently available for vessels operating in the South Atlantic rock and penaeid shrimp fisheries. Therefore, benefits are stated in terms of gains in production and gross revenue. Since, by definition, gross revenue does not account for production costs, they are an overestimate of the actual net economic benefits to society. In addition, the public and private costs associated with the process of developing and enforcing regulations on fishing for rock and penaeid 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.

5.5.1 The 15,000 Pound Rock Shrimp Landing Requirement

Under current regulations, each vessel with a limited access rock shrimp endorsement must land a minimum of 15,000 pounds of rock shrimp in at least one out of every four calendar years. Some vessels could lose their endorsements in the short-term as a result of not having met this requirement at the end of the 2007 calendar year. However, the landings requirement is recurring in nature and thus additional effects could occur in future years. In addition to the vessels that did not meet the landings requirement at the end of the 2007 calendar year, at least 27 other vessels that initially obtained their endorsements between 2004 and 2008 have not yet met the landings requirement and, under current economic conditions, are unlikely to do so by the end of their respective four-calendar-year time periods. As such, these vessels are likely to lose their endorsements in future years thereby causing the maximum fleet size to be reduced to as few as 55 vessels in the long-term. This maximum fleet size is considerably less than the Council's desired fleet size of 150 vessels and would represent a significant reduction in the fleet's potential productive capacity. A permanent reduction of this magnitude is likely to have significant adverse indirect economic impacts on the fishery's onshore infrastructure.

Under **Preferred Alternative 2**, none of these 27 vessels would lose their endorsements and, as such, would retain their ability to participate in the fishery in the long-term. In the short-term, the most significant benefit to these 27 vessels is the retention of their endorsements' market value. Given that the average market value of these endorsements is estimated to be $5,000, the total benefit to these vessels from retaining their endorsements' market value is approximately $135,000. Since these vessels' participation in the fishery has been very limited during the past five years, the short-term benefits to these vessels in terms of rock shrimp revenue are likely minimal (approximately $600 per vessel per year, or $16,000 per year for the fishery). However, since these vessels average nearly $270,000 per year in gross revenue, retaining their 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. In combination with **Preferred Alternative 2** under **Action 2**, the maximum fleet size under **Preferred Alternative 2** for this action would be equivalent to the current fleet of 125 vessels with active or renewable endorsements. And combining **Preferred Alternative 2** under **Action 3** with **Preferred Alternative 2** for this Action would increase the maximum fleet size to 130 vessels, which would further increase the fishery's potential productive capacity in the long-term.

In the long-term, given that these 27 vessels would not lose their endorsements under **Preferred Alternative 2**, indirect economic benefits would accrue to the onshore sector. Specifically, in addition to the 17 dealers that would benefit under **Preferred Alternative 2** for **Action 2**, two additional dealers would be better off under **Preferred Alternative 2** for this action. In the short-term, the benefits to these dealers in terms of increased landings and revenue would be minimal. However, in the long-term, benefits to these 19 dealers will be enhanced under **Preferred Alternative 2** and could expand to other dealers if the vessels allowed to retain their endorsements become more active in the fishery in the future either as a result of improved economic conditions or more restrictive regulations in other fisheries, most notably the Atlantic sea scallop fishery. The same would also be true for other onshore businesses and rock shrimp processors.

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

Under current regulations, vessels that initially obtained their limited access rock shrimp endorsements in 2003 needed to land a minimum of 15,000 pounds of rock shrimp in at least one calendar year between 2004 and 2007. Endorsements held by vessels that did not meet this requirement are not eligible for renewal in 2008. Of the 125 vessels currently possessing active or renewable endorsements, 83 vessels initially obtained their endorsements in 2003. Of these 83 vessels, 43 vessels did not meet the 15,000-pound landing requirement by the end of the 2007 calendar year and thus their endorsements are not eligible for renewal. Since non-renewable endorsements are permanently removed from the fishery, maximum fleet size would be reduced from 125 to 82 vessels in 2008 thereby significantly reducing potential productive capacity in the fishery.

Under **Preferred Alternative 2**, these 43 vessels would not lose their endorsements in 2008 and thus would retain their ability to participate in the fishery in the short-term. That is, these 43 vessels could still harvest South Atlantic rock shrimp and retain their endorsements' value in the short-term. As previously noted, the current market value of these endorsements is estimated at $5,000 per endorsement, resulting in a total benefit of $215,000 to 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 in gross revenue, or nearly $200,000 per year to the fishery as a whole. Moreover, the potential productive capacity associated with these vessels would be retained in the fishery, which is significant given that they average approximately $300,000 per year in gross revenue. When considered in conjunction with **Preferred Alternative 2** under **Action 3**, five additional vessels would benefit under **Preferred Alternative 2** of this Action.

With respect to indirect effects on dealers, when considered in combination with **Preferred Alternative 2** under **Action 3**, **Preferred Alternative 2** for this Action could benefit as many as 17 dealers in the short-run based on the landings histories of the 43 vessels that would be allowed to retain their endorsements. 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 **Preferred Alternative 2**. However, the benefits, as represented by increased landings and revenues, 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**. However, the other third would likely be noticeably better off and at least one and possibly two dealers would be significantly better off under **Preferred Alternative 2**. Similarly, these economic benefits would not be evenly distributed across communities. 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.

5.5.3 Endorsements lost through failure to renew the rock shrimp limited access endorsement

Under current regulations, limited access rock shrimp endorsements are supposed to be renewed on an annual basis. Upon an endorsement's expiration, the owner of the endorsement has one year in which to renew the endorsement before it is terminated. Once an endorsement is terminated, it is permanently removed from the fishery. Of the original 155 limited access endorsements that were issued, 30 endorsements were not renewed in a timely manner and have thus been terminated. In turn, the termination of these endorsements has reduced the maximum fleet size to 125 vessels, which is below the Council's desired fleet size of 150 vessels. Five of the terminated endorsements' owners did renew their vessels' open access rock shrimp permits during the time in which they should have also renewed their endorsements. As such, there is evidence that these particular vessel owners were confused about the renewal process and did intend to retain their ability to participate in the limited access component of the rock shrimp fishery.

Under **Preferred Alternative 2**, these five vessels' terminated endorsements would be reinstated. As such, these vessels would regain their ability to participate in the rock shrimp fishery as well as the market value of their endorsements. Over the 2003 to 2007 time period, these five vessels' participation in the South Atlantic rock shrimp fishery has been very limited. On average, their annual rock shrimp revenues were approximately $6,000 per year. Contrariwise, these vessels were highly dependent on revenues from the Northeast se scallop fishery. Thus, in the short-run, although **Preferred Alternative 2** would reinstate these five vessels' endorsements, thereby increasing the maximum number of vessels in the fishery from 125 to 130, the benefit to the fishery in terms of annual gross revenues would only be approximately $30,000. However, these vessels would also regain the current market value of their endorsements. At $5,000 per endorsement, the benefit to these vessels as a result of regaining their endorsements would be $25,000. Therefore, the direct, short-term economic benefits are relatively small under **Preferred Alternative 2**. However, it should be noted that these are highly productive vessels which have averaged over $390,000 per year in gross revenue over the past five years. Should economic conditions improve in the future, this productive capacity could return to the rock shrimp fishery, which would lead to more significant economic benefits, including indirect economic benefits to the onshore infrastructure, 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.

5.5.4 Change the names given to the rock shrimp permit and endorsement

Under current regulations, a vessel that is eligible to participate in the rock shrimp fishery in the EEZ off of east Florida and Georgia must possess both an open access permit and a limited access endorsement. **Preferred Alternative 2** would institute a simplified permit structure and reduce confusion with the current permit structure and application process. Under **Preferred Alternative 2**, a vessel that currently possesses both an open access permit and a limited access endorsement would only need one permit. That is, vessels eligible to only operate in the EEZ off of North and South Carolina would still only need one permit (i.e. the Carolinas Zone permit), and thus these vessels would not be affected by this action. However, vessels currently possessing a limited access endorsement and an open access permit would only have to apply for one permit, the South Atlantic EEZ 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 potential productive capacity. Furthermore, a minimal savings of $10 per year would accrue to each limited access endorsement holder as a result of only having to pay for one rather than two permits. Given that the maximum number of limited access permits expected to exist in the fishery after the implementation of this Amendment is 130, the maximum annual savings to the fishery as a whole would be $1,300. These savings would continue to accrue each year in the future as long as applicants are required to pay application fees for their permits.

5.5.5 Require verification of Vessel Monitoring System

This section to be completed after the Council selects a preferred alternative

5.5.6 Require all shrimp permit holders to provide economic data

At present, owners of South Atlantic penaeid and rock shrimp permits are not required to provide economic data to the NOAA Fisheries Service. Very limited historical information on vessel costs and profitability is available for the South Atlantic shrimp 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 MSA, NEPA, the Regulatory Flexibility Act, E.O. 12866, and other federal statutes. More specifically, the reauthorized 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 result in less than optimal fishery management decisions by the Council and the NOAA Fisheries Service. Such decisions can cause unforeseen and unintended adverse economic and social impacts on fishery participants.

Under **Preferred Alternative 3**, no direct cash expense would be imposed on industry participants. However, the new reporting requirement would create an opportunity cost as a result of the associated time burden. The opportunity cost is approximated using the

average wage or salary of the affected persons. As of May 2006, which is the most currently available information, the Bureau of Labor Statistics reported that the mean wage for persons expected to provide this data was $19.33 per hour. 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.

There are 694 unique vessels that hold one or more of the three current types of South Atlantic shrimp permits/endorsements. In order to avoid any duplication of burden, the proposed economic data collection program will be combined with the one currently in place for vessels holding Gulf shrimp moratorium permits. The likelihood of such duplication is significant since 293 vessels with South Atlantic shrimp permits/endorsements also have Gulf shrimp moratorium permits. Therefore, the implementation of this new data reporting requirement under **Preferred Alternative 3** would impact approximately 400 additional vessels that are unique to the federal South Atlantic shrimp fisheries. Under **Preferred Alternative 3**, only a sample of these vessels will be asked to provide data each year. For example, assuming a sampling rate of 30%, the annual opportunity cost to the fishery would be $1,740. These opportunity costs are likely 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.

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……$30,000

NOAA Fisheries administrative costs of document preparation, meetings and review ……..$45,000

Industry Cost for purchasing new VMS……$

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

The preferred alternatives for **Action 1**, **Action 2**, and **Action 3** are expected to result in 75 more vessels being able to possess limited access endorsements than under the current

regulations. The market value of these endorsements is estimated to be $375,000. The possession of these endorsements will also allow these vessels to harvest rock shrimp in the future. The ability to participate in the fishery should result in approximately $246,000 per year in annual revenues to these vessels in the short-term with the potential for higher revenues in the long-term should these vessels increase their level of participation in the future. These revenues should generate indirect economic benefits of a similar magnitude to at least 19 rock shrimp dealers, as well as other onshore support businesses such as rock shrimp processors. In general, the retention of these vessels' significant potential productive capacity in the fishery should promote economic stability in the onshore sector. Simplification of the permitting structure and process under **Action 4** will provide minimal direct economic benefits to vessels that possess limited access endorsements of approximately $1,300 per year and, by minimizing confusion, help to avoid any additional unintended and undesired reductions in the maximum fleet size in the future. Discussion of **Action 5** will be included once a preferred alternative has been selected. The requirement to provide economic data under **Action 6** will impose no direct cash costs and only minimal opportunity costs of approximately $1,700 per year on the fishery, which should be more than offset by the indirect benefits from more informed and improved fishery assessments and management decisions.

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.

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 address the Council's desire to maintain a viable rock shrimp fishery in the South Atlantic region. Through the actions in this amendment, the Council is assessing 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;
- Require verification of an active and operational Vessel Monitoring System for renewal, reinstatement or transfer of a limited access rock shrimp endorsement; and
- Require the provision of economic data by rock and penaeid shrimp permit holders.

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 penaeid and rock shrimp fishing vessels. The Small Business Administration (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 and 114112, finfish and shellfish fishing) for all its affiliated operations worldwide.

Within the South Atlantic shrimp fisheries, vessels may possess one or more of the following federal permits: a penaeid shrimp permit, an open access rock shrimp permit, and a limited access rock shrimp endorsement. At present, 266 open access rock shrimp permits, 620 penaeid shrimp permits, and 155 limited access rock shrimp endorsements have been issued. Of the 155 limited access rock shrimp endorsements, 125 are currently active or renewable and 30 have been terminated. The total number of vessels that possess one or more of these permits or endorsements is 694 and thus this is the maximum number of vessels that could be potentially impacted by the actions considered in this Amendment. Of these 694 vessels, 293 vessels also possess Gulf shrimp moratorium permits and therefore only 401 vessels are unique to the South Atlantic shrimp fisheries.

The fleet of vessels with limited access rock shrimp endorsements is fairly homogeneous with respect to its physical characteristics. 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 averaging between 55 and 60 feet in length, and uses between three and four crew on each trip. More than 90% of these vessels are “large” (i.e. at least 60 feet in length) while less than 9% are “small” (i.e. less than 60 feet in length). More than 87% of these vessels have on-board freezing capacity. More than two-thirds of these vessels have steel hulls, while the other vessels are nearly equally split between fiberglass and wood hulls.

Of the 155 vessel with limited access rock shrimp endorsements, 145 were commercially fishing at some point between 2003 and 2007 and thus 10 vessels with endorsements were not commercially active during these years. All of the commercially inactive vessels are in fact state registered boats that are older, smaller, and less powerful than the average vessel in the fleet. Between 2003 and 2007, commercially active vessels with endorsements averaged nearly $284,000 in total revenue per year. During this time period, the maximum total revenue for a single vessel was approximately $1.8 million, and thus all vessels with limited access rock shrimp endorsements are determined to be small entities.

These vessels' dependence on landings from the South Atlantic rock shrimp fishery was relatively low as, on average, they only accounted for 7% of total revenue during this time. These vessels were most dependent on revenue from the Gulf shrimp fishery, which, on average, accounted for nearly 46% of their total revenue. Revenue from South Atlantic penaeid shrimp landings and Northeast non-shrimp landings were also important, with each representing approximately 22% of their total revenue on average. The vast majority of the Northeast non-shrimp revenue came from Atlantic sea scallop landings. 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 the past five years.

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. However, in 2005, South Atlantic rock shrimp landings accounted for only 0.2% of these vessels' total revenue. Landings from the South Atlantic penaeid shrimp fishery were still relatively important accounting for nearly 16% of their total revenue. And although revenue from the Gulf shrimp fishery was still relatively important, accounting for approximately 44% of their total revenue, 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. In 2006, revenue 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, these vessels apparently shifted more effort into the South Atlantic penaeid shrimp fishery, while revenue from Gulf shrimp and Northeast non-shrimp fisheries declined slightly. Thus, by 2007, these vessels' operational changes resulted in them being most dependent on revenue from the Gulf shrimp fishery, followed by Northeast non-shrimp fisheries and the South Atlantic penaeid shrimp fishery, with each accounting for no less than 26% of these vessels' total revenue. Between 2003 and 2006, average total revenue per vessel increased each year from approximately $203,000 in 2003 to $350,000 in 2006, or by approximately 70% on average. Although these vessels' total revenue decreased slightly in 2007 to approximately $321,000 on average, they were still quite high relative to their levels between 2003 and 2005. Without accompanying cost information, it is not

possible to determine how these vessels' costs and therefore profitability have changed during this time.

The fleet of 694 vessels that possess one or more South Atlantic shrimp permits or endorsements is very heterogeneous with respect to its physical characteristics. For example, approximately 65% of the vessels are large while 35% are small. Less than 40% have on-board freezing capacity while nearly 60% rely on ice for storage purposes. With respect to their hulls, the fleet is approximately evenly split between steel, wood, and fiberglass. On average, this group of vessels is somewhat smaller, older, less technologically advanced and uses less crew and gear relative to vessels that only possess limited access rock shrimp endorsements. Related, between 2003 and 2007, the average total revenue per vessel was only about $185,000, or 35% less than vessels that possess a limited access rock shrimp endorsement. Further, revenue 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 during this time. During this time period, the maximum total revenue for a single vessel was approximately $3.7 million, and thus all vessels with one or more South Atlantic shrimp permits or endorsements are determined to be small entities.

With respect to the 401 vessels that possess one or more South Atlantic shrimp permits or endorsements and do not possess a Gulf shrimp moratorium permit, they are also fairly heterogeneous with respect to their physical characteristics. However, on average, they are smaller, older, less technologically advanced and use less crew and gear than the fleet as a whole, and even more so compared to the vessels that possess a limited access rock shrimp endorsement. For example, nearly 56% of these vessels are small, only 10% have on-board freezing capacity, and less than 18% have steel hulls. Related, between 2003 and 2007, the average total revenue per vessel was only about $135,000, or 27% less than the fleet as a whole and 53% less than vessels that possess a limited access rock shrimp endorsement. Since these vessels do not possess a Gulf shrimp moratorium permit and thus cannot participate in the federal Gulf shrimp fishery, approximately 40% of their total revenue comes from both the South Atlantic shrimp and Northeast non-shrimp fisheries respectively, with 15% coming from South Atlantic non-shrimp fisheries.

Action 1, **Action 2**, and **Action 4** will directly affect some or all of the 125 vessels with active or renewable limited access rock shrimp endorsements while **Action 3** and **Action 4** will directly affect 5 vessels with terminated limited access endorsements. Specifically, **Action 1** will directly affect 27 vessels with active or renewable endorsements, **Action 2** will directly affect 43 vessels with active or renewable endorsements, **Action 3** will directly affect 5 vessels with terminated endorsements, and **Action 4** will directly affect all 125 vessels with active or renewable endorsements and 5 vessels with terminated endorsements. Discussion of **Action 5** will be included once a preferred alternative has been selected. In general, **Action 6** would apply to all 694 vessels with a South Atlantic penaeid or rock shrimp permit or endorsement. However, since 293 of these vessels possess a Gulf shrimp moratorium permit and therefore must already comply with economic data reporting requirements in that fishery, only 401 vessels will be directly affected by **Action 6**.

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

Vessel owners with South Atlantic penaeid or rock shrimp permits or endorsements will be required to provide economic data upon request on an annual basis. Data will be collected by use of a mail survey. The survey will request data regarding these vessels' operating costs and revenues (see **Appendix G**). Although nearly 700 vessels possess these permits, approximately 300 of these vessels possess Gulf shrimp moratorium permits and thus are already subject to this reporting requirement. Therefore, it is expected that approximately 400 vessels will be subject to this new requirement, though only a sample will be required to provide the requested data each year. The time reporting burden associated with this new reporting requirement is estimated to be 45 minutes per vessel. The opportunity cost per vessel associated with this time burden is estimated to be approximately $14.50. The requested information should be obtainable from each vessel's annual tax returns or end of the year financial records and thus no special professional skills are needed to comply with the new reporting requirement.

6.6 Substantial Number of Small Entities Criterion

The proposed action would be expected to directly affect approximately 400 of the 694 vessels, or approximately 58%, that possess Federal South Atlantic rock and penaeid shrimp fishery permits. All affected entities have been determined, for the purpose of this analysis, to be small entities. Therefore, it is determined that the proposed action will affect a substantial number of small entities.

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?

Action 1 is expected to directly benefit at least 27 vessels by allowing them to retain their limited access rock shrimp endorsements. Under current regulations, these vessels would be expected to lose their endorsements during the next few years. By retaining their endorsements, these vessels are able to retain the market value of their endorsements, which is estimated to be $5,000. Further, they will retain their ability to participate in the

fishery, which in the short-term is expected to increase these vessels' average total revenue by only $600 per vessel but could be greater in the long-term if they increase their level of participation in the fishery.

Action 2 is expected to directly benefit 43 vessels by allowing them to retain their limited access rock shrimp endorsements. Under current regulations, these vessels would lose their endorsements in 2008. By retaining their endorsements, these vessels are able to retain the market value of their endorsements, which is estimated to be $5,000. Further, they will retain their ability to participate in the fishery, which in the short-term is expected to increase these vessels' average total revenue by $4,600 per vessel but could be greater in the long-term if they increase their level of participation in the fishery.

Action 3 is expected to directly benefit 5 vessels by reinstating their endorsements. At present, these vessels' endorsements have been terminated and thus cannot be used to participate in the fishery and in turn have no market value. Reinstatement of these endorsements will allow these vessels to regain the market value of their endorsements, which is estimated to be $5,000. Further, they will regain their ability to participate in the fishery, which in the short-term is expected to increase these vessels' average total revenue by $6,000 per vessel but could be greater in the long-term if they increase their level of participation in the fishery.

Action 4 is expected to directly benefit 130 vessels by reducing the number of permits these vessels must possess and pay for in order to participate in the limited access rock shrimp fishery. The annual benefit is only $10 per vessel and thus is minimal.

Discussion of Action 5 will be included once a preferred alternative has been selected.

Action 6 is expected to adversely affect 401 vessels by requiring a sample to provide economic data on an annual basis. However, this reporting requirement would only impose an annual opportunity cost of approximately $15 per vessel. Therefore, this Action is not expected to increase these vessels' operating costs and thus would not be expected to decrease their profits.

6.8 Description of Significant Alternatives

Two alternatives, including the *status quo*, were considered for the action to remove the 15,000-pound rock shrimp landing requirement. The first alternative, the *status quo*, would retain the landings requirement. In the long-term, retention of the landing requirement would be expected to significantly and permanently reduce the maximum fleet size in the rock shrimp fishery. Specifically, the maximum fleet size under this alternative would only be approximately 37% of the Council's desired fleet size and 44% of its current fleet size. Such a result would be inconsistent with the Council's objective of retaining sufficient productive capacity in the fishery in order to support the onshore infrastructure. The second alternative to the proposed removal of the landing requirement would have reduced the landing requirement from 15,000 pounds in at least one out of every four calendar years to 7,500 pounds in at least one out of every four calendar years. Although this represents a 50% reduction in the landings requirement,

few additional vessels would be able to meet this requirement relative to the 15,000 pound requirement. Therefore, similar to the *status quo*, this alternative would result in a significant and permanent reduction in the rock shrimp fishery's long-term maximum fleet size. Specifically, the maximum fleet size under this alternative would only be approximately 39% of the Council's desired fleet size and 47% of its current fleet size. Such a result would be inconsistent with the Council's objective of retaining sufficient productive capacity in the fishery in order to support the onshore infrastructure.

Two alternatives, including the *status quo*, were considered for the action to reinstate endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement at the end of the 2007 calendar year. The first alternative, the *status quo*, would not reinstate endorsements lost due to not meeting the 15,000-pound rock shrimp landing requirement at the end of the 2007 calendar year. Of the 125 vessels currently possessing active or renewable endorsements, 83 vessels were required to meet the landing requirement by the end of the 2007 calendar year. However, 43 vessels did not meet the landing requirement and thus their endorsements are not eligible for renewal in 2008. Upon these endorsements' termination, the maximum fleet size would be permanently reduced from 125 vessels to 82 vessels in 2008. Such a significant and permanent reduction in the maximum fleet size would be inconsistent with the Council's objective of retaining sufficient productive capacity in the fishery in order to support the onshore infrastructure.

Two alternatives, including the *status quo*, were considered for the action to reinstate endorsements lost through failure to renew for vessels that renewed their open access permits. The first alternative, the *status quo*, would not reinstate endorsements that were lost through failure to renew for vessels that renewed their open access permits. At present, an open access permit is needed to harvest rock shrimp in the EEZ off of North and South Carolina while both the open access permit and the limited access endorsement is needed to harvest rock shrimp in the EEZ off of Georgia and east Florida. Five vessels that previously possessed endorsements renewed their open access permits but failed to simultaneously renew their endorsements. By renewing their open access permits, these vessels indicated that they intended to continue participating in the limited access component of the fishery in the future. Their failure to renew their endorsements at the same time was the result of confusion over the application and renewal process associated with the open access permit and the limited access endorsement. The Council does not consider the permanent loss of these endorsements to be an equitable outcome. Further, the unintended loss of these endorsements from the fishery is inconsistent with the Council's objective of retaining sufficient productive capacity in order to support the onshore infrastructure. The second alternative would extend the time allowed to renew endorsements by one calendar year after the effective date of this action. The outcome of this alternative is uncertain as it is dependent on whether the five affected vessel owners take the proper actions within the specified time period. Any vessel owners that did not would not have their vessels' endorsements reinstated, which in turn would result in an unintended and undesired reduction in the maximum fleet size and thus this alternative is also potentially inconsistent with the Council's objective of retaining sufficient productive capacity in order to support the onshore infrastructure.

One alternative, the *status quo*, was considered for the action to rename the rock shrimp permit and endorsement. At present, an open access permit is needed to harvest rock shrimp in the EEZ off of North and South Carolina while both the open access permit and the limited access endorsement is needed to harvest rock shrimp in the EEZ off of Georgia and east Florida. Five vessels have already lost their endorsements as a result of confusion associated with the current naming practice and more could be lost in the future. The unintended loss of additional endorsements from the fishery in the future as a result of vessel owners' confusion with the current naming practice is inconsistent with the Council's objective of retaining sufficient productive capacity in order to support the onshore infrastructure.

Discussion of significant alternatives for Action 5 will be included after the Council selects a preferred alternative.

Two alternatives, including the *status quo*, were considered for the action to require all South Atlantic shrimp permit holders to provide economic data if selected. The first alternative, the *status quo*, would not require South Atlantic shrimp permit holders to provide economic data. At present, economic data are lacking for the South Atlantic shrimp fisheries. The lack of such data significantly compromises the Council's ability to conduct regulatory impacts analyses that meet the requirements of MSA, NEPA, the Regulatory Flexibility Act, E.O. 12866, and other federal statutes. Further, the reauthorized version of MSA explicitly states that all FMPs must indicate all economic information necessary to meet the requirements of the Act. Thus, these data are needed in order for the Council to comply with these various mandates. 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. Such misinformation can adversely affect decisions made by the Council and the NOAA Fisheries Service and thereby lead to unforeseen and unintended adverse economic and social impacts on fishery participants. The second alternative would require all shrimp permit holders to provide economic data each year. In effect, this alternative would require a census rather than a sample of permit holders to provide the necessary economic data. A census of permit holders is not required to provide statistically accurate and reliable estimates of important economic variables for the fishery and thus would constitute an unnecessarily onerous time burden on fishery participants.

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 are 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 this fishery to fully describe the impacts of any change in fishing regulations on any one community. Impacts to communities were evaluated as thoroughly as possible throughout **Section 4.0.** 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 three scoping meetings (scoping comments are summarized in **Appendix F**) 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 3.4.3 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 are 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,[37] or minority population.[38] 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. Comments received during scoping did not indicate 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.

[37] 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).

[38] 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.

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

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Myra Brouwer (SAFMC Lead)	Fishery Scientist	SAFMC	N/A	SAFMC
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10 List Of Agencies, Organizations, And Persons To Whom Copies Of The Statement Are Sent

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SAFMC Deepwater Shrimp Advisory Panel
SAFMC Shrimp 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
- Northeast Regional Office

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APPENDIX A. ALTERNATIVES ELIMINATED FROM DETAILED CONSIDERATION.

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

Alternative 3. Extend the time allowed to meet the 15,000-pound rock shrimp landing requirement for not more than two years; this would allow a total of five or six consecutive years.

Each vessel is currently required to land 15,000 pounds of rock shrimp within at least one of four consecutive calendar years to meet the 15,000-pound landing requirement. This alternative would extend the four-year time period within which the 15,000-pound landing requirement could be met. The time period would be extended from four years to five years, or even six years, allowing fishermen who have not meet the landing requirement within the past four consecutive calendar years to have an extended amount of time to meet the 15,000-pound landing requirement. This would change the current time limit in the definition of inactive endorsements to either five or six calendar years, replacing the four calendar-year provision. In the short-term, this action would benefit those vessels that would lose their endorsements this year. In the long-term, this action would benefit all rock shrimp fishery participants by giving them more time to land the 15,000-pound requirement. The pounds-landed component of the landing requirement would remain unchanged, but the time component would be extended, possibly allowing a higher level of fishery participation relative to the *status quo*.

Rationale: According to preliminary analyses the vessels that lost the endorsement all qualified initially and got their permit in either 2003 or 2004. If the time allowed to meet the landing requirement is extended one year and added to the time required to develop this amendment, that would give them all of the current (2008) year to qualify, because the time period ran out in December of 2007 and this amendment is not due to be implemented until March or April of 2009. Therefore, a one-year extension is not going to give fishermen much additional time. Even a two-year extension would give them less than a year to qualify.

Old Alternative 4. Allow application for renewal as an inactive permit holder. This would keep the 15,000-pound requirement but allow those individuals that do not meet the requirement to renew as an inactive permit holder.

Rationale: This alternative was rejected because if they do not meet the 15,000-pound landing requirement then they are already considered an inactive permit holder.

New Alternative 4. Change the landing requirement to one pound of rock shrimp.

This alternative would reduce the pounds landed component of the landing requirement to one pound, while maintaining the current time limit component of the landing requirement. This would effectively change the current definition of an inactive endorsement to be one that is attached to a vessel having landed less than one pound of rock shrimp in a calendar year. Rock shrimp vessels that do not land at least one pound of rock shrimp in at least one of four consecutive calendar years would be eliminated from the fishery. Rock shrimp fishermen who have demonstrated at least some effort in the form of recorded landings of one pound or more in

at least one of four consecutive years would be allowed to apply for renewal of their rock shrimp endorsement. This alternative could potentially benefit 14 vessels with active or renewable endorsements and three vessels linked to non-renewable endorsements if either **Alternative 2** or **Alternative 3** are chosen under **Action 3**. 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 able to be used to meet this annual landings condition.

Rationale: This alternative does not address the needs of those fishermen who have opted to go into other fisheries. They could be in New England fishing on scallops for four years and miss out on even the one pound of rock shrimp, or even in the Gulf. Therefore, this alternative does not address the problem either.

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

Alternative 2. 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 one pound of rock shrimp during the same time period.

Alternative 2 would reinstate endorsements lost due to not meeting the rock shrimp landing requirement of 15,000-pounds in one of four consecutive calendar years for those vessels that landed at least one pound of rock shrimp during one of four consecutive calendar years. This would eliminate rock shrimp vessels that have landed less than one pound (effectively having no landings at all) within four consecutive calendar years. Under this alternative, 10 vessels with active or renewable permits would have their endorsements reinstated. Rock shrimp fishermen who have demonstrated at least some effort in the form of recorded landings of one pound or more in one of four consecutive years would have their endorsement reinstated.

Rationale: This alternative would not provide benefits different from those resulting from doing away with the landing requirement in the regulations.

APPENDIX B. COMMUNITY DESCRIPTIONS

Introduction

This Appendix identifies "shrimp" communities throughout the U.S. Southeast and focuses on recent data regarding shrimp fishing, shrimp fishermen, and ultimately the potentially impacted communities themselves. These "shrimp" communities were identified based on factors such as commercial licenses held by local residents, the number of shrimp "dealers" in such communities as the value of the shrimp landed. Information for many of the South Atlantic community descriptions were referenced from the report, *Potential Fishing Communities in the Carolinas, Georgia and Florida: An effort in baseline profiling and mapping* by Jepson *et al.* (2006). Demographic data came from the U.S. Census Bureau Decennial census. Other fishery dependent data were derived from the Accumulated Landings System (ALS) database and licensing information from the NMFS Regional Office. Each state is addressed and communities are selected based on data from the Southeast Regional Office which highlight the number of licensed shrimp fishermen most likely impacted by potential policy changes. Communities from the Gulf were also included as many Gulf shrimpers and dealers from the region are also impacted by participation in the South Atlantic shrimp fisheries (the community descriptions are based on reports created by Impact Assessment Inc.). The potentially impacted communities are discussed on a state by state basis with individual communities listed in alphabetical order, no way reflecting on the relative importance of shrimp to the region, state or local economy.

North Carolina Shrimp Communities

Beaufort Community Description

Beaufort was built on a former Native American village, called Warelock which translates to "fish town" or "fishing village." It is located near Cape Lookout and borders the southern portion of the Outer Banks. Because of its physical characteristics, especially the deep water harbor, it is an ideal home to vessels of all sizes and types and maintains a maritime infrastructure making it a favorite stop-over for transient boaters. Originally a fishing village and port of safety, it was known as "Fishtowne" until incorporated in 1722.[1] In addition to the fishing activities in Beaufort, a whaling community called Diamond City existed on Shackleford Banks, a barrier island six miles to the southeast by boat. This community was present during the eighteenth and nineteenth centuries. The export economy of the areas centered round lumber, barrel staves, rum, and molasses. However, when the port declined as a trade center, commercial fishing gained greater importance and became the primary economic activity. Up until recently, Beaufort served as home port for a large menhaden fishing fleet and had numerous processing facilities for menhaden products.[2]

Currently, tourism, service industries, retail businesses and construction are the important mainstays of the area, with many shops and restaurants catering to visitors from outside the area. Beaufort's population has slightly increased from 3,808 in 1990 to 4,216 in 2007 (Table 1). The community has some exclusive homes along the waterfront but overall most housing is modest. Even with modest housing Beaufort has seen its housing values more than double from $65,400

in 1990 to $128,500 in 2007 (Table 1). It is home to both the NOAA Center for Coastal Fisheries and Habitat Research and Duke Marine Sciences Center. Directly across the bridge from Morehead city is Radio Island, which is the commercial fishing hub for Beaufort. There are a few private boats along the waterfront in downtown Beaufort, but the commercial enterprises are predominantly located on Radio Island. The waterfront does have two tour/party boats, in addition to private boats, some of which may be smaller charter vessels. There are several marinas in the community and several businesses that provide support services for both the recreational and commercial fishing industries. According to one individual, Beaufort is a commercial fishing community, although less so now, than in the past. This seems to be largely due to fewer young people getting into the fishing business as it does not seem to pay well. This same individual has seven trawlers and four small snapper/grouper boats as part of his business. There are accounts that during summer months three longline vessels travel from New York and dock at his facility. The majority of fish purchased is marketed in Virginia and farther north. Shrimp is a large part of the local seafood industry, but, like everywhere else throughout the southeast region imports are having an impact on the domestic market lowering prices.

Fish houses and facilities are commonly full service in that they serve as a fish house, with processing, ice, fuel, as well as gear and net repair. Like many facilities related to the commercial fishing industry, the glory days of fishing have past them by and many owners have sold-out or relocated leaving in their wake developers who have come to take advantage of the prime coastal real estate. During research in 2002 it was noted that there existed an ice plant across the bridge from Beaufort which has now become a condominium development. The pressure to redevelop has even affected the last shad factory in the state, located on Front St. in Beaufort. Popular fisheries such as the shad fishery have been eliminated and as one remaining owner suggests shad built the fishing industry in Beaufort. While there are efforts or forces to put it out of out of business due to the property valuable, he will hold on until it is time to retire. Asked if he would like his family to continue on the business when he retires, he said no, and that there was little future anymore in this type of fishing.

In 2002 fishermen estimate that on Radio Island there are 20 trawlers that dock there permanently. Another local fisherman said that his fish house used to process year round, but now only operates seven months of the year due to various seasonal closures. This has forced employment levels to change, as for one fish house owner who used to employ four people year round, he now only needs to employ two. It was in1987 that Beaufort had its best year for shrimp. This benefit was said to have a positive impact on the local communities as most the fishermen involved in the fishery live in Beaufort or Morehead City. There are three fish houses in Beaufort, one of which deals primarily in bait. In 1987 there were about 25 larger commercial vessels (70-90') in addition to a lot of smaller boats; now there are approximately 11 large commercial vessels in Beaufort.[3]

Shrimp has always been an important and valuable species in Beaufort, currently second to summer flounder (Figure 1). In 2006 Beaufort landed 630,885 pounds of shrimp valued at $914,602 (Table 2). There were only 10 federally permitted vessels in Beaufort in 2001and those vessels held primarily coastal pelagic permits (Jepson *et al.* 2006). Most of the employment that is fishing related according to census business pattern data is related to boat building with 184 persons employed in that business. Others are employed in fish processing and

fish and seafood. There are over 400 commercial vessels registered with the state from Beaufort with almost 300 standard commercial fishing licenses. There are 172 shellfish licenses and 32 dealer license (Jepson *et al.* 2006).

Table 1. Beaufort, NC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Beaufort, NC	**1990**	**2000**	**2006**
Population	3,808	3,771	4,261
Median Education Attainment	Some college, no degree	Some College less than 1 yr.	
White	2,852	2,861	
Black or African American	908	754	
American Indian & Alaska Native	18	4	
Asian, Native Hawaiian & Other Pacific Islander	14	16	
Some Other Race	16	90	
Hispanic or Latino (or any race)	25	134	
Total Housing Units	2,085	2,187	
Vacant	364	407	
Median Gross Rent	$373	$502	
Median Housing Value	$65,400	$119,200	$128,500
Median Household Income	$21,532	$28,763	$28,300
Per Capita Income	$11,385	$19,356	
Unemployment %	4.80%	2.60%	
Employment by Industry (Top 5)			
Retail Trade	24.20%	15%	
Public Administration	12.70%	DO	
Education, health and social services	15.20%	13.20%	
Manufacturing, durable goods	7.80%	DO	
Other Professional & related services	DO	9.30%	
Construction	DO	10%	
Accommodation & food services, art, entertainment	DO	18%	
Manufacturing, nondurable goods	5.80%	DO	
Transportation	5.80%	DO	
DO= Dropped Out			

1 www.clis.com/beaufortnc
2 http://www.beaufort-nc.com/history/bn-his02.html
3 Interviews conducted by Ana Pitchon, May 2002

Table 2. Top five species by pounds caught in Beaufort, NC, from 2006 data.

SPECIES	DEALERS	FISH RANK	POUNDS	TRIPS	VALUE
SUMMER FLOUNDER	7	1	992,888	146	$2,103,158
SHRIMP	18	2	630,885	1,228	$914,602
BLUE CRABS	7	3	297,597	624	$157,908
SWORDFISH	*	4	*	30	*
STRIPED MULLET	7	5	183,268	247	$104,226

* The number of dealers falls below the rule of three.

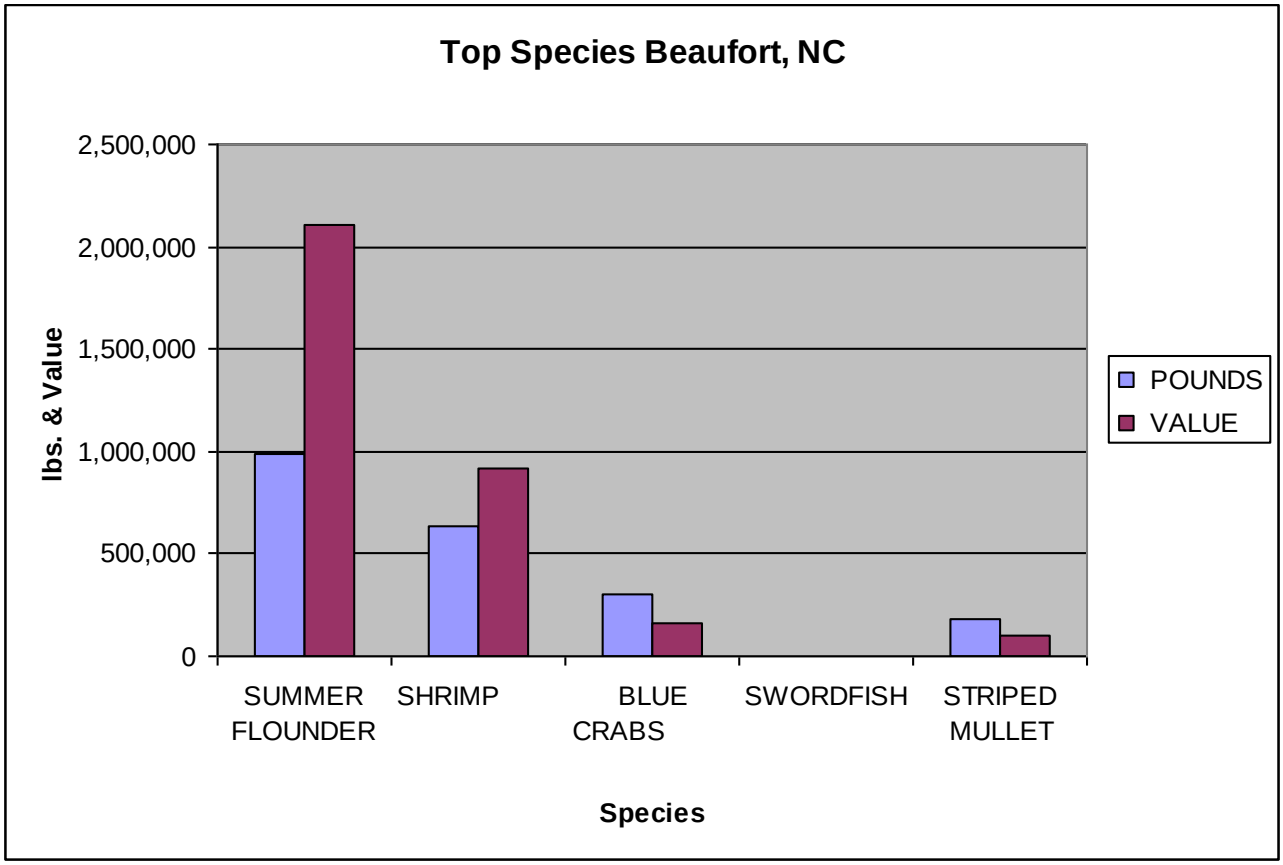

Figure 1. Value and pounds of top five species in Beaufort, NC, for 2006.

Engelhard Community Description

Engelhard is located on the shore of Far Creek (Pamlico Sound) and is said to date as far back as 1650. It features a dredged channel that tailors to the many types of commercial fishing boats. The community is small (population), and described as having a laid back atmosphere. Its existence seems to depend equally on commercial fishing and agriculture.[4] Between 1990 and 2000 the community has experienced a slight decrease in population and a decrease in unemployment (Table 3). Engelhard holds an annual Seafood Festival every May with this year, 2008, being the 21st year in existence.[5] The event is described as family oriented with a blessing of the fleet, live music, a pageant, and of course local food. One of the most popular local

species is shrimp. In fact, shrimp is the second most valuable commercial species in Engelhard, just after summer flounder (Figure 2). In 2006 Engelhard brought in 862,740 pounds of shrimp, taken during 427 trips (Table 4).

[4] http://www.vergie.com/engelhard.html
[5] http://www.engelhardseafoodfestival.com

Table 3. Engelhard, NC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Engelhard/Lake Landing, NC	**1990**	**2000**
Population	2,027	1,852
Median Education Attainment	High School Graduate	High School Graduate
White	1,115	986
Black or African American	905	828
American Indian & Alaska Native	4	1
Asian, Native Hawaiian & Other Pacific Islander	1	3
Some Other Race	2	22
Hispanic or Latino (or any race)	4	62
Total Housing Units	956	1,018
Vacant	183	249
Median Gross Rent	$262	$387
Median Housing Value	$35,900	$64,000
Median Household Income	$16,949	$23,199
Per Capita Income	$8,844	$14,589
Unemployment %	6%	3%
Employment by Industry (Top 5)		
Fisheries, agriculture, forestry	**22%**	**11.50%**
Retail Trade	23.20%	DO
Construction	8.60%	13.20%
Education, health and social services	7.20%	15.30%
Public Administration	DO	11.10%
Finance, insurance, real estate	6.30%	DO
Manufacturing, durable goods	DO	10.50%
DO= Dropped Out		

Table 4. Top five species by pounds caught in Engelhard, NC, from 2006 data.

SPECIES	DEALERS	FISH RANK	POUNDS	TRIPS	VALUE
CROAKER	5	1	1,158,491	307	$413,123
BLUE CRABS	8	2	869,991	1,635	$452,866
SHRIMP	5	3	862,740	427	$1,520,196
SUMMER FLOUNDER	3	4	811,893	89	$1,721,099
SHARKS, DOGFISHES	*	5	*	52	*

* The number of dealers falls below the rule of three.

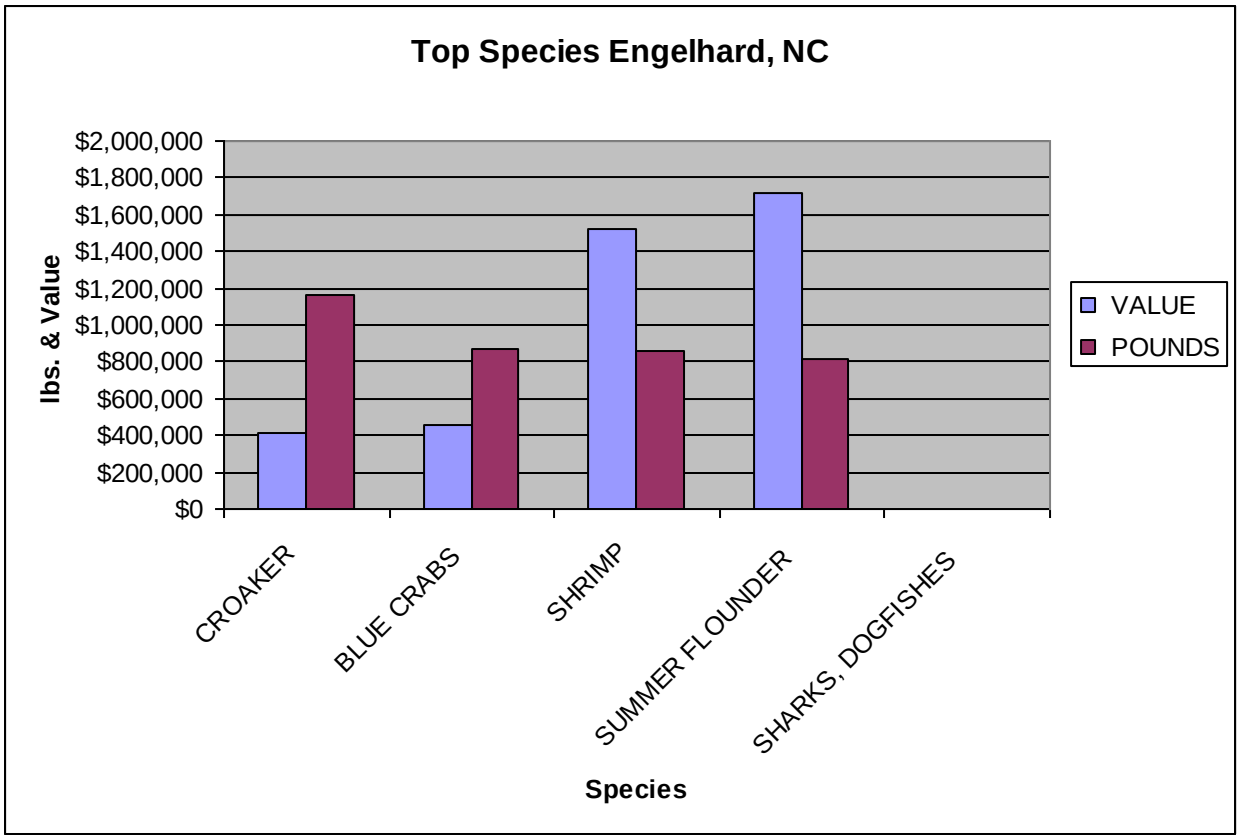

Figure 2. Value and pounds of top five species in Engelhard, NC, for 2006.

Swan Quarter Community Description

Swan Quarter is located in Hyde County and is one of the oldest counties in North Carolina. Swan Quarter was settled by Samuel Swann in the 1700's near the head of Swan Bay, along the Pamlico Sound.[7]

Fishing, oystering, and crabbing have long been the principal occupations of Swan Quarter citizens. This salty duty is supplemented by farming the rich land about the town. Today, the village sees many more visitors than in times past. Tourists pass through on their way to and from the Ocracoke-Swan Quarter ferry, located nearby. The increased traffic doesn't seem to have changed the town much, however.[8] Swan's Quarter has seen a steady population with a large increase in unemployment from 2.30% in 1990 to 5.30% in 2000 (Table 5).

Shrimp in Swan Quarter is second in value and pounds landed to blue crabs (Figure 3). Swan Quarter fishermen landed 346,887 pounds of shrimp valued at $613,910 (Table 6).

[7]Lemme, Ingrid and Dominic Piosczyk-Lemme. Town of Swan Quarter, NC. Retrieved from http://www.swanquarter.net/history.asp.

[8]http://www.albemarle-nc.com/hyde/CGNC/

Table 5. Swan Quarter, NC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Swan Quarter, NC	1990	2000
Population	985	958
Median Education Attainment	High School Graduate	High school graduate
White	594	592
Black or African American	385	337
American Indian & Alaska Native	0	2
Asian, Native Hawaiian & Other Pacific Islander	2	2
Some Other Race	4	5
Hispanic or Latino (or any race)	11	20
Total Housing Units	489	511
Vacant	120	143
Median Gross Rent	$234	$362
Median Housing Value	$39,100	$61,300
Median Household Income	$13,140	$31,136
Per Capita Income	$8,219	$12,776
Unemployment %	2.10%	5.30%
Employment by Industry (Top 5)		
Fisheries, agriculture, forestry	26.70%	16.50%
Finance, insurance, real estate	19%	8.40%
Public Administration	13%	35.80%
Other Professional & related services	8%	DO
Construction	7.60%	DO
Education, health and social services	DO	16%
Retail Trade	DO	6.90%
DO= Dropped Out		

Table 6. Top five species by pounds caught in Swan Quarter, NC, from 2006 data.

SPECIES	DEALERS	FISH RANK	POUNDS	TRIPS	VALUE
BLUE CRABS	3	1	1,131,113	2,647	$714,654
SHRIMP	5	2	346,887	236	$613,910
SHARKS, DOGFISHES	*	3	*	9	*
MENHADEN	*	4	*	38	*
OYSTERS	4	5	72,706	1,331	$362,736

* The number of dealers falls below the rule of three.

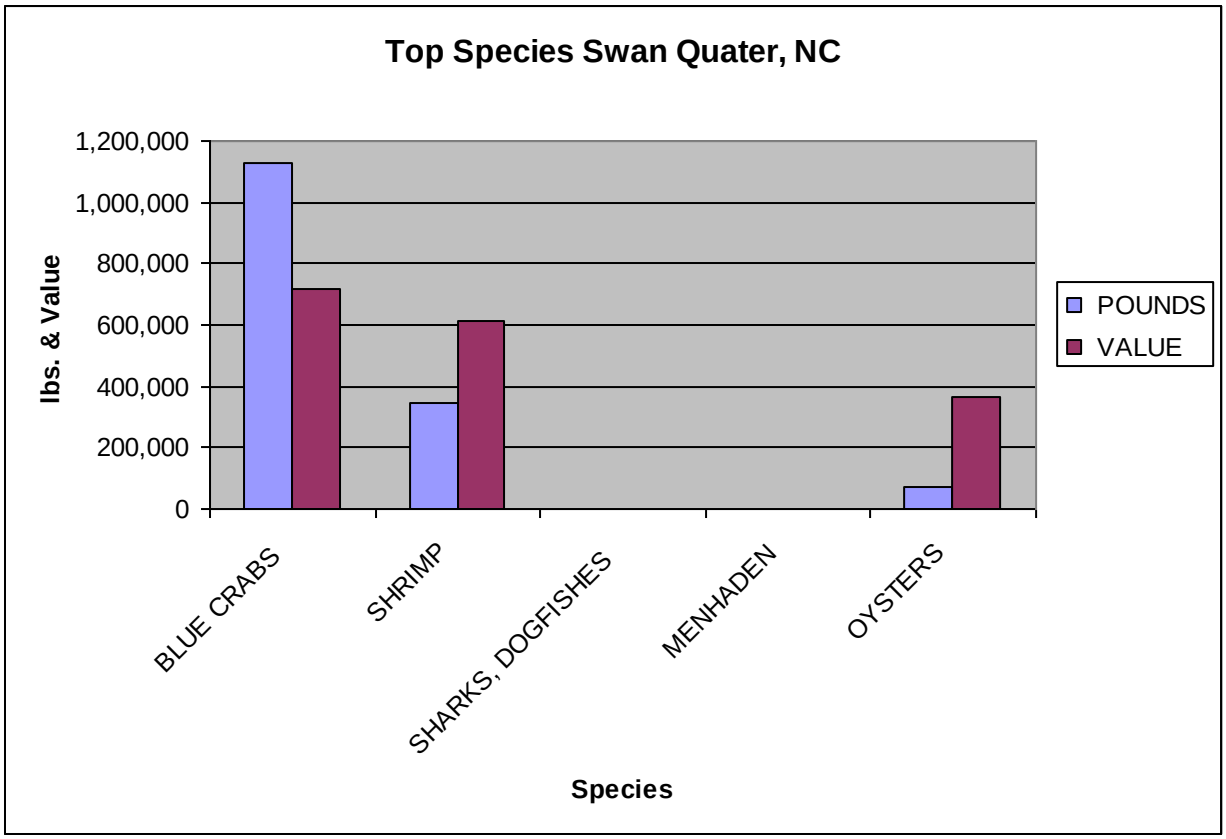

Figure 3. Value and pounds of top five species in Swan Quarter, NC, for 2006.

South Carolina Community Descriptions

McCleallanville Community Description

The population of McClellanville dropped in the 1990 census but has since increased again in the 2000 census to 459 and is currently at 741 (Table 7). The median household income has almost doubled from 1990 to 2006 while the median housing value has increased from $78,600 in 1990 to $225,700 in 2006 (Table 7). There are four vessels with federal permits homeported in McClellanville and all four have rock shrimp permits (Jepson *et al.* 2006). All employment in fishing related business is in fish and seafood and the percent employed through fishing has increased form 12.6% in 1990 to 18%in 2000 (Table 7). There are 133 state permits in McClellanville, with 52 of those being saltwater licenses. There are 27 trawler licenses, 16 handheld equipment licenses and 5 wholesale dealer licenses.

Table 7. McCleallanville, SC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

McClellanville, SC	**1990**	**2000**	**2006**
Population	333	459	471
Median Education Attainment	Some College, no degree	Some college, 1 or more years, no degree	
White	300	425	
Black or African American	33	34	
American Indian & Alaska Native	0	0	
Asian, Native Hawaiian & Other Pacific Islander	0	0	
Some Other Race	0	0	
Hispanic or Latino (or any race)	0	10	
Total Housing Units	198	241	
Vacant	67	46	
Median Gross Rent	$396	$357	
Median Housing Value	$78,600	$147,200	$225,700
Median Household Income	$25,536	$42,500	$48,600
Per Capita Income	$10,447	$22,425	
Unemployment %	1.10%	0.50%	
Employment by Industry (Top 5)			
Educational, Health, social services	27%	15.40%	
Accommodation, food services, entertainment	7%	DO	
Construction	15.30%	13%	
Professional, scientific, mgmt, administrative, waste services	10.20%	DO	
Public Administration	7%	9.50%	

Mt. Pleasant Community Description

The first inhabitants of the Mount Pleasant area were the Sewee Indians. The first English settlers arrived around 1680 under the leadership of Captain Florentia O' Sullivan. He had been granted 2,340 acres and each time a new family arrived, they were allotted several hundred acres. The first small settlement of the area was the village of Greenwich, which was adjacent to Jacob Motte's "Mount Pleasant" estate. Motte's estate was purchased in 1803 and divided into 35 large lots. In 1837, the village of Greenwich was merged with Mount Pleasant. Many of the families in this area had timber concerns and some maintained the ferries. Mount Pleasant also played a leading role in the first major military engagement of the Revolutionary War in 1775. After the war, the area was known as a resort town with many stores and rentals available. The area is still widely known as a vacation area and "model town" in South Carolina.[10] Mount Pleasant has seen its population double every ten years from 1970 to 1990 and now has reached a high of 59,113 in 2006. The number of persons in the labor force has dropped slightly to 69.9 % while percent unemployed has increased from 1.5 in 2000 to 3.3 in 2006. Average wage and salary has risen substantially but so has the number of persons living below the poverty level.

While there are only 6 vessels with federal permits homeported in Mount Pleasant, there are 12 persons listed as fishing and 28 persons employed in fish and seafood and markets (Jepson *et al.* 2006). There are 170 state permits in Mt. Pleasant with 57 saltwater licenses. There were 23 trawler licenses and 11 wholesale dealer licenses (Table 8).

[10] www.townofmountpleasant.com/index.cfm?section=11&page=5

Table 8. Mt. Pleasant, SC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Mt. Pleasant, SC	1990	2000	2006
Population	30,108	47,609	59,113
Median Education Attainment	Some College, no degree	Bachelor's degree	
White	27,075	42,515	
Black or African American	2,766	3,445	
American Indian & Alaska Native	39	67	
Asian, Native Hawaiian & Other Pacific Islander	190	561	
Some Other Race	38	386	
Hispanic or Latino (or any race)	279	635	
Total Housing Units	12,443	20,129	
Vacant	655	1,223	
Median Gross Rent	$537	$838	
Median Housing Value	$96,900	$185,500	$284,400
Median Household Income	$38,605	$61,054	$69,800
Per Capita Income	$18,932	$30,823	
Unemployment %	1.50%	1.50%	3.30%
Employment by Industry (Top 5)			
Educational, Health, social services	24%	26%	
Accommodation, food services, entertainment	DO	10.10%	
Professional, scientific, mgmt, administrative, waste services	DO	11.60%	
Retail Trade	15.40%	11.20%	
Finance, insurance, real estate	8.60%	8.20%	
Construction	8.40%	DO	
Other Related Professional services	8%	DO	
DO= Dropped Out			

Murrells Inlet Community Description

Murrells Inlet is known as the Seafood Capital of South Carolina. The origin of its name remains a mystery, however Murrells Inlet was officially named by the post office in 1913. The first settlers of the area were Native American Tribes. It is stated that beginning in the 16th and 17th Centuries, Spanish and English colonists arrived in the area. The frequency of ships led to pirate activity and pirates were said to have utilized the Inlet's winding creeks for refuge and a hiding place. Historically, large tracts of land were cultivated into successful rice plantations. By 1850, almost 47 million pounds of rice were produced in this area. Murrells Inlet was used a port during the Civil War to sneak cotton and other products to England in exchange for war supplies, such as food and medicine. The Civil War led to the decline of the rice culture and in 1916, the last remaining commercial rice grower was out of business. By this time, commercial

and recreational fishing became a popular industry. By 1914, captain-led fishing excursions cost $5 per person for a day trip out of the Inlet on a 20-foot skiff. Today, charter, recreational and commercial fishing are still popular in Murrells Inlet. Murrells Inlet has seen its population increase to a high of 5,519 in 2000. The percent of the population in the labor force has remained practically the same while unemployment has risen from 3 % in 1990 to 5.2 % in 2000 (Table 9). The number of persons working in farm, fish and forestry occupations has seen a decline like most communities.

There are a total of 33 vessels with federal permits. The majority has king mackerel and snapper grouper class-1 permits. Almost half of those permitted vessels have charter permits for either coastal pelagics or snapper grouper (Jepson *et al.* 2006). There are four federal dealers in the community. Most of the fishing employment is in fish and seafood markets with 10 persons employed in that sector out of the 16 total. There are 111 state permits issued to residents of Murrells Inlet. Forty-four of those permits are for saltwater licenses. Another 14 are for handheld equipment and 12 are for crab pots. There are 10 wholesale dealer licenses held by Murrells Inlet residents (Jepson *et al.* 2006).

Table 9. Murrells Inlet, SC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Murrells Inlet, SC	1990	2000	2006
Population	3,334	5,519	
Median Education Attainment	High School Graduate	Some college, less than 1 year	
White	2,904	5,055	
Black or African American	419	393	
American Indian & Alaska Native	4	9	
Asian, Native Hawaiian & Other Pacific Islander	7	18	
Some Other Race	0	44	
Hispanic or Latino (or any race)	14	34	
Total Housing Units	1,843	3,182	
Vacant	421	592	
Median Gross Rent	$472	$689	
Median Housing Value	$95,600	$198,500	$162,800
Median Household Income	$25,422	$29,307	$33,100
Per Capita Income	$16,033	$28,197	
Unemployment %	3.20%	5.20%	
Employment by Industry (Top 5)			
Educational, Health, social services	DO	11%	
Accommodation, food services, entertainment	DO	16.70%	
Construction	10.20%	13%	
Retail Trade	28%	17.50%	
Finance, insurance, real estate	6%	8.80%	
Personal Services	12.70%	DO	
Business & Repair Services	10%	DO	
DO= Dropped Out			

Wadmalaw Island Community Description

Wadmalaw Island was landed upon by Captain Robert Sandford and the crew of the Berkeley Bay in mid-June of 1666 after an excursion up the Bohicket Creek.[12] Wadmalaw Island is located southwest of Johns Island and more than halfway encircled by it. To the north it is bordered by Church Creek; to the northeast and east by Bohicket Creek; to the south by the North Edisto River; and to the west by the Bohicket Creek. The island's only connection to the mainland is via a bridge over the Wadmalaw River. The island is about 10 miles long by 6 miles wide. It has a land area of 108.502 km² (41.893 sq mi).[11] Wadmalaw Island has seen a decrease in unemployment from 5.90% in 1990 to 3% in 2000 (Table 10).

Table 10. Wadmalaw Island, SC, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Wadmalaw Island, SC	1990	2000	2006
Population	2,570	2,611	
Median Education Attainment	High School Graduate	High school graduate	
White	754	985	
Black or African American	1,788	1,589	
American Indian & Alaska Native	2	7	
Asian, Native Hawaiian & Other Pacific Islander	0	2	
Some Other Race	26	28	
Hispanic or Latino (or any race)	58	108	
Total Housing Units	896	1,063	
Vacant	112	114	
Median Gross Rent	$294	$595	
Median Housing Value	$57,800	$92,100	$141,200
Median Household Income	$26,434	$31,653	$36,200
Per Capita Income	$9,532	$18,989	
Unemployment %	5.90%	3%	
Employment by Industry (Top 5)			
Educational, Health, social services	22%	22%	
Accommodation, food services, entertainment	DO	10.40%	
Construction	11.40%	10.30%	
Professional, scientific, mgmt, administrative, waste services	DO	10.30%	
Retail Trade	11.10%	12.50%	
Fishing	**12.60%**	**DO**	
Transportation	6.50%	DO	
DO= Dropped Out			

[11] Zepke, Terrance. 2006. Coastal South Carolina. Pineapple Press Inc. Publishing. p.157.
[12] http://en.wikipedia.org/wiki/Wadmalaw_Island_South_Carolina

Georgia Community Descriptions

Midway Community Description

Midway, located in Liberty County, was named after the Midway River in England and settled in 1754.

Currently Midway has a major industrial park with nine manufacturing facilities.[13] Midway has seen a slow population increase and a steady unemployment rate (Table 11). Blue, hard crabs were the number one caught species in 2006 (Table 12 and Figure 4).

Table 11. Midway, GA, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Midway, GA	**1990**	**2000**	**2006**
Population	863	1,100	1,037
Median Education Attainment	High School Graduate	High School Graduate Degree	
White	480	647	
Black or African American	370	409	
American Indian & Alaska Native	1	6	
Asian, Native Hawaiian & Other Pacific Islander	7	16	
Some Other Race	5	5	
Hispanic or Latino (or any race)	7	26	
Total Housing Units	322	396	
Vacant	57	64	
Median Gross Rent	$311	$550	
Median Housing Value	$49,400	$85,400	$89,300
Median Household Income	$20,938	$29,205.00	$28,200
Per Capita Income	$8,620	13,078	
Unemployment %	2.40%	2.80%	
Employment by Industry (Top 5)			
Retail Trade	18.20%	17.70%	
Manufacturing	10%	11.90%	
Construction	10.30%	14.50%	
Educational, health, social services	23.30%	15.10%	
Accommodation, food services, recreation, entertainment, art		10.40%	
Personal Services	11%	DO	
DO= Dropped Out			

Table 12. Top species by pounds caught in Midway, GA, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRABS,BLUE,HARD	1	120,542	$101,785	74
SHRIMP	2	9,044	$53,831	33
OYSTERS	3	512	$2,120	*
CRAB,BLUE,PEELER	4	179	$497	*

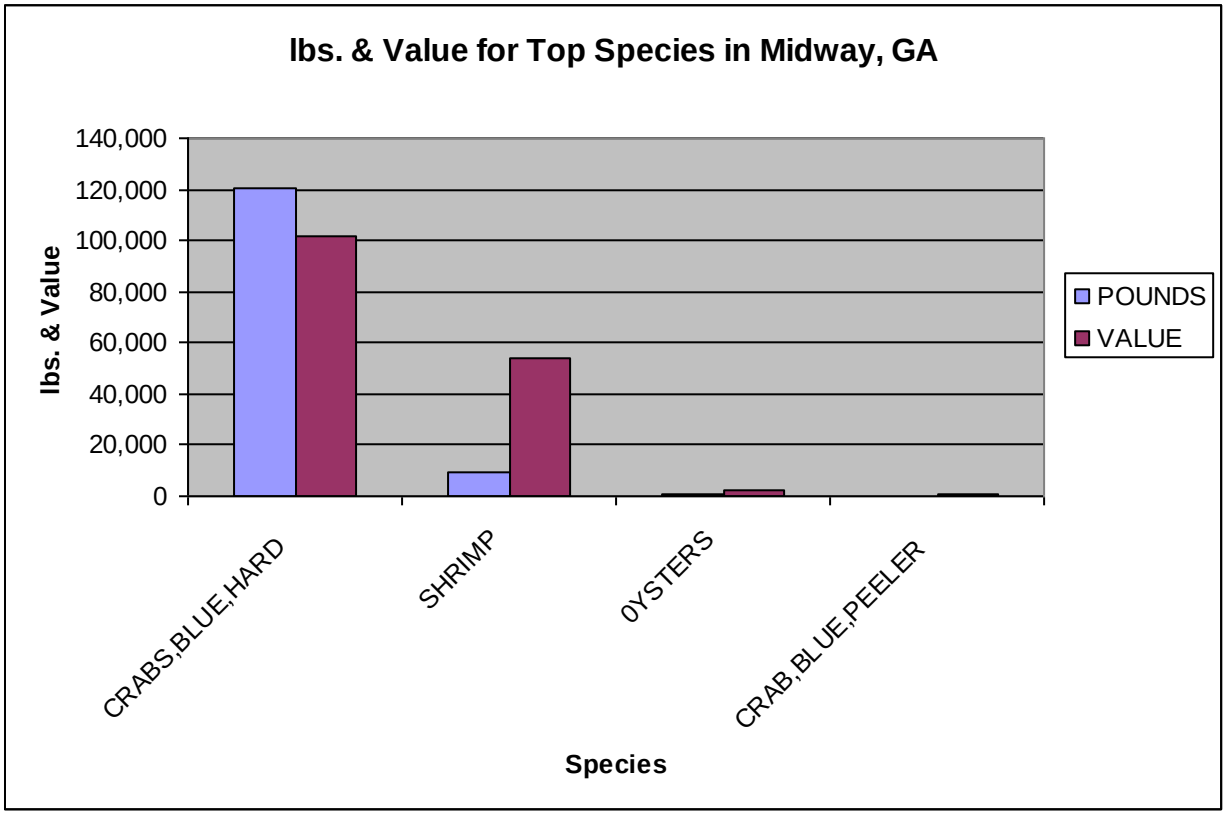

Figure 4. Value and pounds of top species in Midway, GA, for 2006.

Richmond Hill Community Description

Richmond Hill, found in Byron County, is located 20 miles from Savannah on Georgia's coast with a total area of 10 square miles. Richmond Hill has a history that is similar to that of our nation: Exploration, Indian and Colonial settlements, the American Revolution, the War Between the States, Henry Ford Era, and recent military conflicts.[15] For centuries, the Guale people inhabited the shores of the Ogeechee River, taking advantage of the seafood and temperate climate. Spanish exploration in the late 1500s led to English settlement by 1792.[15] Then in 1862 Fort McAllister was built for the civil war and was the site of the end of Sherman's March to the Sea in 1864.[15] During this time the town was known as Ways Station. It was renamed in 1939 to its current name, Richmond Hill, after Henry Ford moved into the town and built an estate. The Ford era transformed this town through their philanthropic efforts, turning

the backwater town of Ways Station into a vibrant community with new schools and employment opportunities.[15]

The next major development in Richmond Hill was Fort Stewart Military Reservation that was built prior to World War II and is still in operation.[14] More recently the J.F. Gregory City Park opened in 1999 in Richmond Hill where the first annual "Great Ogeechee Seafood Festival" was celebrated.[14]

Richmond Hill has seen an increase a moderate increase in population from 1990 to 2006 and a slight decrease in unemployment from 2.60% in 1990 to 1.80% in 2000 (Table 13). Blue, hard crabs were the number one species caught by pounds in 2006 (Table 14 and Figure 5).

[14]http://www.richmondhillga.com/.
[15]http://www.richmondhill-ga.gov/AboutRichmondHill/History/tabid/55/Default.aspx

Table 13. Richmond Hill, GA, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Richmond Hill, GA	1990	2000	2006
Population	2,934	6,959	9,806
Median Education Attainment	Some college no degree	Some College Less than 1 yr.	
White	2,771	5,656	
Black or African American	119	953	
American Indian & Alaska Native	5	42	
Asian, Native Hawaiian & Other Pacific Islander	26	102	
Some Other Race	13	89	
Hispanic or Latino (or any race)	42	26	
Total Housing Units	1,047	2,639	
Vacant	47	140	
Median Gross Rent	$277	$547	
Median Housing Value	$67,600	$97,100	$101,500
Median Household Income	$32,917	$47,061	$45,400
Per Capita Income	$12,156	18,891	
Unemployment %	2.60%	1.80%	
Employment by Industry (Top 5)			
Retail Trade	20.80%	13%	
Manufacturing	10.70%	12.40%	
Educational, health, social services	DO	18.10%	
Accommodation, food services, recreation, entertainment, art	DO	11.30%	
Transportation & warehousing, & utilities	DO	7.70%	
Construction	8.80%	DO	
Public Administration	9.30%	DO	
Wholesale Trade	6.30%	DO	
DO= Dropped Out			

Table 14. Top species by pounds caught in Richmond Hill, GA, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRABS,BLUE,HARD	1	137,849	$94,790	55
SHRIMP	2	53,756	$153,663	51

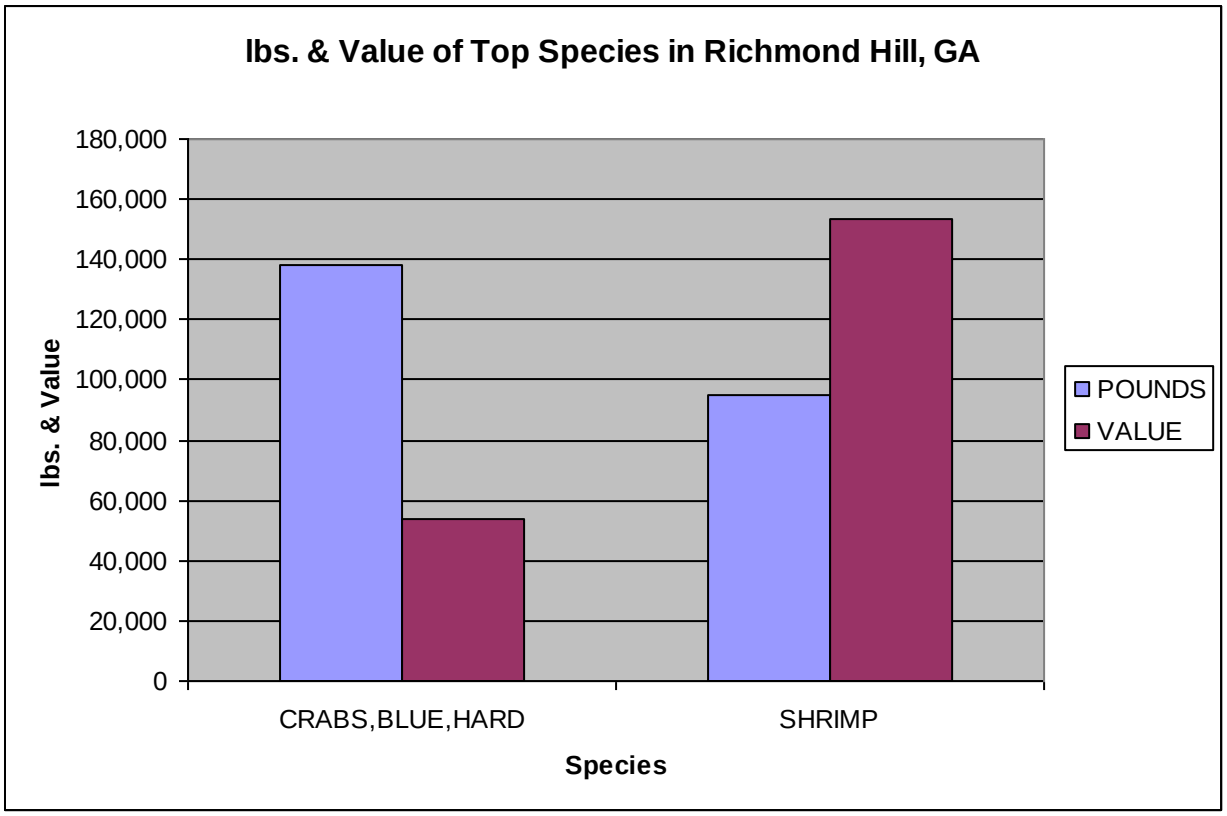

Figure 5. Value and pounds of top species in Richmond Hill, GA, for 2006.

St. Mary's Community Description

St. Mary's has seen steady population growth since 1970. The percent of the population in the labor force has remained fairly constant while unemployment has risen to 3.9 % (Table 15). Average wage and salary has risen consistently over the years along with a rising median housing value. Those employed in farm, fish and forestry sector have seen a steady decline in their numbers since 1970 also.

There were only 2 vessels registered with federal permits from the community (Jepson *et al.* 2006) but there were 42 persons listed in the fishing. The state has 19 vessels registered with 9 of those having shrimp gear and 13 of those owners considered full time fishermen (Jepson *et al.* 2006). Blue, hard crabs were the top species caught in 2006 in St. Mary's (Table 16 and Figure 6).

Table 15. St. Mary's, GA, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

St. Mary's, GA	1990	2000	2006
Population	8,187	13,761	15,967
Median Education Attainment	Some college no degree	Some college no degree	
White	6,478	10,267	
Black or African American	1,407	2,751	
American Indian & Alaska Native	42	65	
Asian, Native Hawaiian & Other Pacific Islander	173	176	
Some Other Race	87	214	
Hispanic or Latino (or any race)	228	614	
Total Housing Units	3,166	5,307	
Vacant	284	514	
Median Gross Rent	$393	$556	
Median Housing Value	$66,400	$85,300	$89,200
Median Household Income	$28,552	$42,087.00	$40,600
Per Capita Income	$11,189	18,099	
Unemployment %	3%	3.90%	
Employment by Industry (Top 5)			
Retail Trade	17.20%	10.80%	
Manufacturing	11.60%	13.20%	
Educational, health, social services	DO	19%	
Accommodation, food services, recreation, entertainment, art	DO	14.30%	
Professional, scientific, management, administrative, & waste mgmt.	DO	13%	
Construction	7.60%	DO	
Public Administration	17.30%	DO	
Other Professional Services	7.30%	DO	
DO= Dropped Out			

Table 16. Top species by pounds caught in St. Mary's, GA, from 2006 data

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRABS,BLUE,HARD	1	60,949	$32,590	23
SHRIMP	2	30,648	$77,744	45
SNAILS(CONCHS)	3	776	$932	*

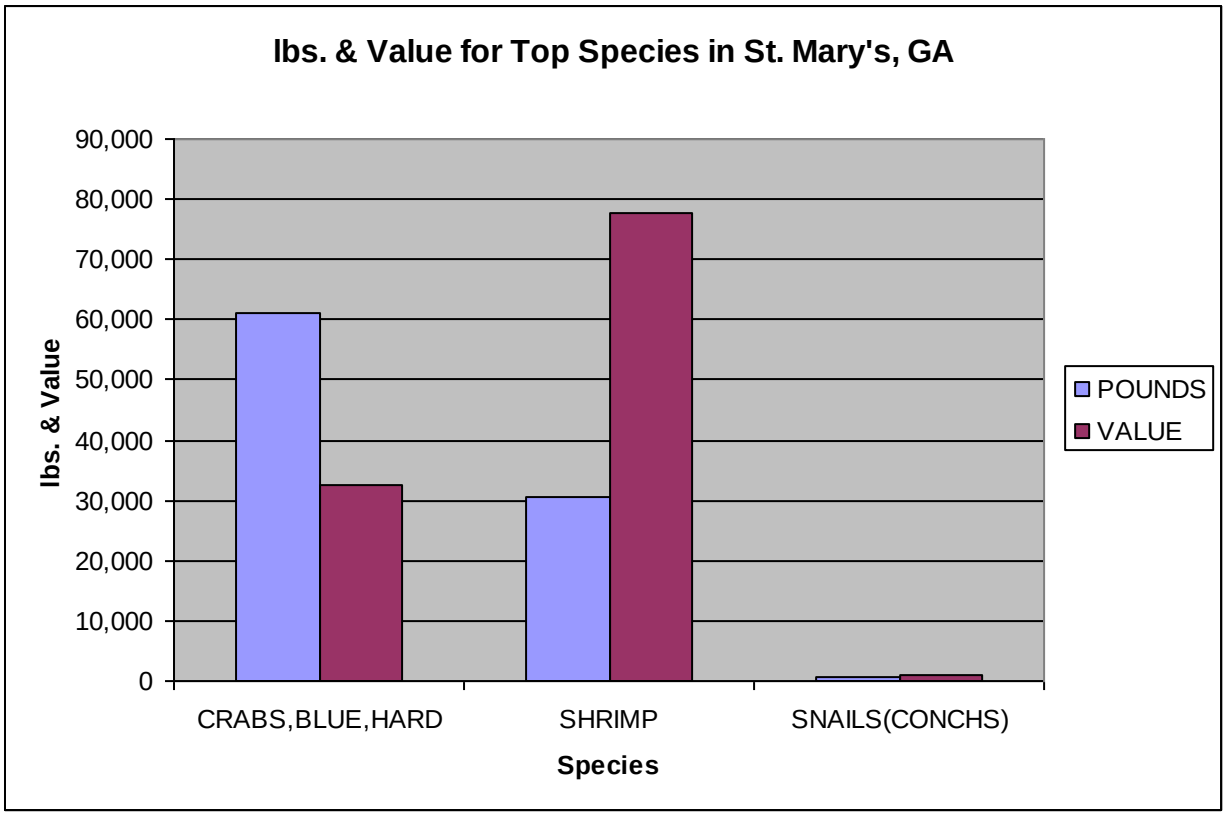

Figure 6. Value and pounds of top species in St. Mary's, GA, for 2006.

Townsend Community Description

Townsend has seen a slight increase in population and steady unemployment rates (Table 17). Median household income has only slightly risen from $23,324 in 1990 to $32,300 in 2006 while median housing value has greatly increased from $33,000 in 1990 to $102,600 in 2006 (Table 17). Blue, hard, crabs were the number one species caught in 2006 with 538,127 lbs. (Table 18 and Figure 7).

Table 17. Townsend, GA, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Townsend, GA	1990	2000	2006
Population	2,413	3,538	
Median Education Attainment	High School Graduate	High School Graduate	
White	1,465	2,437	
Black or African American	947	1,048	
American Indian & Alaska Native	1	7	
Asian, Native Hawaiian & Other Pacific Islander	0	8	
Some Other Race	0	13	
Hispanic or Latino (or any race)	2	27	
Total Housing Units	1,548	2,308	
Vacant	740	867	
Median Gross Rent	$158	$431	
Median Housing Value	$33,000	$98,100	$102,600
Median Household Income	$23,314	$33,531	$32,300
Per Capita Income	$9,965	17,261	
Unemployment %	2.70%	2.80%	
Employment by Industry (Top 5)			
Retail Trade	16.20%	17.30%	
Manufacturing	19%	16.20%	
Construction	10.60%	13.60%	
Educational, health, social services	15%	12.30%	
Accommodation, food services, recreation, entertainment, art	DO	7.50%	
Transportation	6.50%	DO	
DO= dropped out			

Table 18. Top five species by pounds caught in Townsend, GA, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRABS,BLUE,HARD	1	538,127	$331,928	308
SHRIMP	2	120,699	$266,743	114
SNAPPER,VERMILION	3	100,283	$287,411	52
SHAD,BUCK	4	49,621	$49,600	11
CLAM,HARD	5	32,842	$22,485	34

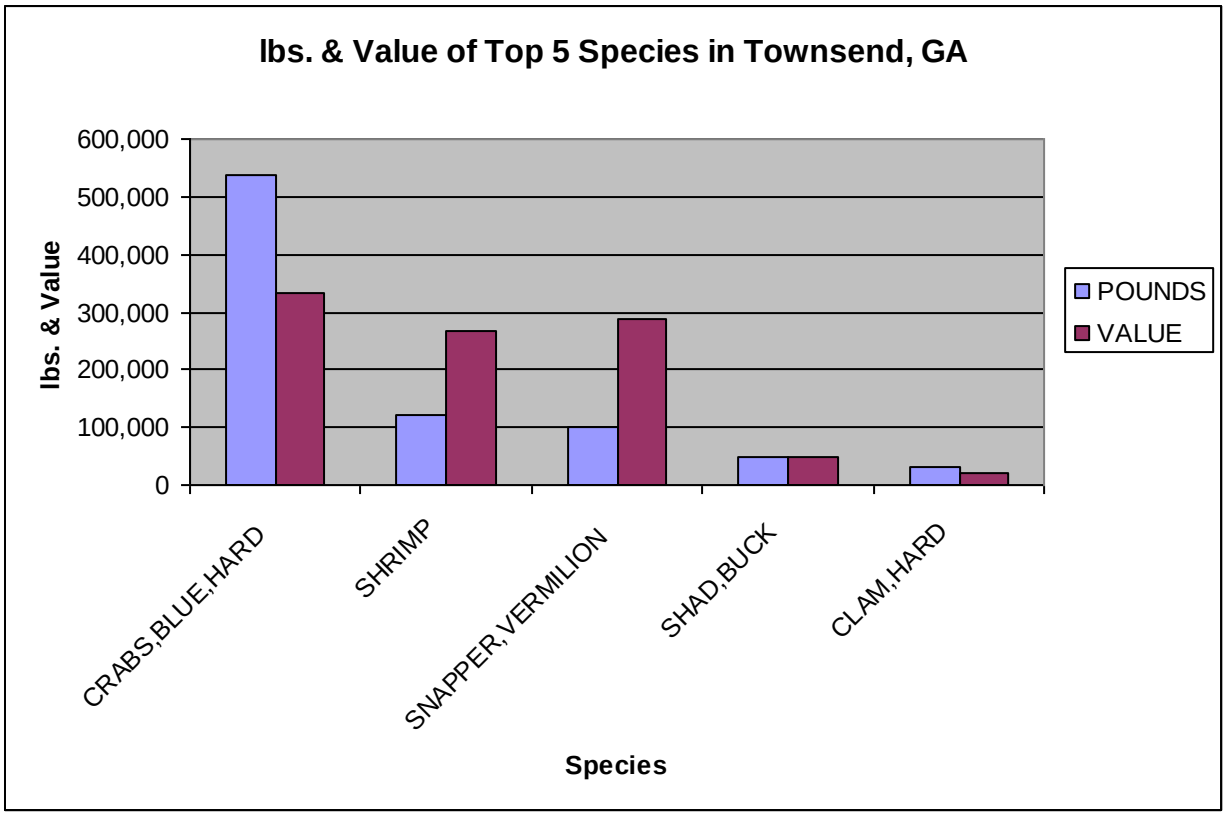

Figure 7. Value and pounds of top five species in Townsend, GA, for 2006.

Florida Community Descriptions

Atlantic Beach Community Description

The community of Atlantic Beach has remained fairly small throughout its history. The arrival of Henry Flagler's Florida East Coast Railroad in 1900 helped spur development and prominence within this coastal community. However, it was not until the construction of the Mayport Naval Station in the 1940s and the completion of the Matthews Bridge in the 1950s that the area truly became ready for development. Beginning in the 1990s, the Atlantic Beach community embarked on environmental endeavors regarding their aquatic resources. They created the Tideviews Preserve and the Dutton Island Preserve.

Preserve, fishing off the pier is a popular activity for park visitors. Atlantic Beach has seen steady growth in its population. There has been a decline in the percent of the population in the labor force and unemployment has dropped to 2.1 % in 2000 (Table 19). Average wage and salary rose significantly between 1980 and 1990, but only slightly in 2000. Jobs in the sector of farm, fish and forestry have fluctuated over the past three decades, but dropped to low levels in 2000. Although there is only one vessel with federal permits in Atlantic Beach (Jepson *et al.* 2006) there are 56 persons employed in the fish and seafood sector. In 2006 blue, hard crabs were the top species by pound (Table 20 and Figure 8).

Table 19. Atlantic Beach, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Atlantic Beach, FL	1990	2000	2006
Population	11,636	13,368	13,268
Median Education Attainment	Some College no degree	Some College no degree	
White	9,333	10,992	
Black or African American	1,792	1,697	
American Indian & Alaska Native	34	35	
Asian, Native Hawaiian & Other Pacific Islander	383	329	
Some Other Race	94	150	
Hispanic or Latino (or any race)	355	559	
Total Housing Units	4,948	6,003	
Vacant	407	380	
Median Gross Rent	$412	$722	
Median Housing Value	$96,900	$169,800	$282,000
Median Household Income	$35,486	$48,353	$53,100
Per Capita Income	$19,291	$28,618	
Unemployment %	3.10%	2.10%	
Employment by Industry (Top 5)			
Educational, health and social services	18.80%	17.50%	
Arts, entertainment, recreation, accommodation and food services	DO	12.60%	
Professional, scientific, management, administrative, and waste management services	DO	13.20%	
Retail Trade	21.50%	9.90%	
Finance, insurance, real estate, and rental and leasing	9.50%	9.70%	
Public Administration	6.40%	DO	
Construction	6.30%	DO	
DO= Dropped Out			

Table 20. Top five species by pounds caught in Atlantic Beach, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRABS,BLUE,HARD	1	37,561	$48,749	34
SHRIMP	2	17,387	$35,732	35
MULLET	3	13,030	$16,791	14
MENHADEN	4	10,343	$2,089	5
GROUPER	5	5,158	$17,505	25

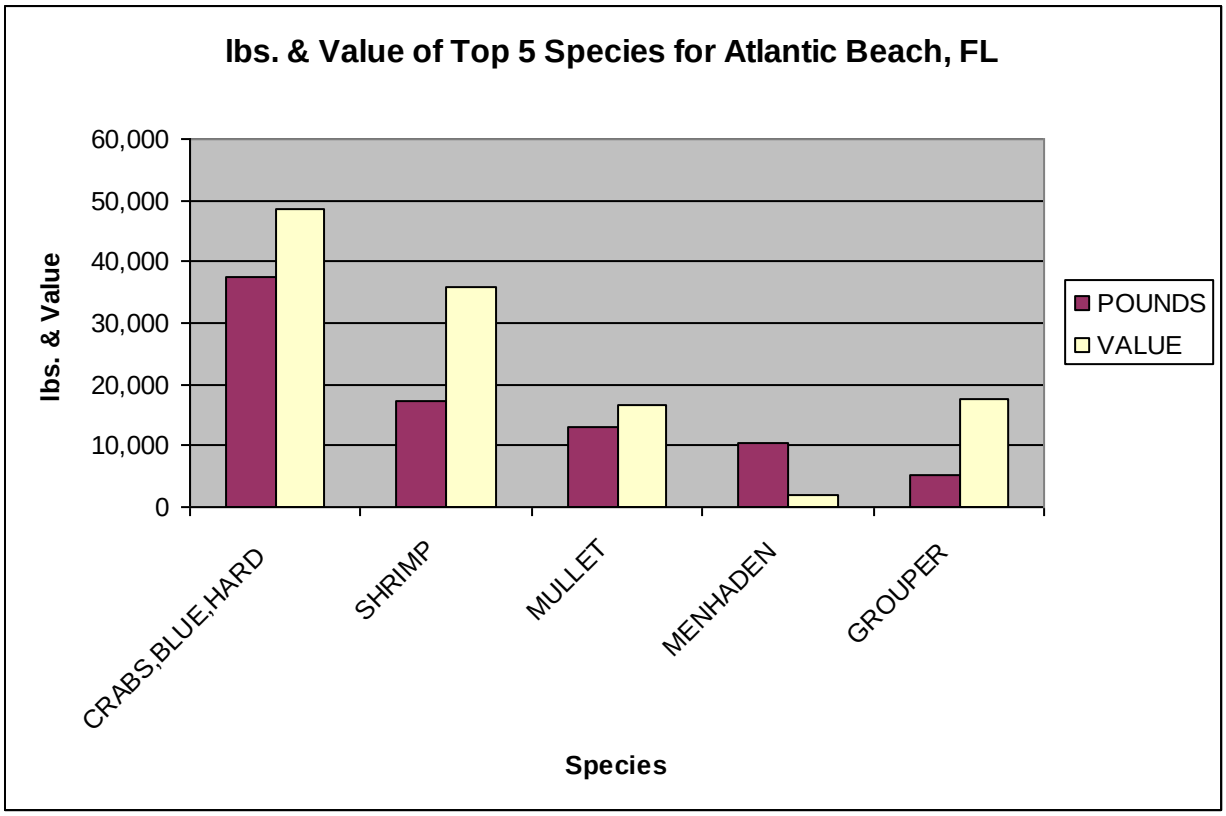

Figure 8. Value and pounds of top five species in Atlantic Beach, FL, for 2006.

Cocoa Beach Community Description

Cocoa Beach is six miles long and not more than a mile wide located on a barrier island between the Atlantic Ocean and the Banana River Lagoon on Florida's Central East Coast. Cocoa Beach is a residential community and a tourist destination with 12,800 permanent residents increasing to 30,000 persons during peak tourist season.[20]

Cocoa Beach has seen a fairly steady population while the median housing value has almost tripled from $127,000 in 1990 to $308,000 in 2006 (Table 21). In 2006 King Mackerel were the top species caught by pound (Table 22 and Figure 9).

[20] http://www.ci.cocoa-beach.fl.us/.

Table 21. Cocoa Beach, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Cocoa Beach, FL	1990	2000	2006
Population	12,123	12,482	12,800
Median Education Attainment	Some College, no degree	Some college, 1 or more years, no degree	
White	11,882	12,062	
Black or African American	61	78	
American Indian & Alaska Native	31	28	
Asian, Native Hawaiian & Other Pacific Islander	110	141	
Some Other Race	39	38	
Hispanic or Latino (or any race)	334	314	
Total Housing Units	8,266	8,686	
Vacant	2,245	2,206	
Median Gross Rent	$549	$631	
Median Housing Value	$127,000	$150,100	$308,000
Median Household Income	$35,862	$42,372	$45,700
Per Capita Income	$23,359	$28,968	
Unemployment %	1.80%	2.60%	
Employment by Industry (Top 5)			
Food services, accommodation, recreation, entertainment, arts	DO	16.10%	
Educational, health, social services	DO	13.50%	
Retail Trade	19%	12.10%	
Manufacturing	13.50%	11.40%	
Finance, Insurance, real estate	8.90%	DO	
Other professional related services	8.50%	9.80%	
Public Administration	7.50%	DO	
DO= Dropped Out			

Table 22. Top five species by pounds caught in Cocoa Beach, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
KING MACKEREL	1	1,277,396	$2,145,204	149
SPANISH MACKEREL	2	1,264,886	$792,271	215
SHARK,SANDBAR	3	269,203	$90,889	50
SHARK,ATLANTIC,SHARPNOSE	4	148,707	$49,691	58
TILEFISH	5	134,242	$303,894	34

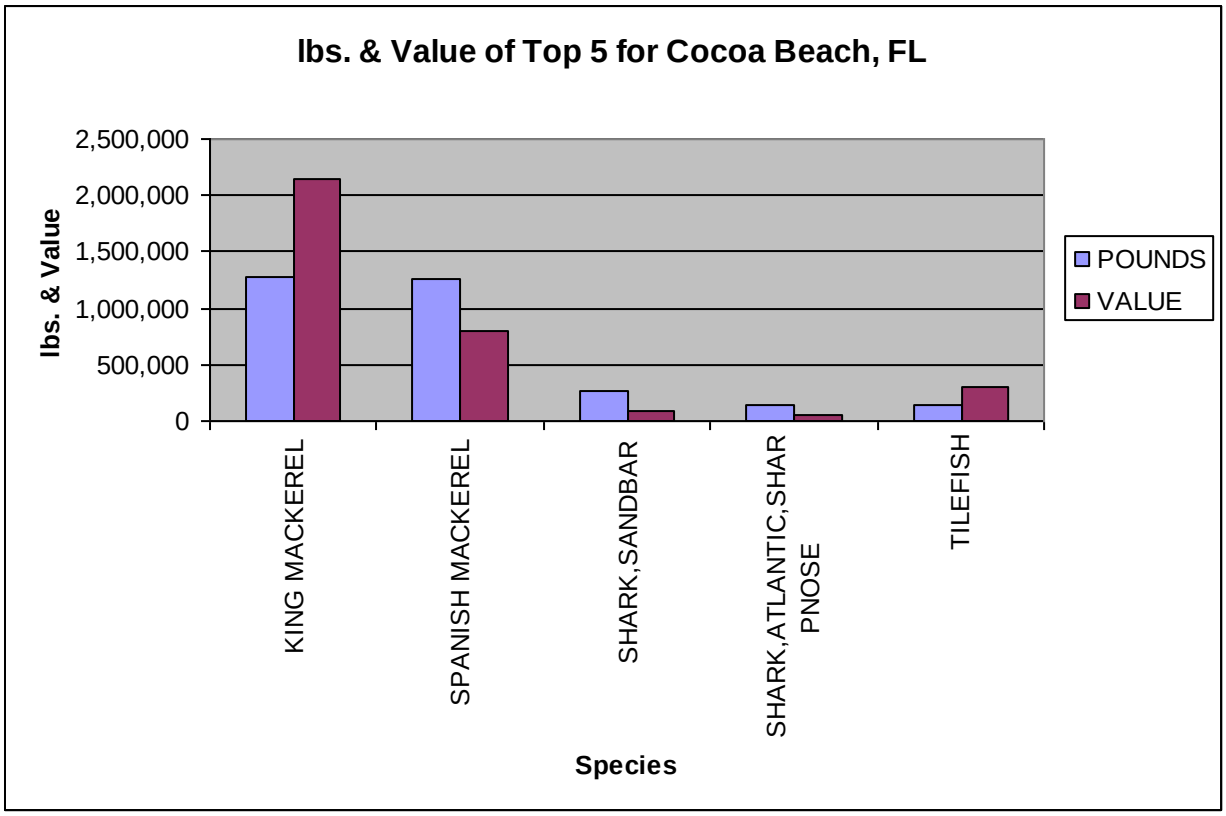

Figure 9. Value and pounds of top five species in Cocoa Beach, FL, for 2006.

Fort Pierce Community Description

The Spanish built Fort Santa Lucia on the Jupiter Inlet in 1565 from which the county now draws its name-St. Lucie County.[21] Permanent U.S. inhabitance of Ft. Pierce dates back to the Seminole Indian War. US Army Lt. Col. Benjamin Kendrick Pierce, for whom the town is named, built a fort in 1837 to use as the army's headquarters. The war ended in the early 1840s, making way for settlement and development: "Water transportation, fishing and canning fish were key to the area's early economy."[22] The arrival of Henry Flagler's railroad in the early 1900s opened Ft. Pierce's economy to the rest of the east coast. Ft. Pierce beach was used as a naval base during World War II.[23]

The culture of fishing has been in the area since its inception. Anecdotes passed down from one generation to the next of Ft. Pierce residents describe the abundance of fish in the area in the late 1800s and early 1900s. One such story, told by Newman (1953) in her book, *Early Life Along the Beautiful Indian River*, tells of a man who bound his shirt at the sleeves and waist and cut a plunging neckline. He would then stand in the water until the shirt was full of fish and then empty it out into a bucket on the shore. In the late 1800s, a man from the nearby town of Titusville helped to create the commercial fishing sector in Ft. Pierce. He would bring the fish to Titusville for shipping to the rest of the east coast. The first icehouse for packaging fish was built in 1900 (Newman, 1953).

Recreational fishing has also become a popular pastime in Ft. Pierce and the rest of St. Lucie County. This is due in large part to the fleet of Spanish galleons that sunk off the St. Lucie and Martin Counties coastline. These artificial reefs have created excellent fishing and diving spots for locals and tourists. The reefs attract spiny lobsters, marlin, snook, flounder, and grouper.[24] Some of the more popular fish in the St. Lucie River include channel bass, snook, ladyfish, jack crevalle, and trout. Black bass is another famous catch in the area.[25] Most charter fishing boats in the area offer half, three-quarter, and full-day trips for dolphin, sailfish, wahoo, amberjack, tuna, kingfish, snapper, and grouper. Fort Pierce has seen moderate population growth over the past three decades while unemployment has increased from 4.90% in 2000 to 11.5% in 2006 (Table 23). Average wage and salary has grown slowly over the past ten years while the number of persons living under the poverty level has risen significantly. The number of people working in farm, fish and forestry has remained relatively high for both occupation and industry over the years with both categories having over 1000 persons in each. There are over 100 vessels with federal permits homeported in Ft. Pierce and most of those have coastal pelagic permits (Jepson *et al.* 2006*)*. There are over 260 persons employed in the boat building sector of fishing related employment. In 2006 Spanish mackerel were the top species caught by pound (Table 24 and Figure 10).

[24]www.flausa.com/destinations/location.php/location=ci-fpi
[25]http://www.visitstluciefla.com/marinas.html
[21] www.rootsweb.com/~flstluci/slchistory.htm
[22]http://plato.stlucie.k12.fl.us/html/ft._pierce.html
[23]www.cityoffortpierce.com/fp000.html

Newman, A.P.L. 1953. Early Life Along the Beautiful Indian River. Stuart Daily News: Stuart, FL.

Table 23. Ft. Pierce, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Ft. Pierce, FL	**1990**	**2000**	**2006**
Population	36,830	37,516	39,365
Median Education Attainment	High School graduate	High school graduate	
White	19,772	18,585	
Black or African American	15,604	15,326	
American Indian & Alaska Native	118	122	
Asian, Native Hawaiian & Other Pacific Islander	198	328	
Some Other Race	1,138	2,011	
Hispanic or Latino (or any race)	2,370	5,629	
Total Housing Units	17,250	17,213	
Vacant			
Median Gross Rent			
Median Housing Value	$56,100	$62,800	$142,400
Median Household Income	$18,913	$25,121	$29,600
Per Capita Income	$9,961	$14,345	
Unemployment %	6.80%	4.90%	11.50%
Employment by Industry (Top 5)			
Food services, accommodation, recreation, entertainment, arts	DO	10.80%	
Educational, health, social services	17%	16.90%	
Retail Trade	20.90%	12.50%	
Manufacturing	DO	8%	
Construction	8.16%	12.60%	
Fisheries, agriculture, forestry	**9.80%**	**DO**	
Public administration	6%	DO	
DO= Dropped Out			

Table 24. Top five species by pounds caught in Ft. Pierce, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SPANISH MACKEREL	1	1,223,602	$838,232	123
KING MACKEREL	2	415,045	$693,181	63
MULLET WITH ROE	3	198,949	$109,192	31
MULLET,STRPED	4	122,394	$57,611	84
MULLET,SILVER	5	100,073	$45,001	63

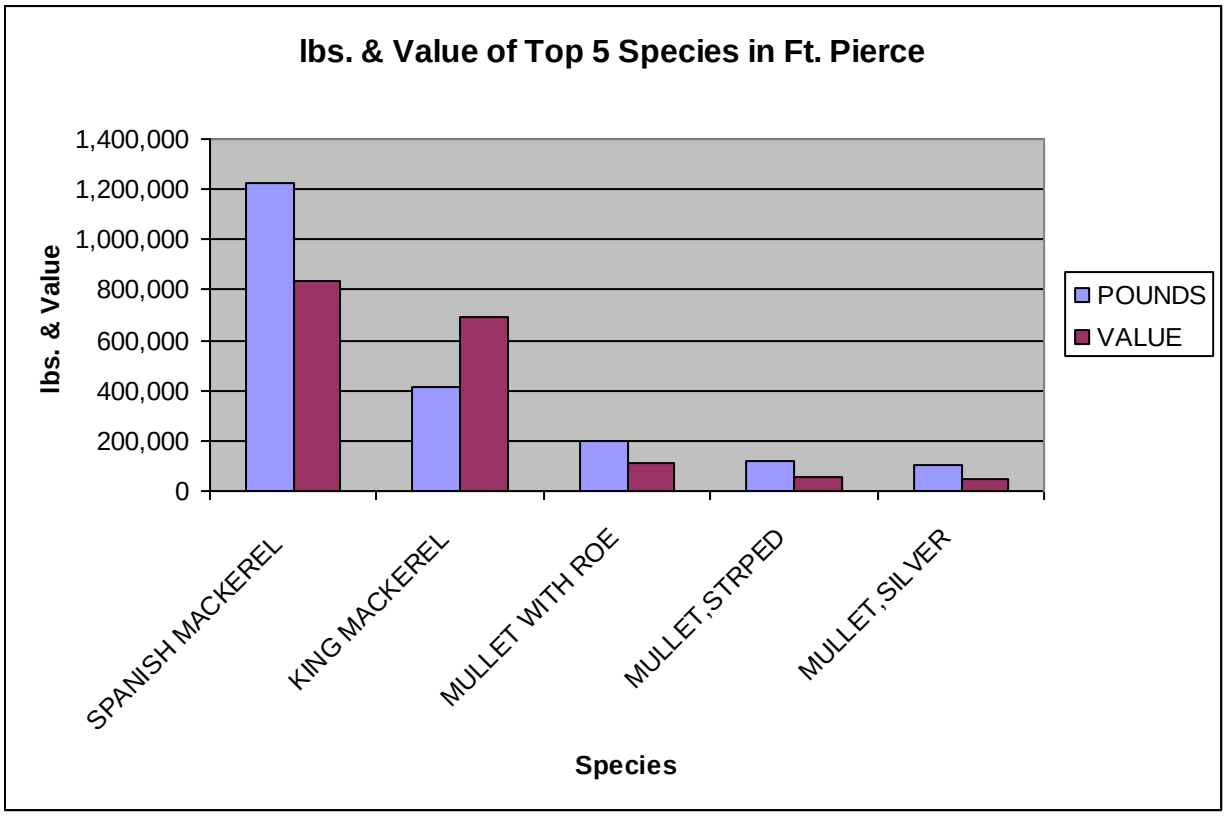

Figure 10. Value and pounds of top five species in Ft. Pierce, FL, for 2006.

Melbourne Community Description

The city of Melbourne is located on east central Florida's Space Coast in Brevard County. The contemporary city of Melbourne is the result of the 1969 merger of the separate communities of Melbourne and Eau Gallie.[27] Today Melbourne is also apart of the Palm Bay-Melbourne-Titusville metropolitan area.[28] The city is close to 40 square miles in size, with about 75% of that land in use with a population of approximately 77,000 that is continuing to grow at a modest rate.[26] While most of Melbourne is located on the Florida mainland, a small portion is located on a barrier island. The Indian River Lagoon separates the mainland from the island.[26] Melbourne's industry is centered on defense and technology companies with a high concentration of high-tech workers.[28]

Melbourne has seen its population rise greatly from 59,649 in 1990 to 76,963 to 2006 (Table 25). Unemployment has slightly risen from 3.20% in 2000 to 4.40% in 2006.

The Banana and Indian Rivers run through Brevard County and offer excellent flats fishing for a wide variety of species. The popular Mosquito Lagoon is located at the north end of Brevard County and offers good redfish fishing. Brevard has two inlets: the Sebastian Inlet which is located at the south end of the Indian River and Port Canaveral which is located at the north end of the Banana River. These inlets offer fishing for snook, redfish, tarpon, and flounder.[29] In 2006 hard, blue crab were the top species by pound (Table 26 and Figure 11).

Table 25. Melbourne, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Melbourne, FL	**1990**	**2000**	**2006**
Population	59,649	71,382	76,963
Median Education Attainment		Some College no degree	
White	52,145	60,339	
Black or African American	5,666	6,658	
American Indian & Alaska Native	192	245	
Asian, Native Hawaiian & Other Pacific Islander	1,224	1,671	
Some Other Race	419	858	
Hispanic or Latino (or any race)	2,075	3,958	
Total Housing Units	28,070	33,678	
Vacant	3,005	2,890	
Median Gross Rent	391	$588	
Median Housing Value	$65,100	$85,400	$167,100
Median Household Income	$25,893	$34,571	$40,471
Per Capita Income	$13,224	$19,175	
Unemployment %	3.90%	3.20%	4.40%
Employment by Industry (Top 5)			
Educational, health and social services	13.80%	17.10%	
Retail Trade	20%	15.60%	
Manufacturing	DO	14.30%	
Arts, entertainment, recreation, accommodation and food services	DO	10.90%	
Professional, scientific, management, administrative, and waste management services	DO	9.90%	
Manufacturing	17.80%	DO	
Construction	8%	DO	
Business & repair services	6.60%	DO	
DO= Dropped out			

[26] http://www.melbourneflorida.org/info/
[27] http://www.melbourneflorida.org/info/history.htm.
[28] http://en.wikipedia.org/wiki/Melbourne,_Florida
[29] http://www.fishmore.com/local_fishing.htm

Table 26. Top five species by pounds caught in Melbourne, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRAB,BLUE,HARD	1	32,147	$40,079	50
MULLET,STRIPED	2	8,605	$8,035	20
POMPANO	3	6,628	$29,431	38
MOJARRAS	4	3,933	$2,677	13
PINFISH	5	2,769	$13,290	18

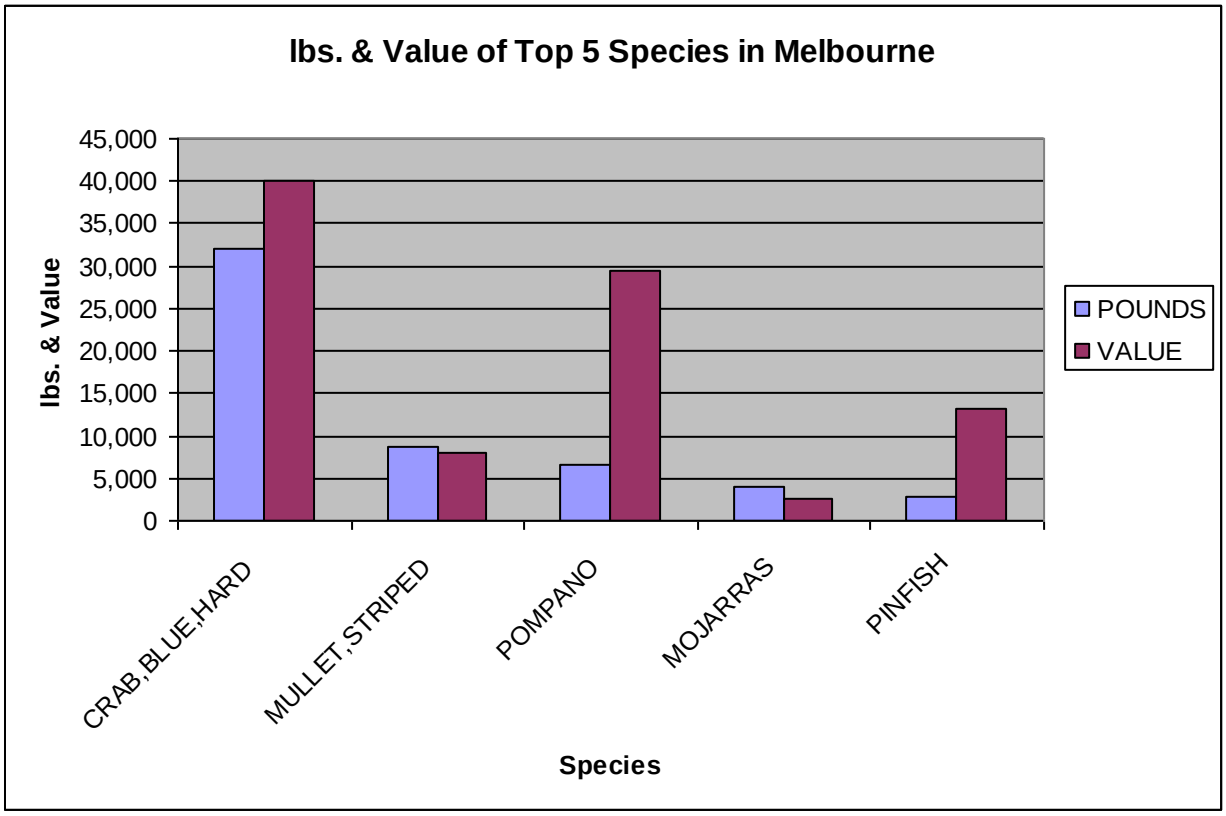

Figure 11. Value and pounds of top five species in Melbourne, FL, for 2006.

Merritt Island Community Description

Merritt Island's population has grown slowly over the past three decades. The percent of the population in the labor force has dropped slightly over the past ten years, but unemployment has increased slightly (Table 27). Average wage and salary have increased to over $40,000 for the year 2000, but the number of persons living under the poverty level has also grown considerably. As for most coastal communities the number of people working in the farm, fish and forestry sector of the economy has dropped significantly over the past decade but has shown a steady decline prior to the 2000 census. Merritt Island has only 8 vessels with federal permits and half of them have charter permits (Jepson *et al.* 2006*)*. There is substantial employment represented in the fishing related sector of boat building with over 1100 persons employed in that sector according to (Jepson *et al.* 2006*)*. In 2006 blue, hard crab were the top species by pound (Table 28 and Figure 12).

Table 27. Merritt Island, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Merritt Island, FL	1990	2000	2006
Population	32,886	36,090	
Median Education Attainment	Some college, no degree	Some college, no degree	
White	30,397	32,560	
Black or African American	1,786	1,918	
American Indian & Alaska Native	121	149	
Asian, Native Hawaiian & Other Pacific Islander	428	618	
Some Other Race	154	246	
Hispanic or Latino (or any race)	909	1,381	
Total Housing Units	14,424	15,813	
Vacant	1,044	858	
Median Gross Rent	$395	$566	
Median Housing Value	$91,400	$118,300	$242,700
Median Household Income	$35,803	$43,532	$47,000
Per Capita Income	$17,400	$23,961	
Unemployment %	2.70%	2.90%	
Employment by Industry (Top 5)			
Educational, health and social services	DO	17.10%	
Professional, scientific, management, administrative, and waste management services	8%	12.40%	
Retail Trade	19%	13.30%	
Manufacturing	16.70%	12.60%	
Arts, entertainment, recreation, accommodation and food services	DO	10.80%	
Public Administration	7.20%	DO	
Finance, insurance, & real estate	6.70%	DO	
DO= Dropped Out			

Table 28. Top five species by pounds caught in Merritt Island, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRAB,BLUE,HARD	1	59,222	$59,222	13
COBIA	2	2,250	$6,124	15
TRIPLETAIL	3	2,124	$4,677	12
SHEEPSHEAD,ATLANTIC	4	1,828	$2,412	10
GROUPER,RED	5	1,271	$4,047	7

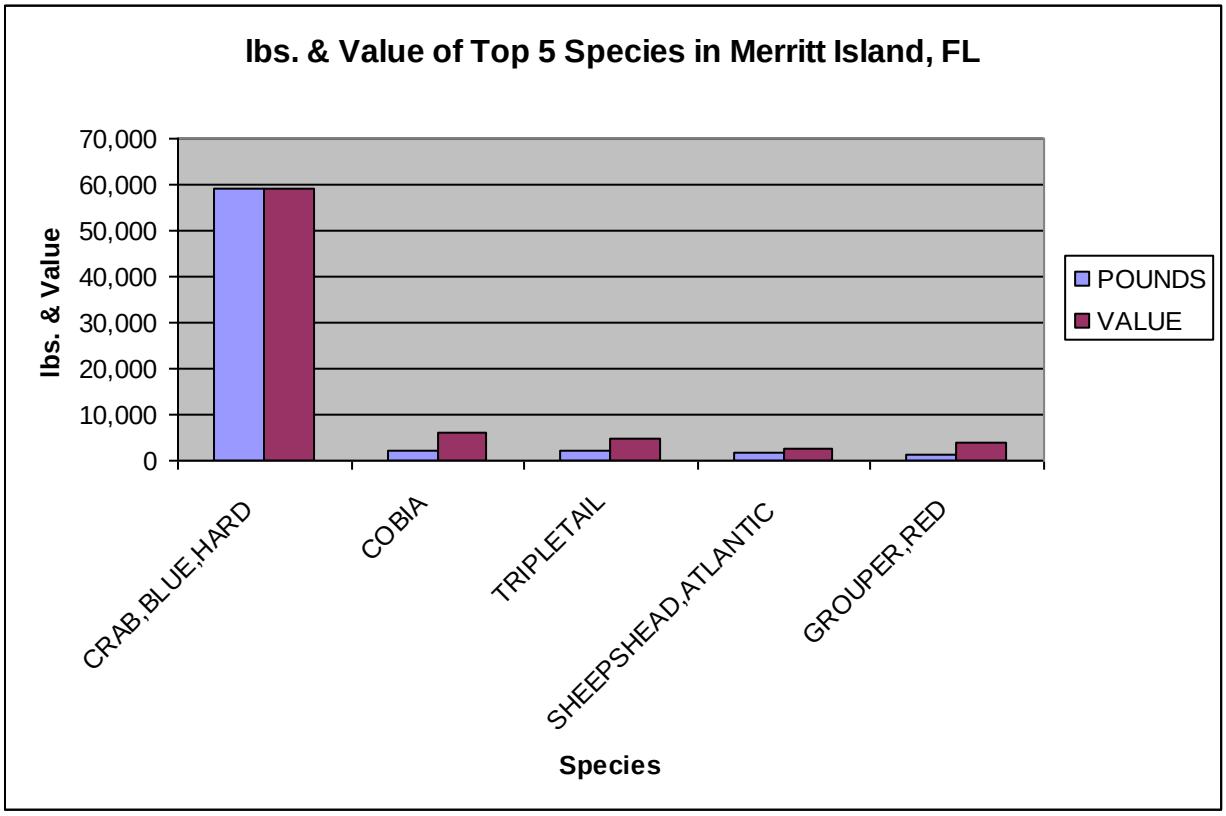

Figure 12. Value and pounds of top five species in Merritt Island, FL, for 2006.

Miami Community Description

In 1891 Julia Tuttle moved to Florida and purchased 640 acres of land on the north bank of the Miami River. Tuttle then talked railroad builder Henry Flagler into extending his railroad into Miami, building a luxury hotel and laying out a new town. These developments resulted in the birth of a new city. The city of Miami was incorporated on July 28, 1896.[31]

The city of Miami is located in Miami-Dade County on the Miami River, between the Florida Everglades and the Atlantic Ocean. The population of Miami has steadily increased from 358,548 in 1990 to 404,048 in 2006 (Table 29). In 1990 the median household income was only $16,925 and has only slightly risen to $25,211 in 2006 while the median housing value has increased from $79,200 in 1990 to $248,500 in 2006. Unemployment remains high but has decreased from 6.50% in 1990 to 4.4% in 2006. In 2006 shrimp were the top species caught by pound (Table 30 and Figure 13).

[30] http://www.miamigov.com/press/pressreleases/miami/AbouttheCity.asp.
[31] http://www.miamigov.com/press/pressreleases/miami/history.asp

Table 29. Miami, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Miami, FL	1990	2000	2006
Population	358,548	362,470	404,048
Median Education Attainment	9-12th grade, no diploma	High School Graduate	
White	235,358	241,470	
Black or African American	98,207	80,858	
American Indian & Alaska Native	545	810	
Asian, Native Hawaiian & Other Pacific Islander	2,272	2506	
Some Other Race	22,166	19644	
Hispanic or Latino (or any race)	223,964	238,351	
Total Housing Units	144,550	148,554	
Vacant	14,298	14,195	
Median Gross Rent	$404	$535	
Median Housing Value	$79,200	$120,100	$248,500
Median Household Income	$16,925	$23,483	$25,211
Per Capita Income	$9,799	$15,128	
Unemployment %	6.50%	5.90%	4.4.%
Employment by Industry (Top 5)			
Food services, accommodation, recreation, entertainment, arts	DO	12%	
Educational, health, social services	7.60%	15%	
Retail Trade	18.50%	11%	
Professional, scientific, mgmt., administrative, waste mgmt. services	DO	11.80%	
Construction	7.90%	10%	
Manufacturing, durable goods	7.60%	DO	
Personal Services	7.80%	DO	
DO= Dropped Out			

Table 30. Top five species by pounds caught in Miami, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SHRIMP	1	411,462	$706,225	104
LOBSTER,SPINY	2	253,105	$1,575,878	104
BALLYHOO	3	79,450	$62,724	35
SHARKS	4	74,561	$16,223	14
KING MACKEREL	5	72,048	$128,327	153

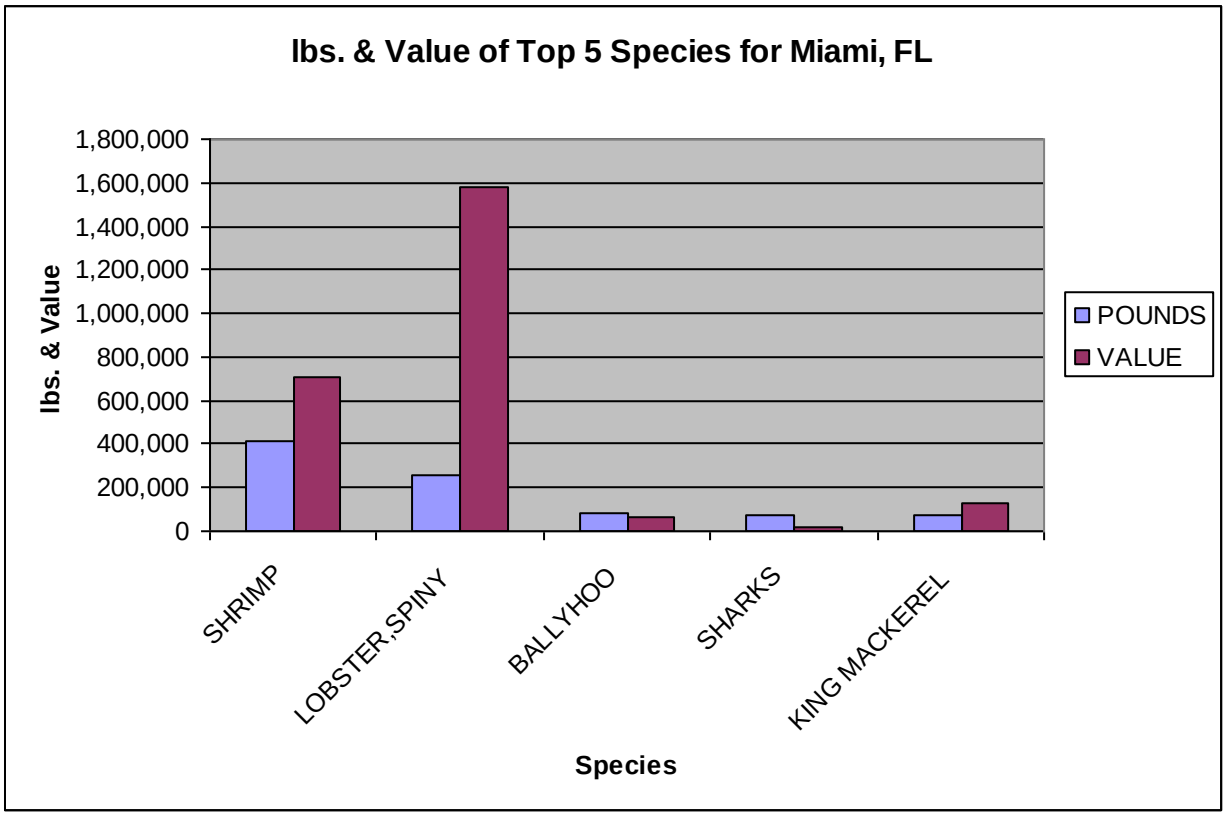

Figure 13. Value and pounds of top five species in Miami, FL, for 2006.

Port Orange Community Description

On April 26, 1867 the community of Port Orange was established on the banks of the Halifax River. It was not until the mid 1970s when Dunlawton Avenue was extended from the FEC railroad to Nova Road did Port Orange start to see the early growth that would happen in the mid 1980s. According to the 1970 US Census, there were only 3,871 calling Port Orange home (Cardwell & Cardwell, 2000). With the second western extension of Dunlawton all the way out to Interstate 95, did Port Orange begin to blossom into the large metropolitan community that we know today.[32] Now some 140 years later, Port Orange is a community of 54,851 people extending 28 square miles (Table 31). In 2006 sandbar shark were the top species caught by pound (Table 32 and Figure 14).

[32] http://www.port-orange.org/

Cardwell, Harold D. Sr. and Priscilla D. Cardwell. 2000. Port Orange. Arcadia Publishing.

Table 31. Port Orange, FL, demographic data from 1990-2006 (Source: U.S. Census Bureau Decennial census).

Port Orange, FL	1990	2000	2006
Population	35,317	45,823	54,851
Median Education Attainment	High School graduate	Some college, less than 1 year	
White	34,512	43,803	
Black or African American	354	722	
American Indian & Alaska Native	97	121	
Asian, Native Hawaiian & Other Pacific Islander	275	533	
Some Other Race	79	245	
Hispanic or Latino (or any race)	689	1,151	
Total Housing Units	17,019	20,845	
Vacant	2,055	1,415	
Median Gross Rent	$547	$682	
Median Housing Value	$78,900	$95,500	$176,300
Median Household Income	$26,472	$38,783	$42,400
Per Capita Income	$13,391	$20,628	
Unemployment %	2.60%	1.60%	3.40%
Employment by Industry (Top 5)			
Food services, accommodation, recreation, entertainment, arts	DO	11.30%	
Educational, health, social services	7.23%	20.10%	
Retail Trade	21.30%	15.60%	
Professional, scientific, mgmt., administrative, waste mgmt. services	DO	9.30%	
Construction	9.70%	8.40%	
Manufacturing, durable goods	8%	DO	
Finance, Insurance, real estate	9.90%	DO	
DO = Dropped Out			

Table 32. Top five species by pounds caught in Port Orange, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
SHARK,SANDBAR	1	109,003	$36,484	12
TILEFISH	2	105,174	$236,068	18
SHRIMP	3	91,414	$208,683	21
MULLET with ROE	4	60,476	$49,870	14
GLOUNDER,ATLANTIC	5	37,683	$85,035	90

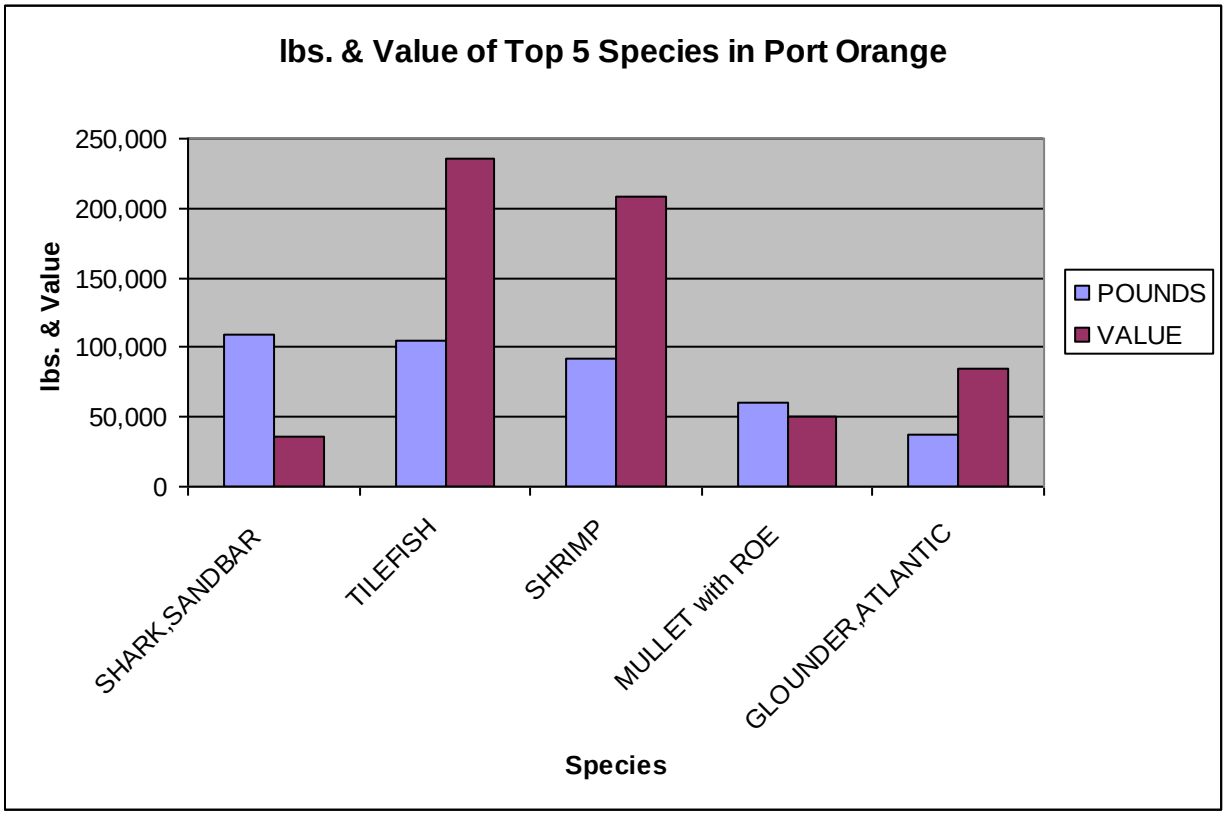

Figure 14. Value and pounds of top five species in Port Orange, FL, for 2006.

St. Augustine Community Description

St. Augustine has the distinction of being the oldest European city in the United States. First sited by the Spanish explorer Don Juan Ponce de Leon in 1513, it was not settled until 1565 by Don Pedro Menendez de Aviles, a Spanish admiral, in the name of King Phillip II.[33] The town's boom did not occur until the 1880s with the arrival of Henry M. Flagler. His goal was to turn St. Augustine into a winter resort for wealthy Americans. It was this thinking that transformed the town. The construction of the railroad linked the city with much of the east coast. Flagler built three large hotels to help fulfill his dream of a tourist mecca. By the mid-1900s, St. Augustine's local economy was dominated by tourism.[34] The commercial fishing industry began in the St. Augustine/Fernandina area around 1900 with the arrival of a Sicilian immigrant named Sallecito

Salvador. He placed an engine on his boat that allowed him to pull a shrimp seine across the ocean floor in 1902, and in 1906, he began his company, S. Salvador & Sons. Salvador moved his business to St. Augustine in 1922, where it thrived until 1929. Shrimp catch levels soared from about 1934 to 1940.[35] These stories illustrate the longstanding culture of fishing in the St. Augustine area and the importance it holds for many of the fishing families there. Commercial fishing still continues at the port, the oldest continuously active port in the United States. Boat building, tourism, and recreational activities are also important to St. Augustine's port.[36]

St. Augustine has seen a steady decline in its population since 1970 until recently in 2006 (Table 33). Both the percent of population in the labor force and unemployment have remained relatively stable over the years. Average wage and salary has grown steadily, while the number of person living below the poverty level has dropped. The number of people employed in farm, fish and forestry has also dropped significantly over the past three decades, with the most pronounced decline from 1990 to 2000. St. Augustine has 28 vessels with federal permits and the majority of them have charter permits for either snapper grouper or coastal pelagics (Jepson *et al.* 2006). There is significant employment in fishing related business as there are over 370 people employed in boat building (Jepson *et al.* 2006) and another 75 in the seafood processing sector. In 2006 blue, hard crab were the number one species caught by pound (Table 34 and Figure 15).

[33] http://www.stjohns.k12.fl.us/history/history.html
[34] http://www.ci.st-augustine.fl.us/visitors/history_fullprint.html
[35] http://www.fl-seafood.com/water/places/fernidina.htm
[36] http://dhr.dos.state.fl.us/maritime/ports/port.cfm?name=St_Augustine

Table 33. St. Augustine, FL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

St. Augustine, FL	1990	2000	2006
Population	11,692	11,592	12,604
Median Education Attainment	Some College, no degree	Some college, 1 or more years, no degree	
White	9,135	9,414	
Black or African American	2,365	1,747	
American Indian & Alaska Native	26	48	
Asian, Native Hawaiian & Other Pacific Islander	84	94	
Some Other Race		102	
Hispanic or Latino (or any race)	82	361	
Total Housing Units	5,181	5,619	
Vacant	580	670	
Median Gross Rent	$380	$645	
Median Housing Value	$61,800	$153,700	$193,400
Median Household Income	$21,722	$32,358	$37,000
Per Capita Income	$12,012	$21,225	
Unemployment %	3.10%	3.30%	
Employment by Industry (Top 5)			
Food services, accommodation, recreation, entertainment, arts	DO	17.10%	
Educational, health, social services	22.10%	19.10%	
Retail Trade	24.10%	15.70%	
Manufacturing	DO	7.40%	
Professional, scientific, mgmt., administrative, waste mgmt. services	6.30%	7.70%	
Personal Services	6%	DO	
Public administration	5.70%	DO	
DO = Dropped Out			

Table 34. Top five species by pounds caught in St. Augustine, , from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE	DEALERS
CRABS,BLUE,HARD	1	219,975	$234,279	115
SHRIMP	2	189,946	$419,478	63
DOLPHINFISH	3	43,310	$72,850	20
OYSTER	4	52,686	$187,164	34
SNAPPER,VERMILION	5	37,258	$101,296	40

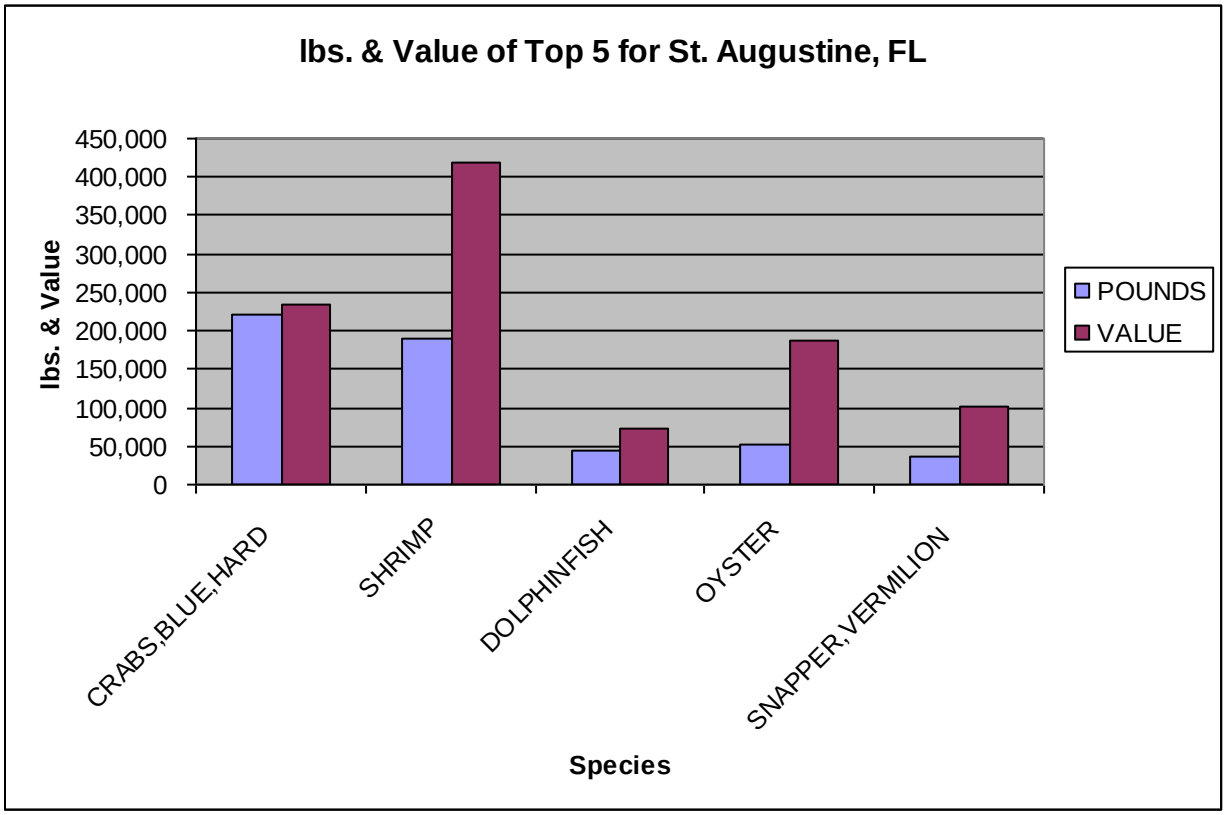

Figure 15. Value and pounds of top five species in St. Augustine, FL, for 2006.

Fort Myers Community Description

Fort Myers is located on the east banks of the Caloosahatchee River in central Lee County. Access to the Gulf of Mexico can be over ten miles via the Caloosahatchee River to San Carlos Bay. Fort Myers served as a military operations base during the Seminole Indian Wars in the mid-1800s. Following the platting of the town in 1876, Fort Myers' economic focus turned from defense to agriculture (tomatoes, castor beans, and avocados), cattle, and logging.

The year 2000 census counted 48,208 persons in Fort Myers, an increase of 3,002 persons from the 1990 census (Table 35). Shrimp is the principal landing for the commercial fleet in Lee County, though a wide range of species are landed, including some pelagics (Table 37). There are numerous seafood dealers, marinas, and various other fishing-related businesses active in Fort Myers throughout the course of the year. Charter fishing is popular here.

Table 35. Fort Myers, FL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Fort Myers, FL	1990	2000
Population	45,206	48,208
Education Attainment	High school graduate	High school graduate
White	27,091	27,166
Black or African American	14,183	6,095
American Indian & Alaska Native	83	181
Asian, Native Hawaiian & Other Pacific Islander	334	520
Some Other Race	26	2,745
Hispanic or Latino (or any race)	3,489	6,984
Total Housing Units	21,388	21,836
Vacant	3,244	2,729
Median Gross Rent	$373	$272
Median Housing Value	$60,500	$76,700
Median Household Income	$22,102	$28,514
Per Capita Income	$12,329	$17,312
Unemployment %	3.90%	3.70%
Employment by Industry (Top 5)		
Educational, health & social services	11%	18.90%
Arts, entertainment, recreation, accommodation & food services	DO	13%
Professional, scientific, mgmt. administrative, & waste mgmt. services	DO	12%
Retail trade	30.20%	15.60%
Construction	7%	11.30%
Personal services	10%	DO
Public administration	9.20%	DO
DO= Dropped Out		

Fort Myers Beach Community Description

Fort Myers Beach is located on the northern tip of Estero Island in western Lee County. It is surrounded by water: the Gulf of Mexico to the west, Estero Bay to the east, and San Carlos Bay to the north.

Anglo homesteaders arrived in the late 1800s and quickly developed the island's commercial fishing industry; mullet was the primary catch. Investors gradually bought up the majority of available subdivisions on the island during the 1920s; however, commercial development remained slow through the 1960s. In the meantime, the island's fishing industry continued to thrive. In particular, the Coquina clam– the area's most common shellfish– was a popular pre-war product. By the 1950s, Fort Myers Beach was an important shrimp port. In the 1960s, recreational fishing became popular in the area, with snook, trout, ladyfish, jacks, mackerel,

kingfish, bonito, grouper, and tarpon being the primary species of interest. Fort Myers Beach incorporated in 1995 (Town of Fort Myers Beach).

The year 2000 population of Fort Myers Beach was 6,561, down from 9,284 in 1990 (Table 36). Fort Myers Beach is primarily a beach/tourist destination island. Numerous fishing-associated businesses are located here, and sightseeing and diving tours are popular activities. There is substantial recreational fishing infrastructure, as marinas, docking facilities, head boat operations, and charter boats are all available here. Fort Myers Beach is the site of docking facilities for about 60 or more Gulf shrimp vessels. Some trawler captains and crew are local, while many are transient and come from as far away as Texas. Offloading facilities, fuel, and maintenance (including net building and repair) are available at the docks.

Table 36. Fort Myers Beach, FL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Fort Myers Beach, FL	**1990**	**2000**
Population	9,284	6,561
Education Attainment	High school graduate	Some college, no degree
White	9,248	6,380
Black or African American	7	5
American Indian & Alaska Native	12	25
Asian, Native Hawaiian & Other Pacific Islander	11	21
Some Other Race	6	65
Hispanic or Latino (or any race)	110	227
Total Housing Units	9,977	8,429
Vacant	5,643	5,004
Median Gross Rent	$476	$700
Median Housing Value	$137,100	$193,900
Median Household Income	$28,536	$48,045
Per Capita Income	$19,445	$34,703
Unemployment %	6.80%	1.40%
Employment by Industry (Top 5)		
Arts, entertainment, recreation, accommodation & food services	DO	24.90%
Construction	12.30%	11.30%
Retail Trade	25.10%	12.10%
Finance, insurance, real estate, & rental and leasing	7.50%	15%
Educational, health & social services	10.80%	12.10%
Personal services	8.20%	DO
DO= Dropped Out		

Table 37. Top five species by pounds caught in Lee County, FL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE
SHRIMP	1	5,590,206	$13,541,584
BLUE,HARD,CRABS	2	2,441,161	$1,813,104
MULLET, STREIPED	3	627,608	$389,977
MULLET with ROE	4	500,034	$426,617
GROUPER	5	282,323	$723,041

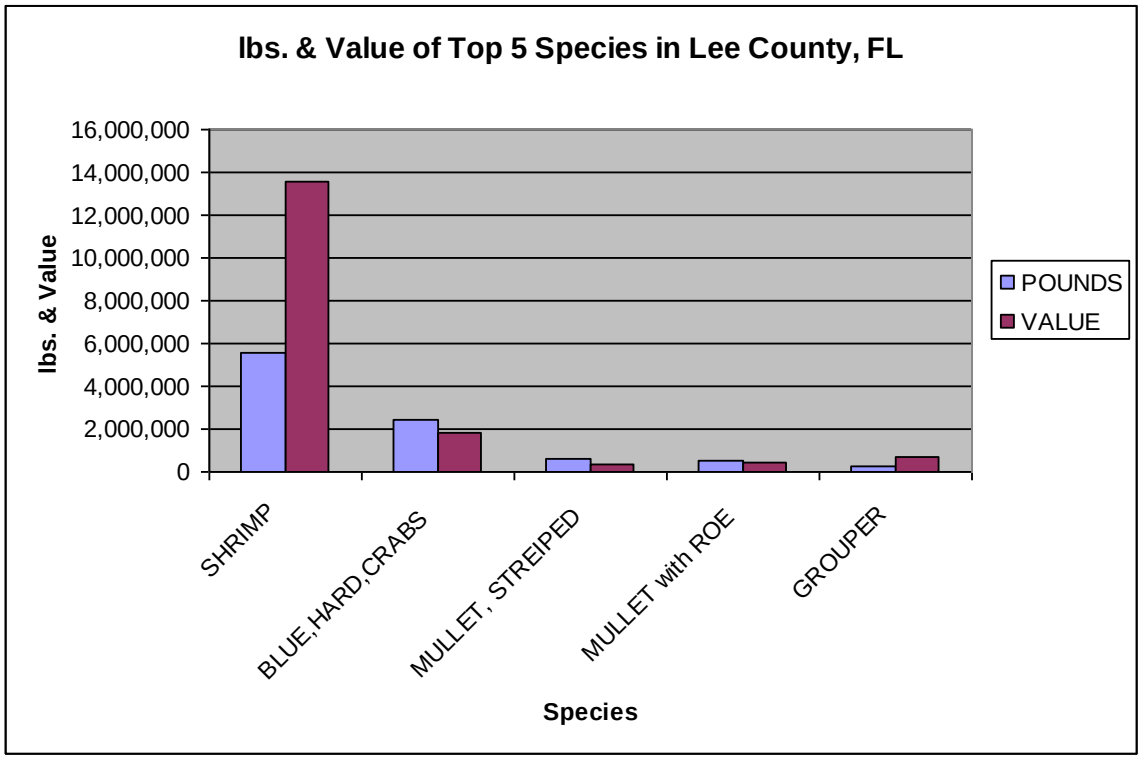

Figure 16. Value and pounds of top five species in Lee County, FL, for 2006.

Alabama Communities

Grand Bay Community Description

Grand Bay is located in Mobile County, 25 miles south of the Gulf of Mexico. Grand Bay was founded in 1870 and in 2000 had a population of 3,918 (Table 38). Two wholesale seafood dealers are based here. One processes primarily oysters and the other crab. Most commercial fishermen who live in Grand Bay work from Bayou La Batre. The fleet is highly productive in shrimp, crabs, and oysters. Four Gulf shrimp permit holders were working from the area in 2003.

Table 38. Grand Bay, AL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Grand Bay, AL	**1990**	**2000**
Population	3,383	3,918
Education Attainment	High School graduate or higher, no college degree	High School graduate or higher, no college degree
White	2,998	3,487
Black or African American	665	348
American Indian & Alaska Native	13	9
Asian, Native Hawaiian & Other Pacific Islander	12	33
Some Other Race	5	5
Hispanic or Latino (or any race)	33	34
Total Housing Units	12,454	1,441
Vacant	113	77
Median Gross Rent	$238	$521
Median Housing Value	$53,600	$76,500
Median Household Income	$26,651	$38,941
Per Capita Income	$11,046	$15,741
Unemployment %	4.30%	6.20%
Employment by Industry (Top 5)		
Retail Trade	18%	10.80%
Construction	11.70%	9.20%
Manufacturing	20.40%	26.50%
Educational, health services	13%	11.40%
Wholesale Trade	7.20%	DO
Transportation and warehousing, and utilities	DO	6.80%
DO = Dropped Out		

Fairhope Community Description

Fairhope is located along the eastern shore of Mobile Bay in west-central Baldwin County, approximately 25 miles northeast of the Gulf of Mexico. Fairhope was established as a "utopian" community by "single-tax colonists" in 1894. These political idealists embraced theories advanced by Henry George, advocating no taxes other than a single land tax. One of the first local endeavors was to build a municipal pier, completed in 1885.

The year 2000 population of Fairhope was 12,480 persons, up from 8,485 in 1990 (Table 39). Several locally-owned shrimp boats are docked at one marina; according to the manager, the owners are retired and fish only occasionally. Two marina managers stated that most of their customers are interested in pleasure boating rather than fishing. Four charter operations are based here, as is a small group of commercial license holders. Shrimp were the principal commercial landings during 2002 (Table 40 and Figure 18).

Table 39. Fairhope, AL, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Fairhope, AL	**1990**	**2000**
Population	8,485	12,480
Education Attainment	High School graduate or higher, no college degree	High School graduate or higher, no college degree
White	7,850	11,259
Black or African American	580	972
American Indian & Alaska Native	17	25
Asian, Native Hawaiian & Other Pacific Islander	26	82
Some Other Race	12	26
Hispanic or Latino (or any race)	91	130
Total Housing Units	3,808	6,000
Vacant	258	655
Median Gross Rent	$307	$710
Median Housing Value	$70,100	$149,900
Median Household Income	$28,824	$42,913
Per Capita Income	$14,987	$25,237
Unemployment %	3.80%	2.40%
Employment by Industry (Top 5)		
Educational, health, social services	16%	25%
Retail Trade	16.80%	11.20%
Arts, entertainment, recreation, accommodation, food services	DO	9.20%
Professional, scientific, mgmt. administrative, waste mgmt. services	DO	9.20%

Table 39. Fairhope, AL, demographic data from 1990-2000. Continued.

Fairhope, AL	1990	2000
Manufacturing	12.60%	7.20%
Other professional and related services	7.60%	DO
Finance, insurance, and real estate	7.20%	DO
DO= Dropped Out		

Table 40. Top five species by pounds caught in Baldwin County, AL, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE
SHRIMP	1	3,068,199	$6,069,491
STRIPED MULLET	2	712,763	$383,117
TENPOUNDER	3	639,138	$383,626
SHARK	4	472,678	$170,426
SPANISH MACKEREL	5	591,629	$375,066

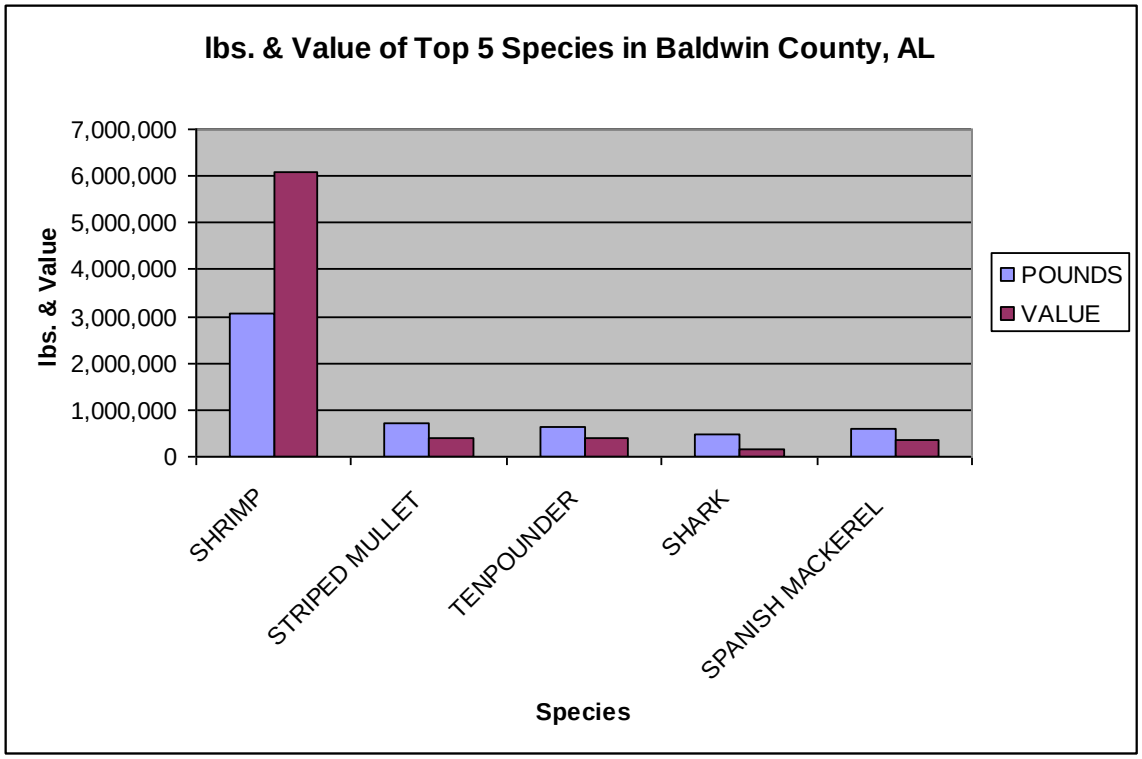

Figure 18. Value and pounds of top five species in Baldwin County, AL, for 2006.

Mississippi Communities

Pascagoula Community Description

Pascagoula is located in Jackson County and is bordered by three bodies of water: Pascagoula Bay to the west, Mississippi Sound to the south, and Point aux Chenes Bay to the east. The Gulf of Mexico is roughly ten miles south.

This city is home to the Naval Station Pascagoula and one of Mississippi's leading and busiest deepwater ports, the Port of Pascagoula. The shipbuilding industry is very active in Pascagoula, as are the oil and petrochemical industries. The year 2000 census enumerated 26,200 persons in Pascagoula, an increase of 301 from 1990 (Table 41). The Pascagoula seafood industry is an important source of local jobs and income. The shipbuilding industry is particularly important, however, and one of the larger shipbuilding operations in the area employees more than 11,000 persons. The operation is the largest employer in the state. As of the year 2000, six seafood processors employed an average of 24 persons each. Some 12.4 million pounds of seafood totaling 8.2 million dollars were processed in Pascagoula that year. A large fleet of small boat commercial operators is also based here; most pursue shrimp and various finfish in the inshore and nearshore waters of the sound and Gulf. Menhaden is the number one species landed (Table 42 and Figure 19).

Table 41. Pascagoula, MS, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Pascagoula, MS	**1990**	**2000**
Population	25,899	26,200
Education Attainment	High School graduate or higher, no college degree	High School graduate or higher, no college degree
White	19,998	17,594
Black or African American	5,557	7,590
American Indian & Alaska Native	49	47
Asian, Native Hawaiian & Other Pacific Islander	239	259
Some Other Race	56	437
Hispanic or Latino (or any race)	252	1,019
Total Housing Units	11,053	10,942
Vacant	1,279	
Median Gross Rent	$265	$486
Median Housing Value	$49,100	$69,000
Median Household Income	$24,986	$32,042
Per Capita Income	$9,056	$16,891
Unemployment %	7.80%	9.30%

Table 41. Pascagoula, MS, demographic data from 1990-2000. Continued.

Pascagoula, MS	1990	2000
Employment by Industry (Top 5)		
Retail Trade	17.50%	11.40%
Manufacturing	31.50%	24.40%
Education, health services	14.80%	18.70%
Other professional & related services	6%	5.70%
Construction	5.60%	8.20%
Arts, entertainment, recreation, accommodation & food services	DO	8.10%
DO= Dropped Out		

Table 42. Top five species by pounds caught in Jackson County, MS, from 2006 data.

	FISH RANK	POUNDS	VALUE
MENHADEN	1	211,163,171	$8,446,609
BUTTERFISH	2	537,636	$134,412
SCADS	3	104,391	$36,539
STRIPED MULLET	4	65,358	$22,924
TUNA, LITTLE	5	54,999	$19,248

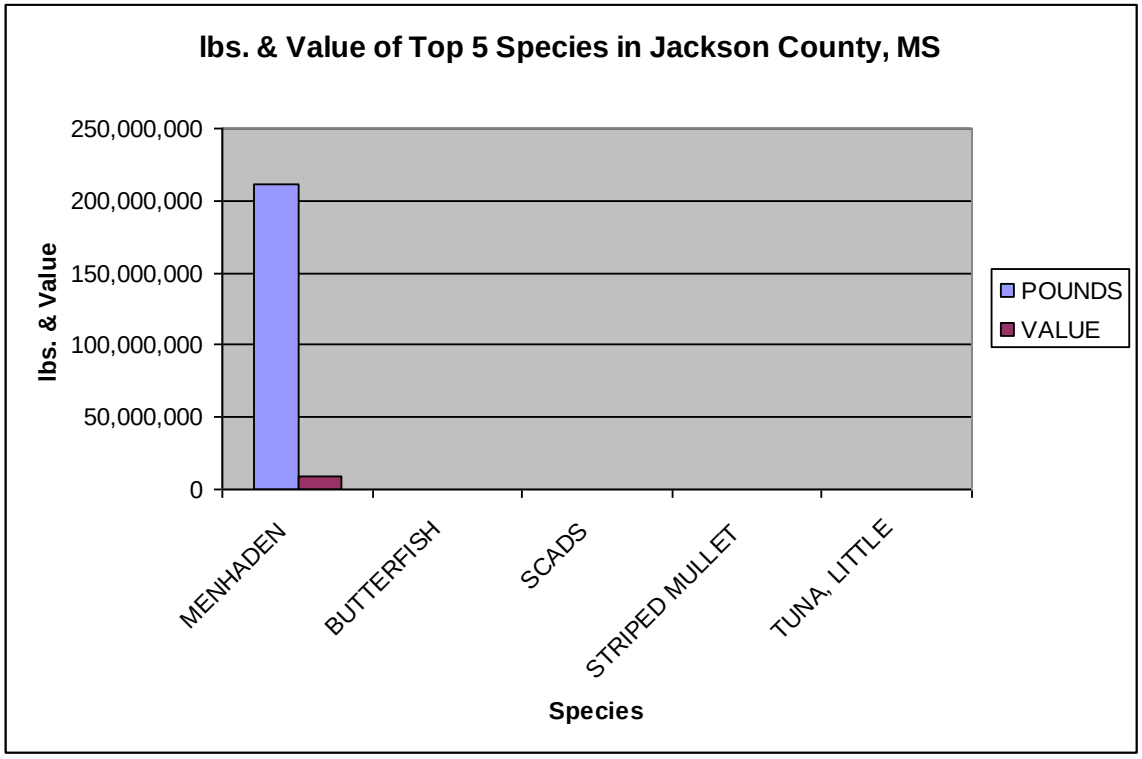

Figure 19. Value and pounds of top five species in Jackson County, MS, for 2006.

Texas Communities

Port Arthur Community Description

Port Arthur is located along the Intracoastal Waterway and Sabine Lake in eastern Jefferson County. Port Arthur is about 14 miles north of the Gulf of Mexico and the Gulfgate Bridge connects it with Pleasure Island and provides access to the Sabine Lake Causeway. The town of Port Arthur was founded in the late 1800s by railroad pioneer Arthur E. Stilwell, with financial support from Dutch investors. Growth occurred in the early 1900s after the port opened for shipping. Economic prosperity was closely tied to the Spindletop oil field in nearby Beaumont. The Gulf Oil Corporation and Texaco established refineries in Port Arthur. The year 2000 census reported a population of 57,755 persons, a loss of 969 from 1990 (Table 43). Extensive fishing-related infrastructure is in place here, including numerous boat builders and brokers, marinas, processors, and retail and wholesale seafood dealers. A fleet of charter vessels is also based here. A relatively large fleet of trawlers is based here, with 35 persons holding Gulf shrimp permits in 2003. Shrimp are the number one species landed (Table 44 and Figure 20).

Table 43. Port Arthur, TX, demographic data from 1990-2000 (Source: U.S. Census Bureau Decennial census).

Port Arthur, TX	**1990**	**2000**
Population	58,724	57,755
Education Attainment	High School graduate or higher, no college degree	High School graduate or higher, no college degree
White	28,955	22,528
Black or African American	24,778	25,240
American Indian & Alaska Native	147	260
Asian, Native Hawaiian & Other Pacific Islander	2,825	3,413
Some Other Race	2,019	5,127
Hispanic or Latino (or any race)	4,829	10,081
Total Housing Units	25,746	24,713
Vacant	3,420	2,874
Median Gross Rent	$226	$405
Median Housing Value	$30,400	$35,900
Median Household Income	$18,548	$26,455
Per Capita Income	$9,706	$14,183
Unemployment %	6.90%	7.00%

Table 43. Port Arthur, TX, demographic data from 1990-2000. Continued.

Port Arthur, TX	1990	2000
Employment by Industry (Top 5)		
Educational, health & social services	19.20%	22%
Manufacturing	17.60%	13.10%
Retail Trade	20.50%	12.60%
Construction	8.40%	9.50%
Arts, entertainment, recreation, accommodation & food services	DO	7.20%
Business & repair services	5.40%	DO
DO=Dropped Out		

Table 44. Top five species by pounds caught in Jefferson County, TX, from 2006 data.

SPECIES	FISH RANK	POUNDS	VALUE
SHRIMP	1	24,504,592	$42,546,350
CRABS,BLUE,HARD	2	504,105	$303,813
CATFISH	3	48,747	$44,143
SNAPPER	4	28,278	$77,571
SUCKERS	5	2,748	$1,648

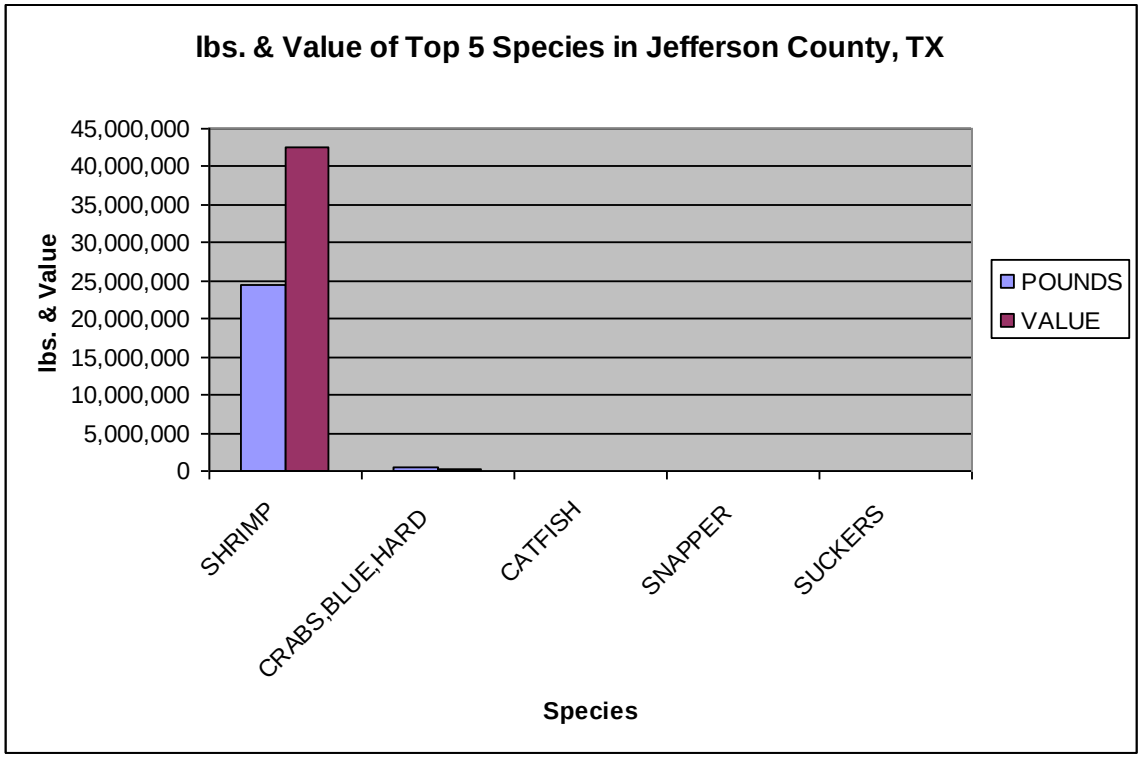

Figure 20. Value and pounds of top five species in Jefferson County, TX, for 2006.

Observer Coverage of the US Southeastern Atlantic Rock Shrimp Fishery, September 2001 through September 2006
Preliminary Report

NOAA Fisheries
Southeast Fisheries Science Center
4700 Avenue U
Galveston, Texas 77551

Introduction

In September 2001, NOAA Fisheries in cooperation with the commercial rock shrimp industry and the South Atlantic Fishery Management Council initiated observer coverage of the rock shrimp fishery operating in the US southeastern Atlantic (east coast). The primary objective of this research effort is to estimate catch rates during commercial shrimping operations for target and non-target species.

Seventeen rock shrimp trips were observed from September 2001 through September 2006. Thirteen trips occurred off the east coast, and four trips operated in the Gulf of Mexico and off the east coast. A total of 400 tows targeting rock shrimp were sampled during 208 sea days of observations, with 334 and 66 tows occurring off the east coast and Gulf of Mexico, respectively (Figure 1).

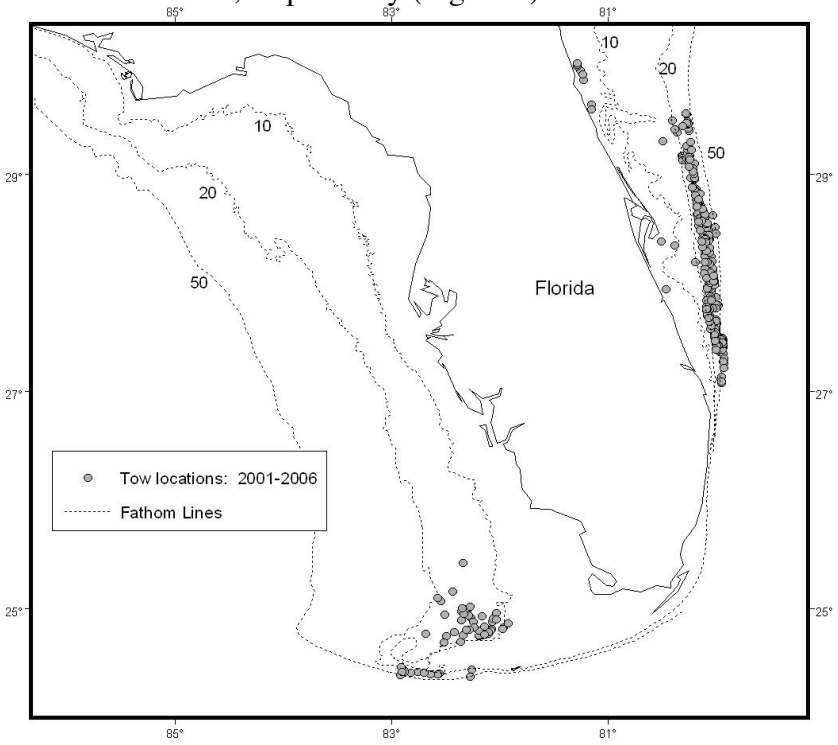

Figure 1. Distribution of sampling effort (tows) based on observer coverage of the US southeastern Atlantic rock shrimp fishery from September 2001 through September 2006.

Only east coast data are included in the preliminary summary presented below. Continued efforts are underway to obtain additional rock shrimp trawl observations off the east coast. Mandatory observer placement for the rock shrimp fishery is anticipated in July 2008.

Methods

NOAA Fisheries-approved observers were placed on cooperating shrimp vessels targeting rock shrimp. The intent was to sample east coast waters exclusively; however, once onboard, no attempt was made to direct fishing location or modify normal commercial operations. During two trips, the target species shifted from rock shrimp to penaeid shrimp; these additional 44 tows are not included in this assessment. Effort allocation was based on vessel availability and current commercial effort trends by area and season.

Vessel length, hull construction material, gross tonnage, engine horsepower and crew size information were obtained for each vessel. Gear characteristics related to bycatch reduction device (BRD), turtle excluder device (TED), net type and other associated gear were recorded at the start of each trip, or when changes were made. For each tow, bottom time, vessel speed and operational aspects relative to each net were documented.

Fishery-specific data were collected from one randomly selected net for each tow. Total catch and total rock shrimp weights were recorded (i.e., not extrapolated and based on one net per tow). A subsample (approximately 20% of the total catch weight) was processed for species composition. Modified characterization (species grouped) was conducted during three trips as part of BRD evaluation. Species weight and number were obtained from the subsample. A detailed description of the sampling procedures is contained in the NOAA Fisheries Characterization of the US Gulf of Mexico and Southeastern Atlantic Otter-trawl and Bottom Reef Fish Fisheries – Observer Training Manual as revised June 2001.

Species total weight and number were extrapolated from subsample weight to the total catch weight, and are also based on one net per tow. In the absence of a weight or number for a given species the entire tow was eliminated from the analysis.

Two hundred ninety-four unique species, family, taxa, etc. (now referred to as species) were recorded. Species were placed into the following categories: rock shrimp, penaeid shrimp, non-shrimp crustaceans, fish, other non-crustacean invertebrates, and debris (e.g., rocks, logs, trash).

Overall catch rates are presented collectively for all years, areas, seasons, and depths. Catch estimates were also examined by depth; a minimum of three vessels were required for stratification purposes.

All data were entered into the southeast regional shrimp trawl bycatch data base developed in 1992 though a southeast regional program conducted by NOAA Fisheries in cooperation with commercial fishing organizations and interests, state fishery management agencies and universities. This database is housed and managed at NOAA Fisheries Southeast Fisheries Science Center's Galveston Laboratory where final data sets are archived. Summarized data are available for use by all interested stakeholders.

Results and Discussion

Overview

Data from 334 tows targeting rock shrimp were collected from seventeen trips off the east coast of Florida from September 2001 to September 2006. Approximately 66% of the tows were successful relative to operational aspects (e.g., no torn webbing, hangs, clogging) and/or sampling requirements (e.g., no catch mixed together, rough weather). Only data where all nets fished successfully during a tow are included in this analysis. Based on data from 221 successful tows (838.3 hours of trawling), 38213.2 kilograms of total catch were recorded based on one net from each tow. Rock shrimp (*Sicyonia sp.)* comprised 6802.7 kilograms (heads-on) or 17.8% of the total weight. Rock shrimp percent composition when extrapolated from subsamples was 19.1%. For the purpose of the graphs below, all percent values have been rounded to the nearest whole number. A total of 294 unique species was collected: 49 species of crustacea, 192 fish, 51 invertebrates, and 2 of miscellaneous debris.

Vessels, Gear and Tow Characteristics

Eight vessels participated in the study. Overall vessel length ranged from 63 to 84 feet with 75.6 feet the average ($\pm$ 6.1 s.d.). Seven vessels were steel hull with one of fiberglass construction. Six vessels had freezer storage capacity. For the remaining two vessels, no data relative to cold storage were recorded.

Based on a per tow basis, average headrope length was 53.1 feet ($\pm$ 4.4 s.d.), and ranged from 40 to 61 feet. Four nets were pulled on each tow. All nets included in this assessment were equipped with TEDs (hard frame) and BRDs.

Tow depth averaged 30.1 fathoms ($\pm$ 11.2 s.d) and ranged from 8.3 to 73.2 fathoms. Tow time ranged from 0.9 to 7.0 hours, with average tow time being 3.8 hours ($\pm$ 1.2 s.d).

Extrapolated Species Composition by Categories – Percent and Catch-Per-Unit Effort

Based on weight extrapolations from species composition samples by category for all years, areas, seasons, and depths (Figure 2), fish species dominated the catch at 49%, followed by rock shrimp at 19%, nonshrimp crustaceans at 18%, noncrustacean invertebrates at 8%, penaeid shrimp at 4%, and debris at 2%. Catch-per-unit-effort (CPUE) in kilograms per hour by category was 22.5 for fish, 8.7 for rock shrimp, 8.2 for crustaceans, 3.8 for invertebrates 1.7 for penaeid shrimp, and 0.8 for debris.

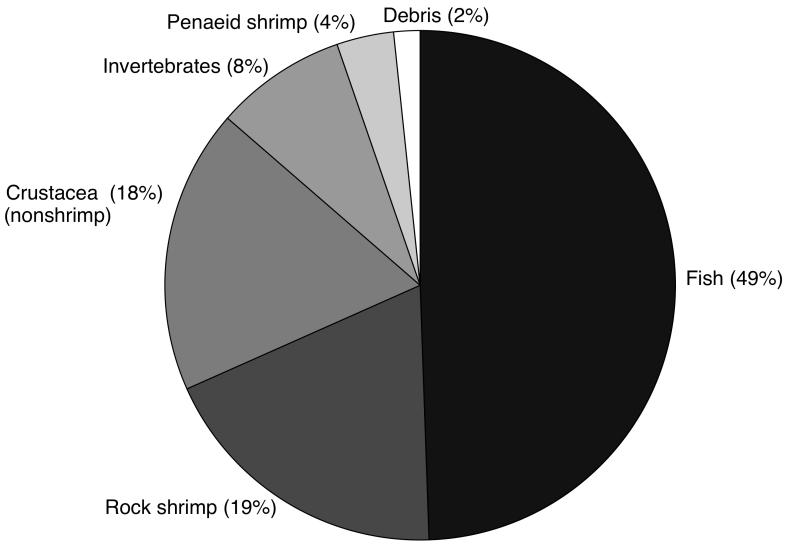

Figure 2. Percent species composition by weight and category from observer coverage of the US southeastern Atlantic rock shrimp fishery from September 2001 through September 2006, n = 221 tows.

Extrapolated numbers from species composition samples by category for all years, areas, seasons, and depths are presented in Figure 3. Crustaceans were dominant by number at 36%, followed by fish at 30%, rock shrimp at 28%, invertebrates at 4%, and penaeid shrimp at 3%. Tows where no counts were obtained (89) for a given species were set aside for the purpose of this analysis. Debris counts where entered as a default of one and accounted for less than 1% based on one unit of debris for each tow where present. CPUE estimates in numbers per hour for the category components were 825 for crustaceans, 679 for fish, 642 for rock shrimp, 86 for invertebrates, and 67 for penaeid shrimp.

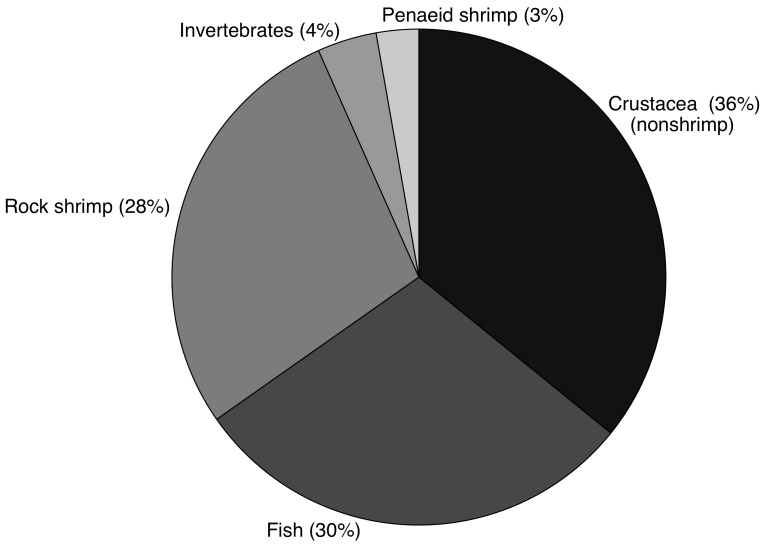

Figure 3. Percent species composition by number and category from observer coverage of the US southeastern Atlantic rock shrimp fishery from September 2001 through September 2006, n = 132 tows.

It is important to note that the order of the categories presented in Figures 2 and 3 are different. Sample size used for extrapolation purposes is different between weight (221 tows) and number (132 tows). Thus comparison of weight and number estimates are not possible. The remaining sections of this report contain extrapolated estimates by weight only.

Extrapolated Species Composition by Species – Percent and CPUE

Weight extrapolations from the species characterization samples for all years, areas, seasons and depths (Figure 4) indicate that rock shrimp genus comprised 16% of the total catch, followed by dusky flounder (*Syacium papillosum*) at 13%, inshore lizardfish (*Synodus foetens*) at 11%, iridescent swimming crab (*Portunus gibbesii*) at 7%, longspine swimming crab (*Portunus spinicarpus*) at 6%, spot (*Leiostomus xanthurus*) at 5%, blotched swimming crab (*Portunus spinimanus*) and brown shrimp (*Farfantepenaeus aztecus*) each at 3%, and horned searobin (*Bellator militaris)* and brown rock shrimp (*Sicyonia brevirostris*) each at 2%. All other species combined comprised 32% of the total weight.

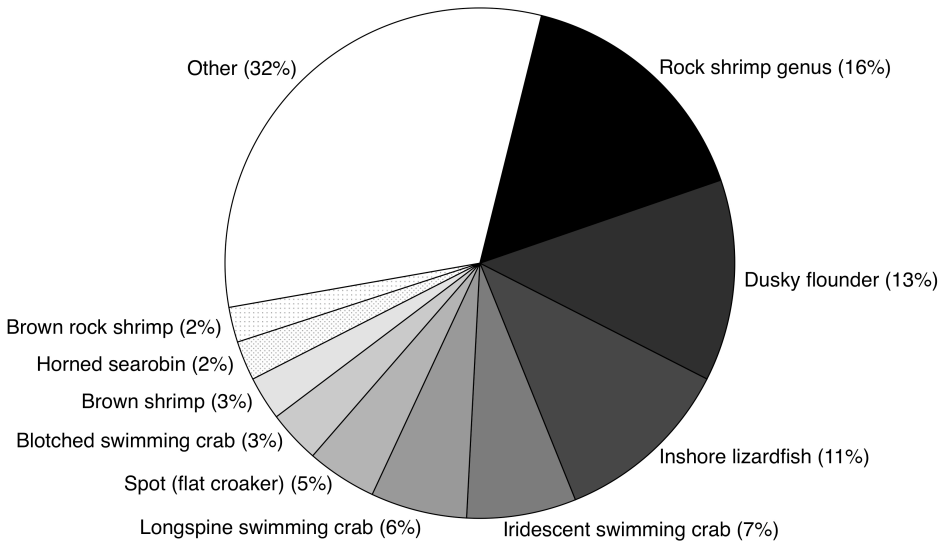

Figure 4. Percent species composition by weight from observer coverage of the US southeastern Atlantic rock shrimp fishery from September 2001 through September 2006, n = 183 tows

CPUE at the species level for all years, areas, seasons and depths is presented in Table 1. CPUE estimates in kilograms per hour are given for species that occurred at a rate greater than or equal to 0.7 kg/hr. CPUE for 278 species was less than 0.7 kg/hr.

Table 1. Catch-per-unit effort estimates in kilograms per hour by species from observer coverage of the US southeastern Atlantic rock shrimp fishery from September 2001 through September 2006, n = 183 tows.

Common Name	**Genus Species (or Equivalent)**	**Kgs/Hr**
Rock Shrimp Genus	*Sicyonia sp*	6.2
Dusky Flounder	*Syacium papillosum*	5.1
Inshore Lizardfish	*Synodus foetens*	4.5
Irridescent Swimming Crab	*Portunus gibbesii*	2.7
Longspine Swimming Crab	*Portunus spinicarpus*	2.4
Spot (Flat Croaker)	*Leiostomus xanthurus*	1.8
Blotched Swimming Crab	*Portunus spinimanus*	1.3
Brown Shrimp	*Farfantepenaeus aztecus*	1.0
Horned Searobin	*Bellator militaris*	1.0
Brown Rock Shrimp	*Sicyonia brevirostris*	0.9
Rock Seabass	*Centropristis philadelphica*	0.7
Squid and Octopus Class	Cephalopoda	0.7
Debris (rocks,logs,etc.)	Debris	0.7
Bluespotted Searobin	*Prionotus roseus*	0.7
Red Goatfish	*Mullus auratus*	0.7
Lefteye Flounder Family	Bothidae	0.7

Estimated CPUE – by Depth

Figure 5 depicts CPUE in kilograms per hour by depth zone and category for all years, areas and seasons. CPUE for fish was highest in the 0-25 fathom zone (25.5 kgs/hr), followed by the 26-45 fathom zone (22.2 kgs/hr), and the 45+ fathom zone (16.8 kgs/hr). Non-shrimp crustacean CPUE was similar among the fathom zones. Catch rates were highest in the 0-25 fathom zone (8.9 kgs/hr), followed by the 45+ fathom zone (8.3 kgs/hr), and the 26-45 fathom zone (7.7 kgs/hr). Rock shrimp catch rates were highest in 26-45 fathom zone (10.6 kgs/hr), followed by the 0-25 fathom zone (7.0 kgs/hr), and the 45+ fathom zones zone (5.1 kgs/hr). Invertebrate CPUE was highest in the 26-45 fathom zone (7.7 kgs/hr). Lower catch rates were observed in the 26-50 fathom zone (2.3 kgs/hr) and the 45+ fathom zone (0.8 kgs/hr). CPUE rates for penaeid shrimp and debris were less than 2.5 kgs/hr for all depth zones.

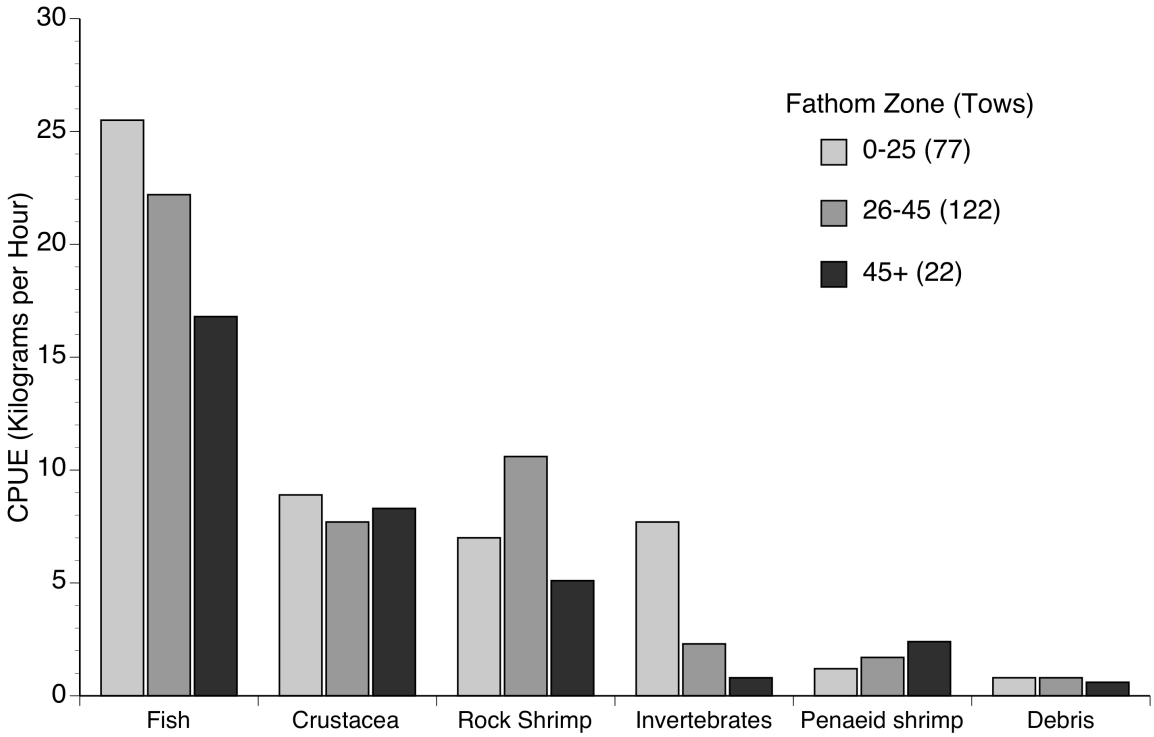

Figure 5. Catch-per-unit effort estimates in kilograms per hour by depth and category from observer coverage of the US southeastern Atlantic rock shrimp fishery from September 2001 through September 2006, n = 221 tows.

Sea Turtles

Eleven sea turtles (six loggerhead, two Kemp's Ridley, three unidentified) were captured in rock shrimp trawls during the study period. Eight sea turtles were taken in try nets, and three slid out of TED-equipped nets. Nine were released alive and conscious, with two released in an unknown condition.

We sincerely acknowledge and thank the commercial rock shrimp fishery members for their participation in this research effort, and look forward to their continued involvement. For further information regarding this report, please contact Elizabeth Scott-Denton, NOAA Fisheries, 4700 Avenue U, Galveston, Texas 77551, (409) 766-3571, elizabeth.scott-denton@noaa.gov.

Appendix D. Essential Fish Habitat and Movement towards Ecosystem-Based Management

The Council, using the Essential Fish Habitat Plan as the cornerstone, adopted a strategy to facilitate the move to an ecosystem-based approach to fisheries management in the region. This approach required a greater understanding of the South Atlantic ecosystem and the complex relationships among humans, marine life and the environment including essential fish habitat. To accomplish this, a process was undertaken to facilitate the evolution of the Habitat Plan into a Fishery Ecosystem Plan, thereby providing more comprehensive understanding of the biological, social and economic impacts of management necessary to initiate the transition from single species management to ecosystem-based management in the region.

The development of a South Atlantic Council Fishery Ecosystem Plan (FEP) (SAFMC under development) provided the opportunity to expand the regional habitat and ecosystem network of partners necessary to compile, review and consolidate available habitat, biological, social, and economic fishery and resource information for fisheries in the South Atlantic ecosystem. Development of this source document expands and significantly updates habitat and species information presented in the SAFMC Habitat Plan (SAFMC, 1998a) incorporating comprehensive details of all managed species (SAFMC, MAFMC, South Atlantic States, ASMFC, and NOAA Fisheries Highly Migratory Species and Protected Species) including their biology and food web, and economic and social characteristics of the fisheries prosecuted in those resources. In addition, development of the FEP has initiated coordination and integration of information from other developing regional initiatives including but not limited to the Southeast Coastal Ocean Observing Regional Association (SECOORA) and the Southeast Aquatic Resources Partnership (SARP) under the National Habitat Action Plan. The FEP development process has provided the Council with the opportunity to build on the existing comprehensive compendium of the habitat, fisheries, and ecosystem information in the South Atlantic Council's Habitat Plan. This effort has resulted in the development of a FEP that describes the South Atlantic Ecosystem and the impact of the fisheries on the environment. The FEP also updates available information on designated Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern, expands descriptions of biology and status of managed species, presents ecosystem considerations for managed species, and describes the social and economic characteristics of the fisheries in the region. In addition, it expands the discussion and description of existing comprehensive habitat research needs to include all biological, social, and economic research needed to fully address ecosystem-based management. This FEP serves as a living source document of biological, economic, and social information for all Fishery Management Plans (FMP). Future Environmental Assessments and Environmental Impact Statements associated with subsequent amendments to Council FMPs will draw from or cite by reference the FEP.

The Fishery Ecosystem Plan for the South Atlantic Region encompasses the following volume structure:

FEP Volume I Introduction and Overview of FEP for the South Atlantic Region

FEP Volume II	South Atlantic Habitats and Species
FEP Volume III	South Atlantic Human and Institutional Environment
FEP Volume IV	Threats to South Atlantic Ecosystem and Recommendations
FEP Volume V	South Atlantic Research Programs and Data Needs
FEP Volume VI	References and Appendices

Comprehensive Ecosystem Amendment (CEA) 1 (SAFMC under development) is supported by this FEP and updates EFH and EFH-HAPC information and addresses the Final EFH Rule (e.g., GIS presented for all EFH and EFH-HAPCs). Management actions proposed in the CEA propose the establishment of deepwater Coral HAPCs to protect what is thought to be the largest continuous distribution (>25,000 square miles) of pristine, untouched, deepwater coral ecosystems in the world.

The CEA development process serves as the vehicle to move the Council to a new era of ecosystem-based management. While this first CEA focuses on deepwater coral ecosystem conservation and EFH related action, future FMP actions will be addressed by reviewing and developing the suite of potential management needs to initiate preparation of a new CEA to address all FMP amendment needs in the coming year. The Council has already adopted an annual scoping process that will facilitate this effort in the future. This effort will not only draw from and build on the biological, economic, and social information presented in the FEP, but will also address possible issues or future management actions identified in the FEP. This process will provide the Council with the opportunity to evaluate needed actions across multiple fisheries, evaluate the impacts of management, and facilitate development of FMP amendments or measures that could apply across FMPs. The Council, through the combined development of the first FEP and first CEA, establishes a process to facilitate the transition from single species to ecosystem-based management in the South Atlantic Region.

EFH and EFH-HAPC Designations Translated to Cooperative Habitat Policy Development and Protection

The Council actively comments on non-fishing projects or policies that may impact fish habitat. Appendix A of the Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (SAFMC 1998b) outlines the Council's comment and policy development process and the establishment of a four-state Habitat Advisory Panel. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. AP members bring projects to the Council's attention, draft comment letters, and attend public meetings. With guidance from the Advisory Panel, the Council has developed and approved policies on:

1. Energy exploration, development, transportation and hydropower re-licensing;
2. Beach dredging and filling and large-scale coastal engineering;
3. Protection and enhancement of submerged aquatic vegetation;
4. Alterations to riverine, estuarine and nearshore flows; and
5. Marine aquaculture.

NOAA Fisheries, State and other Federal agencies apply EFH and EFH-HAPC designations and protection policies in the day-to-day permit review process. In addition

to the workshop process described above the revision and updating of existing habitat policies and the development of new policies is being coordinated with core agency representatives on the Habitat and Coral Advisory Panels. Existing policies are included at the end of this Appendix.

South Atlantic Bight Ecopath Model

The Council is developing a food web model (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the Council. This effort will help the Council and cooperators in identifying available information and data gaps while providing insight into ecosystem function. More importantly, the model will aid in identifying research necessary to better define populations, fisheries and their interrelationships. The model will include the area between Cape Hatteras, North Carolina, through the Florida Keys and extend from the upper wetlands to the 300-meter isobath.

Cooperative Research to Support Ecosystem-Based Management

Regional Internet Map Server for Coral and Live/Hard Bottom Habitat and South Atlantic Habitat/Ecosystem Web Site

The South Atlantic Council and the Florida Fish and Wildlife Research Institute (FWRI) developed a Habitat and Ecosystem web site. The website hosts an Internet Map Server (IMS) application that provides access to downloadable GIS data and metadata, imagery, and documents related to EFH, EFH-HAPCs, and coral and benthic habitats across the South Atlantic Region (the Carolinas, Georgia, and Florida). The IMS is an effective tool for displaying, sharing and querying information related to hard bottom and EFH across the South Atlantic coast. The video and still imagery archives served from this site provide researchers a unique opportunity to observe and monitor the health and abundance of coral and benthic habitats throughout the South Atlantic region. The IMS also serves as a repository of historic and current information to be used by managers, scientists and the general public.

The Habitat/Ecosystem website was designed to track the Council's Action Plan for Ecosystem-Based Management. The latter was designed to address the ecosystem-based management principles recommended by the Ecosystem Principles Advisory Panel in their 1999 report to Congress. Thus, visitors to the site can fully appreciate the Council's efforts in moving towards this new management approach and gain access to more detailed information as to the actions the Council is taking to fully embrace ecosystem-based fisheries management in the South Atlantic region. The website can be accessed through the Council's main website at www.safmc.net.

Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern

Following is a summary of the current South Atlantic Council's EFH and EFH-HAPCs. Information supporting their designation is being updated (pursuant to the EFH Final Rule) in the Council's Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment:

Snapper Grouper FMP
Essential fish habitat for snapper-grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (but to at least 2000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom.

Areas which meet the criteria for EFH-HAPCs for species in the snapper-grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; nearshore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the *Oculina* Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs).

Shrimp FMP
For penaeid shrimp, Essential Fish Habitat 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. 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.

For rock shrimp, essential fish habitat consists of offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters in depth with highest concentrations occurring between 34 and 55 meters. 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.

Essential fish habitat for royal red shrimp include the upper regions of the continental slope from 180 meters (590 feet) to about 730 meters (2,395 feet), with concentrations found at depths of between 250 meters (820 feet) and 475 meters (1,558 feet) over blue/black mud, sand, muddy sand, or white calcareous mud. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse royal red shrimp larvae.

Areas which meet the criteria for EFH-HAPCs for penaeid shrimp include all coastal inlets, all state-designated nursery habitats of particular importance to shrimp (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas), and state-identified overwintering areas.

Coastal Migratory Pelagics FMP

Essential fish habitat for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf Stream shoreward, including *Sargassum*. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas).

For Cobia essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse coastal migratory pelagic larvae.
For king and Spanish mackerel and cobia essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights.

Areas which meet the criteria for EFH-HAPCs include sandy shoals of Capes Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the ELMR Program. Estuaries meeting this criteria for Spanish mackerel include Bogue Sound and New River, North Carolina; Bogue Sound, North Carolina (Adults May-September salinity >30 ppt); and New River, North Carolina (Adults May-October salinity >30 ppt). For Cobia they include Broad River, South Carolina; and Broad River, South Carolina (Adults & juveniles May-July salinity >25ppt).

Golden Crab FMP
Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987). There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate through the framework

Spiny Lobster FMP
Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (*Laurencia*); and mangrove habitat (prop roots). In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae.

Areas which meet the criteria for EFH-HAPCs for spiny lobster include Florida Bay, Biscayne Bay, Card Sound, and coral/hard bottom habitat from Jupiter Inlet, Florida through the Dry Tortugas, Florida.

Coral, Coral Reefs, and Live/Hard Bottom Habitats FMP
Essential fish habitat for corals (stony corals, octocorals, and black corals) must incorporate habitat for over 200 species. EFH for corals include the following:

A. Essential fish habitat for hermatypic stony corals includes rough, hard, exposed, stable substrate from Palm Beach County south through the Florida reef tract in subtidal to 30 m depth, subtropical (15°-35° C), oligotrophic waters with high (30-35$^{o}/_{oo}$) salinity and turbidity levels sufficiently low enough to provide algal symbionts adequate sunlight penetration for photosynthesis. Ahermatypic stony corals are not light restricted and their essential fish habitat includes defined hard substrate in subtidal to outer shelf depths throughout the management area.

B. Essential fish habitat for *Antipatharia* (black corals) includes rough, hard, exposed, stable substrate, offshore in high (30-35$^{o}/_{oo}$) salinity waters in depths exceeding 18 meters (54 feet), not restricted by light penetration on the outer shelf throughout the management area.

C. Essential fish habitat for octocorals excepting the order Pennatulacea (sea pens and sea pansies) includes rough, hard, exposed, stable substrate in subtidal to outer shelf depths within a wide range of salinity and light penetration throughout the management area.

D. Essential fish habitat for Pennatulacea (sea pens and sea pansies) includes muddy, silty bottoms in subtidal to outer shelf depths within a wide range of salinity and light penetration.

Areas which meet the criteria for EFH-HAPCs for coral, coral reefs, and live/hard bottom include: The 10-Fathom Ledge, Big Rock, and The Point (North Carolina); Hurl Rocks and The Charleston Bump (South Carolina); Gray's Reef National Marine Sanctuary (Georgia); The *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; Oculina Banks off the east coast of Florida from Ft. Pierce to Cape Canaveral; nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral to Broward County); offshore (5-30 meter; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary.

Dolphin and Wahoo FMP

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*. This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC, 1998b) (dolphin was included within the Coastal Migratory Pelagics FMP).

Areas which meet the criteria for EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*. This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP).

Actions Implemented That Protect EFH and EFH-HAPCs

Snapper Grouper FMP

- Prohibited the use of the following gears to protect habitat: bottom longlines in the EEZ inside of 50 fathoms or anywhere south of St. Lucie Inlet Florida, fish traps, bottom tending (roller-rig) trawls on live bottom habitat, and entanglement gear.
- Established the *Oculina* Experimental Closed Area where the harvest or possession of all species in the snapper grouper complex is prohibited

Shrimp FMP

- Prohibition of rock shrimp trawling in a designated area around the *Oculina* Bank,
- Mandatory use of bycatch reduction devices in the penaeid shrimp fishery,
- Mandatory Vessel Monitoring System (VMS) in the Rock Shrimp Fishery.
- A mechanism that provides for the concurrent closure of the EEZ to penaeid shrimping if environmental conditions in state waters are such that the overwintering spawning stock is severely depleted.

***Sargassum* FMP**

- Prohibited all harvest and possession of *Sargassum* from the South Atlantic EEZ south of the latitude line representing the North Carolina/South Carolina border (34° North Latitude).
- Prohibited all harvest of *Sargassum* from the South Atlantic EEZ within 100 miles of shore between the 34° North Latitude line and the Latitude line representing the North Carolina/Virginia border.
- Harvest of *Sargassum* from the South Atlantic EEZ is limited to the months of November through June.
- Established an annual Total Allowable Catch (TAC) of 5,000 pounds landed wet weight.
- Required that an official observer be present on each *Sargassum* harvesting trip. Require that nets used to harvest *Sargassum* be constructed of four inch stretch mesh or larger fitted to a frame no larger than 4 feet by 6 feet.

Coastal Migratory Pelagics FMP

- Prohibited of the use of drift gill nets in the coastal migratory pelagic fishery;

Golden Crab FMP

- In the northern zone golden crab traps can only be deployed in waters deeper than 900 feet; in the middle and southern zones traps can only be deployed in waters deeper than 700 feet.
  Northern zone - north of the 28°N. latitude to the North Carolina/Virginia border;
  Middle zone - 28°N. latitude to 25°N. latitude; and
  Southern zone - south of 25°N. latitude to the border between the South Atlantic and Gulf of Mexico Fishery Management Councils.

Coral, Coral Reefs and Live/Hard Bottom FMP

- Established an optimum yield of zero and prohibited all harvest or possession of these resources which serve as essential fish habitat to many managed species.
- Designated of the *Oculina* Bank Habitat Area of Particular Concern.
- Expanded the *Oculina* Bank Habitat Area of Particular Concern (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 feet) depth contour.
- Established the following two Satellite *Oculina* HAPCs: (1) Satellite *Oculina* HAPC #1 is 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 is 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.
- Prohibited the use of all bottom tending fishing gear and fishing vessels from anchoring or using grapples in the *Oculina* Bank HAPC.
- Established a framework procedure to modify or establish Coral HAPCs.

South Atlantic Council Policies for Protection and Restoration of Essential Fish Habitat.

SAFMC Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the SAFMC to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, "habitat" is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the SAFMC policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The SAFMC will pursue these goals at state, Federal, and local levels. The Council shall assume an aggressive role in the protection and enhancement of habitats important to fishery species, and shall actively enter Federal, decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the Council.

SAFMC Policy Statement Concerning Beach Dredging and Filling and Large-Scale Coastal Engineering

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of the essential fish habitats (EFH) and habitat areas of particular concern (EFH-HAPCs) impacted by beach dredge and fill activities, and related large-scale coastal engineering projects. The policies are designed to be consistent with the overall habitat protection policies of the SAFMC as formulated and adopted in the Habitat Plan (SAFMC, 1998a) and the Comprehensive EFH Amendment (SAFMC, 1998b).

The findings presented below assess the threats to EFH potentially posed by activities related to the large-scale dredging and disposal of sediments in the coastal ocean and adjacent habitats, and the processes whereby those resources are placed at risk. The policies established in this document are designed to avoid, minimize and offset damage caused by these activities, in accordance with the general habitat policies of the SAFMC as mandated by law.

EFH at Risk from Beach Dredge and Fill Activities

The SAFMC finds:

1) In general, the array of large-scale and long-term beach dredging projects and related disposal activities currently being considered for the United States

southeast together constitute a real and significant threat to EFH under the jurisdiction of the SAFMC.

2) The cumulative effects of these projects have not been adequately assessed, including impacts on public trust marine and estuarine resources, use of public trust beaches, public access, state and federally protected species, state critical habitat, SAFMC-designated EFH and EFH-HAPCs.

3) Individual beach dredge and fill projects and related large-scale coastal engineering activities rarely provide adequate impact assessments or consideration of potential damage to fishery resources under state and federal management. Historically, emphasis has been placed on the logistics of dredging and economics, with environmental considerations dominated by compliance with the Endangered Species Act for sea turtles, piping plovers and other listed organisms. There has been little or no consideration of hundreds of other species affected, many with direct fishery value.

4) Opportunities to avoid or minimize impacts of beach dredge and fill activities on fishery resources, and offsets for unavoidable impacts have rarely been proposed or implemented. Monitoring is rarely adequate to develop statistically appropriate impact evaluations.

5) Large-scale beach dredge and fill activities have the potential to impact a variety of habitats across the shelf, including:

a) waters and benthic habitats near the dredging sites
b) waters between dredging and filling sites
c) waters and benthic habitats in or near the fill sites, and
d) waters and benthic habitats potentially affected as sediments move subsequent to deposition in fill areas.

6) Certain nearshore habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and potentially threatened by large-scale, long-term or frequent disturbance by dredging and filling:

a) the swash and surf zones and beach-associated bars
b) underwater soft-sediment topographic features
c) onshore and offshore coral reefs, hardbottom and worm reefs
d) inlets

7) Large sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC**,** as well as the Mid-Atlantic Fishery Management Council (MAFMC) in the case of North Carolina. Potentially Affected species and their EFH under federal management include (SAFMC, 1998b):

a) summer flounder (various nearshore waters, including the surf zone and inlets; certain offshore waters)
b) bluefish (various nearshore waters, including the surf zone and inlets)
c) red drum (ocean high-salinity surf zones and unconsolidated bottoms nearshore waters)
d) many snapper and grouper species (live hardbottom from shore to 600 feet, and – for estuarine-dependent species [e.g., gag grouper and gray snapper] – unconsolidated bottoms and live hardbottoms to the 100 foot contour).
e) black sea bass (various nearshore waters, including unconsolidated bottom and live hardbottom to 100 feet, and hardbottoms to 600 feet)
f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas, including the surf zone and inlets)
g) coastal migratory pelagics [e.g., king mackerel, Spanish mackerel] (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream; all coastal inlets)
h) corals of various types (hard substrates and muddy, silt bottoms from the subtidal to the shelf break)
i) areas identified as EFH for Highly Migratory Species (HMS) managed by the Secretary of Commerce (e.g., sharks: inlets and nearshore waters, including pupping and nursery grounds)

In addition, hundreds of species of crustaceans, mollusks, and annelids that are not directly managed, but form the critical prey base for most managed species, are killed or directly affected by large dredge and fill projects.

8) Beach dredge and fill projects also potentially threaten important habitats for anadromous species under federal, interstate and state management (in particular, inlets and offshore overwintering grounds), as well as essential overwintering grounds and other critical habitats for weakfish and other species managed by the Atlantic States Marine Fisheries Commission (ASMFC) and the states. The SAFMC also identified essential habitats of anadromous and catadromous species in the region (inlets and nearshore waters).

9) Many of the habitats potentially affected by these projects have been identified as EFH-HAPCs by the SAFMC. The specific fishery management plan is provided in parentheses:

a) all nearshore hardbottom areas (SAFMC, snapper grouper).
b) all coastal inlets (SAFMC, penaeid shrimps, red drum, and snapper grouper).
c) near-shore spawning sites (SAFMC, penaeid shrimps, and red drum).
d) benthic *Sargassum* (SAFMC, snapper grouper).
e) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; *Phragmatopora* (worm reefs) reefs off the central coast of Florida and nearshore hardbottom south of Cape Canaveral (SAFMC, coastal migratory pelagics).

f) Atlantic coast estuaries with high numbers of Spanish mackerel and cobia from ELMR, to include Bogue Sound, New River, North Carolina; Broad River, South Carolina (SAFMC, coastal migratory pelagics).
g) Florida Bay, Biscayne Bay, Card Sound, and coral hardbottom habitat from Jupiter Inlet through the Dry Tortugas, Florida (SAFMC, Spiny Lobster)
h) Hurl Rocks (South Carolina), The *Phragmatopoma* (worm reefs) off central east coast of Florida, nearshore (0-4 meters; 0-12 feet) hardbottom off the east coast of Florida from Cape Canaveral to Broward County; offshore (5-30 meters; 15-90 feet) hardbottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary (SAFMC, Coral, Coral Reefs and Live Hardbottom Habitat).
i) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region (NMFS, Highly Migratory Species).

10) Habitats likely to be affected by beach dredge and fill projects include many recognized in state-level fishery management plans. Examples of these habitats include Critical Habitat Areas established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans (CHAs).

11) Recent work by scientists in east Florida has documented important habitat values for nearshore, hardbottom habitats often buried by beach dredging projects, is used by over 500 species of fishes and invertebrates, including juveniles of many reef fishes. Equivalent scientific work is just beginning in other South Atlantic states, but life histories suggest that similar habitat use patterns will be found.

Threats to Marine and Estuarine Resources from Beach Dredge and Fill Activities and Related Large Coastal Engineering Projects

The SAFMC finds that beach dredge and fill activities and related large-scale coastal engineering projects (including inlet alteration projects) and disposal of material for navigational maintenance, threaten or potentially threaten EFH through the following mechanisms:

1) Direct mortality and displacement of organisms at and near sediment dredging sites.
2) Direct mortality and displacement of organisms at initial sediment fill sites.
3) Elevated turbidity and deposition of fine sediments down-current from dredging sites.
4) Alteration of seafloor topography and associated current and waves patterns and magnitudes at dredging areas.
5) Alteration of seafloor sediment size-frequency distributions at dredging sites, with secondary effects on benthos at those sites.
6) Elevated turbidity in and near initial fill sites, especially in the surf zone, and deposition of fine sediment down-current from initial fill sites (ASMFC, 2002).
7) Alteration of nearshore topography and current and wave patterns and magnitudes associated with fill.

8) Movement of deposited sediment away from initial fill sites, especially onto hardbottoms.
9) Alteration of large-scale sediment budgets, sediment movement patterns and feeding and other ecological relationships, including the potential for cascading disturbance effects.
10) Alteration of large-scale movement patterns of water, with secondary effects on water quality and biota.
11) Alteration of movement patterns and successful inlet passage for larvae, post-larvae, juveniles and adults of marine and estuarine organisms.
12) Alteration of long-term shoreline migration patterns (inducing further ecological cascades with consequences that are difficult to predict).
13) Exacerbation of transport and/or biological uptake of toxicants and other pollutants released at either dredge or fill sites.

In addition, the interactions between cumulative and direct (sub-lethal) effects among the above factors certainly trigger non-linear impacts that are completely unstudied.

SAFMC Policies for Beach Dredge and Fill Projects and Related Large Coastal Engineering Projects

The SAFMC establishes the following general policies related to large-scale beach dredge and fill and related projects, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC 1998a; SAFMC 1998b):

1) Projects should avoid, minimize and where possible offset damage to EFH and EFH-HAPCs.

2) Projects requiring expanded EFH consultation should provide detailed analyses of possible impacts to each type of EFH, with careful and detailed analyses of possible impacts to EFH-HAPCs and state CHAs, including short and long-term, and population and ecosystem scale effects. Agencies with oversight authority should require expanded EFH consultation.

3) Projects requiring expanded EFH consultation should provide a full range of alternatives, along with assessments of the relative impacts of each on each type of EFH, HAPC and CHAs.

4) Projects should avoid impacts on EFH, HAPCs and CHAs that are shown to be avoidable through the alternatives analysis, and minimize impacts that are not.

5) Projects should include assessments of potential unavoidable damage to EFH and other marine resources, using conservative assumptions.

6) Projects should be conditioned on the avoidance of avoidable impacts, and should include compensatory mitigation for all reasonably predictable impacts to EFH,

taking into account uncertainty about these effects. Mitigation should be local, up-front and in-kind, and should be adequately monitored, wherever possible.

7) Projects should include baseline and project-related monitoring adequate to document pre-project conditions and impacts of the projects on EFH.

8) All assessments should be based upon the best available science, and be appropriately conservative so follow and precautionary principles as developed for various federal and state policies.

9) All assessments should take into account the cumulative impacts associated with other beach dredge and fill projects in the region, and other large-scale coastal engineering projects that are geographically and ecologically related.

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SAFMC Policy Statement Concerning Energy Exploration, Development, Transportation and Hydropower Re-licensing

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of Essential Fish Habitat (EFH) and Essential Fish Habitat - Habitat Areas of Particular Concern (EFH-HAPCs) from threats associated with energy exploration, development, transportation and hydropower re-licensing. The policies are designed to be consistent with the overall habitat protection policies of the SAFMC as formulated and adopted in the Habitat Plan (SAFMC 1998a), the Comprehensive EFH Amendment (SAFMC 1998b) and the various Fishery Management Plans (FMPs) of the Council.

The findings presented below assess the threats to EFH potentially posed by activities related to energy development and hydropower re-licensing in offshore and coastal waters, riverine systems, and adjacent wetland habitats, and the processes whereby those resources are placed at risk. The policies established in this document are designed to avoid, minimize, and offset damage caused by these activities, in accordance with the general habitat policies of the SAFMC as mandated by law. To address any future energy projects in the South Atlantic region, the SAFMC reserves the right to revise this policy when more information becomes available.

EFH at Risk from Energy Exploration, Development Transportation and Hydropower Re-licensing Activities

The SAFMC finds:

1. That oil or gas drilling for exploration or development on or closely associated with EFH including – but not limited to – coral, coral reefs, and live/hardbottom habitat at all depths in the Exclusive Economic Zone (EEZ), EFH-HAPCs, or other special biological resources essential to commercial and recreational fisheries under SAFMC jurisdiction, be prohibited.

2. That all facilities associated with oil and gas exploration, development, and transportation be designed to avoid impacts on coastal ecosystems and sand sharing systems.

3. That adequate spill containment and cleanup equipment be maintained for all development and transportation facilities and, that the equipment be available on-site or located so as to be on-site within the landing time trajectory. An environmental bond should be required to assure that adequate resources will be available for unanticipated environmental impacts, spill response, clean-up and environmental impact assessment.

4. That exploration and development activities should be scheduled to avoid migratory patterns, breeding and nesting seasons of endangered and threatened species, including – but not limited to – northern right whales in coastal waters off the southeastern United States.

5. That the Environmental Impact Statement (EIS) for any Lease Sale address impacts from activities specifically related to natural gas production, safety precautions required in the event of the discovery of "sour gas" or hydrogen sulfide reserves and the potential for transport of hydrocarbons to nearshore and inshore estuarine habitats resulting from the cross-shelf transport by Gulf Stream spin-off eddies. The EIS should also address the development of contingency plans to be implemented if problems arise due to oceanographic conditions or bottom topography, the need for and availability of onshore support facilities in coastal areas, and an analysis of existing facilities and community services in light of existing major coastal developments.

6. That EISs prepared for liquefied natural gas (LNG) pipeline projects or other energy-related projects must fully describe direct and cumulative impacts to EFH, including deepwater coral communities. Impact evaluations should include quantitative assessments for each habitat based on recent scientific studies pertinent to that habitat, and the best available information.

7. That construction and operation of open-loop (flow-through) LNG processing facilities be prohibited in areas that support EFH.

8. That hydropower project prescriptions include measures that ensure that the amount and timing of flows mimic natural conditions. In addition, the best available technologies that allow for fish passage should be integrated into the project design.

9. That projects requiring expanded EFH consultation provide a full range of alternatives, along with assessments of the relative impacts of each on each type of EFH, EFH-HAPC and state-designated Critical Habitat Areas (CHAs).

10. That energy development activities have the potential to cause impacts to a variety of habitats across the shelf and to nearshore, estuarine, and riverine systems and wetlands, including:

    a) waters and benthic habitats in or near drilling and disposal sites, including those potentially affected by sediment movement and by physical disturbance associated with drilling activities and site development;
    b) waters and benthic habitats in or near LNG processing facilities or other energy development or transportation sites,
    c) exposed hardbottom (e.g. reefs and live bottom) in shallow and deep waters,
    d) coastal wetlands and
    e) riverine systems and associated wetlands.

11. That certain offshore, nearshore and riverine habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and potentially threatened by oil and gas and other energy exploration, development, transportation, and hydropower re-licensing activities:

    a) coral, coral reef and live/hardbottom habitat, including deepwater coral communities,
    b) marine and estuarine waters,
    c) estuarine wetlands, including mangroves and marshes,
    d) submersed aquatic vegetation,
    e) waters that support diadromous fishes, and
    f) waters hydrologically connected to waters that support EFH.

12. That siting and design of onshore receiving, holding, and transport facilities could have impacts on wetlands and endangered species' habitats if they are not properly located.

13. Sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC. Potentially affected species and their EFH under federal management include (SAFMC, 1998b):

    a) summer flounder (various nearshore waters, including the surf zone and inlets; certain offshore waters),
    b) bluefish (various nearshore waters, including the surf zone and inlets),
    c) red drum (ocean high-salinity surf zones and unconsolidated bottoms in the nearshore),
    d) many snapper and grouper species (live hardbottom from shore to 600 feet, and – for estuarine-dependent species (e.g., gag grouper and gray snapper) – unconsolidated bottoms and live hardbottoms to the 100 foot contour),
    e) black sea bass (various nearshore waters, including unconsolidated bottom and live hardbottom to 100 feet, and hardbottoms to 600 feet),
    f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas, including the surf zone and inlets),
    g) coastal migratory pelagics (e.g., king mackerel, Spanish mackerel) (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream; all coastal inlets),
    h) corals of various types and associated organisms (on hard substrates in shallow, mid-shelf, and deepwater),
    i) muddy, silt bottoms from the subtidal to the shelf break, deepwater corals and associated communities),
    j) areas identified as EFH for Highly Migratory Species managed by the Secretary of Commerce (e.g., sharks: inlets and nearshore waters, including pupping and nursery grounds), and
    k) riverine areas that support diadromous fishes, including important prey species such as shad and herring, in addition to shortnose and Atlantic sturgeon.

14. Many of the habitats potentially affected by these activities have been identified as EFH-HAPCs by the SAFMC. Each habitat, type of activity posing a potential threat and FMP is provided as follows:

    a) all nearshore hardbottom areas – exploration, transportation and development (SAFMC snapper grouper);
    b) all coastal inlets – transportation and development (SAFMC penaeid shrimp, red drum, and snapper grouper);
    c) nearshore spawning sites – transportation and development (SAFMC penaeid shrimps and red drum);
    d) benthic *Sargassum* – exploration, transportation and development (SAFMC snapper grouper);
    e) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; and *Phragmatopoma* (worm reefs) reefs off the central coast of Florida and near shore hardbottom south of Cape Canaveral – transportation and development (SAFMC coastal migratory pelagics);
    f) Atlantic coast estuaries with high numbers of Spanish mackerel and cobia from ELMR, to include Bogue Sound, New River, North Carolina; Broad River, South Carolina – transportation and development (SAFMC coastal migratory pelagics);
    g) Florida Bay, Biscayne Bay, Card Sound, and coral hardbottom habitat from Jupiter Inlet through the Dry Tortugas, Florida – exploration, transportation and development (SAFMC spiny lobster);
    h) Hurl Rocks (South Carolina); The *Phragmatopoma* (worm reefs) off central east coast of Florida; nearshore (0-4 meters; 0-12 feet) hardbottom off the east coast of Florida from Cape Canaveral to Broward County; offshore (5-30 meters; 15-90 feet) hardbottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary – transportation and development (SAFMC Coral, Coral Reefs and Live Hardbottom Habitat); and
    i) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region – exploration, transportation and development (NMFS Highly Migratory Species).

15. Habitats likely to be affected by oil and gas exploration, development and transportation, and hydropower re-licensing activities include many recognised in state level fishery management plans. Examples of these habitats include Critical Habitat Areas (CHAs) established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans.

16. Scientists in east Florida have documented exceptionally important habitat values for nearshore hardbottom used by over 500 species of fishes and invertebrates, including juveniles of many reef fishes. Equivalent scientific work is just beginning in other South Atlantic states, but life histories suggest that similar habitat use patterns will be found.

Threats to Marine and Estuarine Resources from Energy Exploration, Development, Transportation and Hydropower Re-licensing Activities

The SAFMC finds that energy exploration, development, transportation and hydropower re-licensing activities threaten or potentially threaten EFH through the following mechanisms:

1) Direct mortality and displacement of organisms at and near drilling, dredging, and/or trenching sites,

2) Deposition of fine sediments (sedimentation) and drilling muds down-current from drilling, dredging, trenching, and/or backfilling sites,

3) Chronic elevated turbidity in and near drilling, dredging, trenching, and/or backfilling sites,

4) Direct mortality of larvae, post-larvae, juveniles and adults of marine and estuarine organisms occurring from spills from pipelines or from vessels in transit near or close to inlet areas,

5) Alteration of long-term shoreline migration patterns (with complex, often indeterminable, ecological consequences),

6) Burial of sensitive coral resources and associated habitat resulting from "frac-outs" associated with horizontal directional drilling,

7) Permanent conversion of soft bottom habitat to artificial hardbottom habitat through installing a hard linear structure (i.e., a pipe covered in articulated concrete mats),

8) Impacts to benthic resources from placement and shifting of pipelines and cables, and from other types of direct mechanical damage,

9) Alterations in amount and timing of streamflow and significant reductions in fish passage resulting from damming or diverting rivers, and

10) Alteration of community diversity, composition, food webs and energy flow due to addition of structure.

In addition, the interactions between cumulative and direct (lethal and sub-lethal) effects among the above-listed can affect the magnitude of the overall impacts. Such interactions may result in a scale of effect that is multiplicative rather than additive. Those effects are at present nearly completely unstudied.

SAFMC Policies for Energy Exploration, Development, Transportation and Hydropower Re-licensing Activities

The SAFMC establishes the following general policies related to energy exploration, development, transportation, and hydropower re-licensing activities and related projects, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC, 1998a; SAFMC, 1998b):

1. Projects should avoid, minimize, and – where possible – offset damage to EFH and EFH-HAPCs. This should be accomplished, in part, by integrating the best available and least impactive technologies into the construction design.

2. Agencies with oversight authority should require expanded EFH consultation for projects with the potential to significantly damage EFH. Projects requiring expanded EFH consultation should include detailed analyses for a full range of alternatives of possible impacts to each type of EFH, each EFH-HAPC and each CHA, including short and long-term effects and cumulative impacts at local, population and ecosystem scales. These analyses should utilize resource-protective assumptions and the best available science.

3. Projects should utilize the alternative that minimizes total impact EFH, EFH-HAPCs, and CHAs.

4. Projects should include detailed assessments of potentially unavoidable damage to EFH and other marine resources associated with the preferred or selected alternative and cumulative impacts, using conservative assumptions and the best available science.

5. Compensatory mitigation should not be considered until avoidance and minimization measures have been duly demonstrated. Compensatory mitigation should be required to offset losses to EFH, including losses associated with temporary impacts, and should take into account uncertainty and the risk of the chosen mitigation measures inadequately offsetting the impacts. Mitigation should be local, "up-front," and "in-kind," and include long-term monitoring to assess and ensure the efficacy of the mitigation program selected.

6. Projects should include pre-project, project-related, and post-project monitoring adequate to document pre-project conditions and the initial, long-term and cumulative impacts of the project on EFH.

7. All EFH assessments should be based upon the best available science, be conservative, and follow precautionary principles as developed for various Federal and State policies.

8. All EFH assessments should document the cumulative impacts associated with all natural and anthropogenic stressors on EFH, including other energy exploration,

development, transportation, and re-licensing projects that are geographically and ecologically related.

9. Projects should comply with existing standards and requirements regulating domestic and international transportation of energy products including regulated waste disposal and emissions which are intended to minimize negative impacts on and preserve the quality of the marine environment.

10. Open-loop LNG processing facilities should be avoided in favor of closed-loop systems.

11. The re-licensing of hydropower projects should provide for adequate amount and timing of water flow, in addition to fish passage.

12. Third party environmental inspectors should be required on all projects to provide for independent monitoring and permit compliance.

13. Resource sensitivity training modules should be developed specific to each project, construction procedures and habitat types found within the project impact area. This training should be provided to all contractors and sub-contractors that are anticipated to work in or adjacent to areas that support sensitive habitats.

The SAFMC recommends the following specific concerns and issues be addressed by the Federal Energy Regulatory Commission, Minerals Management Service, and/or the U.S. Army Corps of Engineers prior to approval of any license, application, or permit.

A. The following requirements should apply to any permit to drill any exploratory well or wells in any Lease Sale with the potential to affect EFH in the SAFMC's jurisdiction. These concerns and issues should also be included in a new EIS for any future Outer Continental Shelf (OCS) Leasing Plan:

1. Identification of the on-site fisheries resources, including both pelagic and benthic communities, that inhabit, spawn, or migrate through the lease sites with special focus on those specific lease blocks where industry has expressed specific interest in the pre-lease phases of the leasing process. Particular attention should be given to critical life history stages (i.e. eggs and larvae) that are most sensitive to oil spills and seismic exploration.

2. Identification of on-site or potentially affected state or federally-listed species (e.g. endangered, threatened, special concern, etc.), marine mammals, pelagic birds, diadromous fishes, and all species regulated under federal fishery management plans.

3. Determination of impacts of all exploratory and development activities on the fisheries resources prior to MMS approval of any applications for permits to drill

in the Exploratory Unit area, including effects of seismic survey signals on fish behavior, eggs and larvae.

4. Identification of commercial and recreational fishing activities in the vicinity of the lease or Exploratory Unit area, their season of occurrence and intensity, and any impacts whether temporary or permanent on the potential to continue those activities associated with the project or activity.

5. Determination of the physical and chemical oceanographic and meteorological characteristics of the area through field studies by MMS or the applicant, including on-site direction and velocity of currents and tides, sea states, temperature, salinity, water quality, wind storms frequencies, and intensities and icing conditions. Such studies must be required prior to approval of any exploration plan submitted in order to have adequate information upon which to base decisions related to site-specific proposed activities. Studies should include detailed characterization of seasonal surface currents and likely spill trajectories.

6. Description of required monitoring activities to be used to evaluate environmental conditions, and assess the impacts of exploration activities in the lease area or the Exploratory Unit.

7. Identification of the quantity, composition, and method of disposal of solid and liquid wastes and pollutants likely to be generated by offshore, onshore, and transportation operations associated with oil and gas exploration development and transportation.

8. Development of an oil spill contingency plan which includes oil spill trajectory analyses specific to the area of operations, dispersant-use plan including a summary of toxicity data for each dispersant, identification of response equipment and strategies, establishment of procedures for early detection and timely notification of an oil spill, and "chain-of-command" and notification procedures inclusive of all local, state and federal agencies and agency personnel to be notified when an oil spill is discovered, as well as defined and specific actions to be taken after discovery of an oil spill.

9. Mapping of environmentally sensitive areas (e.g., spawning aggregations of snappers and groupers); coral resources and other significant benthic habitats (e.g., tilefish mudflats) along the edge of the continental shelf (including the upper slope); calico scallop, royal red shrimp, and other productive benthic fishing grounds; other special biological resources; and northern right whale calving grounds and migratory routes, and subsequent deletion from inclusion in the respective lease block(s).

10. Planning for oil and gas product transport should be done to determine methods of transport, pipeline corridors, and onshore facilities.

11. The applicant, or MMS, must provide an analysis of biological community dynamics, and pathways and flows of energy, to ascertain accumulation of toxins and impacts on biological communities.

12. Due to the critical nature of canyons and steep relief to important fisheries (e.g. billfishes, swordfish and tunas) an evaluation of shelf-edge and down-slope dynamics, and a resource assessment to determine transport and fate of contaminants should be required.

13. Discussion of the potential adverse impacts upon fisheries resources of the discharges of all drill cuttings and all drilling muds that may be approved for use in the lease area or the Exploration Unit, as well as discharges associated with production activities (i.e. produced waters). This should include: physical and chemical effects upon pelagic and benthic species and communities, including spawning behavior, effects on eggs and larval stages; effects upon sight-feeding species of fish; and analysis of methods and assumptions underlying the model used to predict the dispersion of discharged muds and cuttings from exploration activities.

14. Discussion of secondary impacts affecting fishery resources associated with onshore oil and gas related development such as storage and processing facilities, dredging and dredged material disposal, roads and rail lines, fuel and electrical transmission line routes, waste disposal, and others.

B. The following requirements should apply to any permit or license to construct LNG gas pipelines and related facilities with the potential to affect EFH in the SAFMC's jurisdiction:

1. The least damaging construction method for traversing reef tracts and deepwater corals should be integrated into the project design.

2. Hydrotest chemicals that may be harmful to fish and wildlife resources shall not be discharged into waters of the United States.

3. Geotechnical studies shall be completed to ensure that the geology of the area is appropriate for the construction method and that geological risks are appropriately mitigated.

4. All work vessels associated with construction that traverses any reef system should be equipped with standard navigation aids, safety lighting and communication equipment. A vessel monitoring system with global positioning system will be employed to continuously monitor all vessel movements and locations in real time.

5. Any anchor placement should completely avoid corals and be diver verified. In addition, measures to avoid anchor sweep should be developed and implemented.

6. Appropriate exclusion zones should be designated around sensitive marine habitats.

7. Pre- and post-project monitoring should be completed in addition to monitoring during construction. The pre-project monitoring should establish pre-project conditions; project monitoring should examine if unanticipated impacts are occurring and if corrective actions are needed; and post-project (immediate and long-term) monitoring should document impacts to resources resulting from the project, and any recovery from those impacts.

8. All feasible avoidance and minimization measures must be used to protect deepwater coral communities. Those measures must be fully described in detail prior to authorization of any permit or license.

9. A contingency plan should be required to address catastrophic blowouts or more chronic material losses from LNG facilities, including trajectory and other impact analyses and remediation measures and responsibilities.

10. Periodic long-term monitoring of pipelines and nearby deepwater resources should be conducted to evaluate the environmental effects of these installations on deepwater marine communities.

11. Appropriate mitigation should be developed in concert with the NMFS Habitat Conservation Division to offset unavoidable impacts.

C. The requirement listed below should apply to any relevant permit or license to construct windfarms or hydroturbine energy producing facilities with the potential to affect EFH in the SAFMC jurisdiction. To date, such projects are conceptual, yet reasonably foreseeable as future proposed actions. Given the existing information, it is reasonable to conclude that such projects may have an impact on EFH. However, at this time sufficient information is not available to make general project-type recommendations.

1. Submarine cables should be placed in a manner that avoids impacts to EFH. The best available technologies should be used to install such cables to avoid and minimize temporary and long-term impacts to EFH. If placed on the seabed, cables should be anchored and/or stabilized, and stability analyses should be conducted to ensure that the cable can withstand a 100-year storm event in appropriate water depths.

2. Many of the areas designated as EFH are important to protected resources (e.g., endangered and threatened species and marine mammals) in the region. Direct and indirect impacts may result from noise, electromagnetic fields, vessel traffic, pollutants/water quality issues, alteration of the benthos and habitat degradation or habitat exclusion. The degree of impact can depend on the species, the type of

turbine, the method of installation, site characteristics and the layout and size of the facility. Therefore, any EIS prepared for the construction, operation or decommissioning of a wind energy generating facility should include maps of species' ranges, migratory pathways, and use of habitat as part of an evaluation of direct and cumulative impacts to protected resources.

D. The following requirements should apply to the re-licensing of hydropower plants on rivers draining to waters under SAFMC jurisdiction:

1. The construction of fish ladders should be implemented into the project design to provide for the safe and effective passage of fish to and from vital upstream habitats.
2. Instream flows prescriptions should ensure adequate quality, timing, and amount of water flow.

SAFMC Policy and Position on Previous Oil and Gas Exploration Proposals

The SAFMC urged the Secretary of Commerce to uphold the 1988 coastal zone inconsistency determination of the State of Florida for the respective plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS-G6520 (Pulley Ridge Block 799) and by Union Oil Company of California for Lease OCS-G6491/6492 (Pulley Ridge Blocks 629 & 630). Both plans of exploration involved lease blocks lying within the lease area comprising the offshore area encompassed by Part 2 of Lease Sale 116, and south of 26° North latitude. The Council's objection to the proposed exploration activities was based on the potential degradation or loss of extensive live bottom and other habitat essential to fisheries under Council jurisdiction.

The SAFMC also supported North Carolina's determination that the plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS Manteo Unit are not consistent with North Carolina's Coastal Zone Management program.

The Council has expressed concern to the Outer Continental Shelf Leasing and Development Task Force about the proposed area and recommended that no further exploration or production activity be allowed in the areas subject to Presidential Task Force Review (the section of Sale 116 south of 26° N latitude).

The following section addresses the recommendations, concerns and issues expressed by the South Atlantic Council (Source: Memorandum to Regional Director, U.S. Fish and Wildlife Service, Atlanta, Georgia from Regional Director, Gulf of Mexico OCS Region dated October 27, 1995):

"The MMS, North Carolina, and Mobil entered into an innovative Memorandum of Understanding on July 12, 1990, in which the MMS agreed to prepare an Environmental Report (ER) on proposed drilling offshore North Carolina. The scope of the ER prepared by the MMS was more comprehensive than an EIS would be. The normal scoping

process used in preparation of a NEPA-type document would not only 'identify significant environmental issues deserving of study' but also 'de-emphasize insignificant issues, narrowing the scope' (40 CFR 1500.4) by scoping out issues not ripe for decisions.

Of particular interest to North Carolina are not the transient effects of exploration, but rather the downstream and potentially broader, long-term effects of production and development. The potential effects associated with production and development would normally be "scoped out" of the (EIS-type) document and would be the subject of extensive NEPA analysis only after the exploration phase proves successful, and the submittal of a full-scale production and development program has been received for review and analysis. The ER addressed three alternatives: the proposed Mobil plan to drill a single exploratory well, the no-action alternative and the alternative that the MMS approve the Mobil plan with specific restrictions (monitoring programs and restrictions on discharges). The ER also analyzes possible future activities, such as development and production, and the long-term environmental and socioeconomic effects associated with such activities. The MMS assured North Carolina that all of the State's comments and concerns would be addressed in the Final ER (USDOI 1990).

The MMS also funded a Literature Synthesis study (USDOI MMS 1993a) and a Physical Oceanography study (USDOI MMS 1994), both recommended by the Physical Oceanography Panel and the Environmental Sciences Review Panel (ESRP). Mobil also submitted a draft report to the MMS titled *Characterization of Currents at Manteo Block 467 off Cape Hatteras, North Carolina*. The MMS also had a Cooperative Agreement with the Virginia Institute of Marine Science to fund a study titled *Seafloor Survey in the Vicinity of the Manteo Prospect Offshore North Carolina* (USDOI MMS 1993b). The MMS had a Cooperative Agreement with East Carolina University to conduct a study titled *Coastal North Carolina Socioeconomic Study* (USDOI MMS 1993c). The above-mentioned studies were responsive to the ESRP's recommendations as well as those of the SAFMC and the State of North Carolina."

Copies of these studies can be acquired from the address below:
Minerals Management Service, Technical Communication Services
MS 4530 381 Elden Street
Herndon, VA 22070-4897 (703) 787-1080

In addition, by letter dated November 21, 2003, the SAFMC provided the following recommendations on the AES Ocean Express LNG pipeline project:

- The deepwater touch-down route should be pre-inspected by ROV and the pipeline right of way shall be clear of all deepwater resources;
- Adjust deepwater touchdown position to maintain an appropriate buffer from any such deepwater resources;
- Require deepwater resources, other EFH and the deepwater touchdown position be mapped by ROV to confirm the resource position in relation to the installed pipeline;

- Conduct pre-installation video surveys to select the route that maximizes avoidance of these deepwater coral and live bottom habitats; and
- Monitor pipelines and nearby deepwater resources after installation to evaluate the environmental effects of these installations on deepwater marine communities.

References

SAFMC. 1998a. Final Habitat Plan for the South Atlantic region: Essential Fish Habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, SC 29407-4699. 457 pp. + appendices.

SAFMC. 1998b. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, SC 29407-4699. 136pp.

USDOI, MMS. 1990. Atlantic Outer Continental Shelf, Final Environmental Report on Proposed Exploratory Drilling Offshore North Carolina, Vols. I-III.

USDOI, MMS. 1993a. North Carolina Physical Oceanography Literature Study. Contract No. 14-35-0001-30594.

USDOI, MMS. 1993b. Benthic Study of the Continental Slope Off Cape Hatteras, North Carolina. Vols. I-III. MMS 93-0014, -0015, -0016.

USDOI, MMS. 1993c. Coastal North Carolina Socioeconomic Study. Vols. I-V. MMS 93-0052, -0053, -0054, -0055, and -0056.

USDOI, MMS. 1994. North Carolina Physical Oceanographic Field Study. MMS 94-0047.

SAFMC Policy Statement Concerning Alterations to Riverine, Estuarine and Nearshore Flows

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of the essential fish habitats (EFH) and habitat areas of particular concern (EFH-HAPCs) associated with alterations of riverine, estuarine and nearshore flows. Such hydrologic alterations occur through activities such as flood control reservoir and hydropower operations, water supply and irrigation withdrawals, deepening of navigation al channels and inlets, and other modifications to the normative hydrograph. The policies are designed to be consistent with the overall

habitat protection policies of the SAFMC as formulated and adopted in the Habitat Plan (October 1998) and the Comprehensive EFH Amendment (October 1998).

The findings presented below assess the threats to EFH potentially posed by activities related to the alteration of flows in southeast rivers, estuaries and nearshore ocean habitats, and the processes whereby those resources are placed at risk. The policies established in this document are designed to avoid, minimize and offset damage caused by these activities, in accordance with the general habitat policies of the SAFMC as mandated by law.

EFH at Risk from Flow-Altering Activities

The SAFMC finds:

1) In general, the array of existing and proposed flow-altering projects being considered for the Southeastern United States for states with river systems that drain into the South Atlantic Fishery Management Council area of jurisdiction together constitutes a real and significant threat to EFH under the jurisdiction of the SAFMC.

2) The cumulative effects of these projects have not been adequately assessed, including impacts on public trust marine and estuarine resources (especially diadromous species), use of public trust waters, public access, state and federally protected species, state critical habitat, SAFMC-designated EFH and EFH-HAPCs.

3) Individual proposals resulting in hydrologic alterations rarely provide adequate assessments or consideration of potential damage to fishery resources under state and federal management. Historically, emphasis has been placed on the need for human water supply, hydropower generation, agricultural irrigation, flood control and other human uses. Environmental considerations have been dominated by compliance with limitations imparted by the Endangered Species Act for shortnose sturgeon, and/or through provisions of Section 18 of the Federal Power Act, as administered by the Federal Energy Regulatory Commission, which applies to the provision of passage for anadromous species, as well as the provisions of the Fish and Wildlife Act.

4) Opportunities to avoid and minimize impacts of hydrologic alterations on fishery resources, and offsets for unavoidable impacts have rarely been proposed or implemented.

5) Hydrologic alterations have caused impacts to a variety of habitats including:

    a) waters, wetlands and benthic habitats near the discharge and withdrawal points, especially where such waters are used for spawning by anadromous species;
    b) waters, wetlands and benthic habitats in the area downstream of discharge or withdrawal points;
    c) waters wetlands and benthic habitats in receiving estuaries of southeast rivers; and
    d) waters and benthic habitats of nearshore ocean habitats receiving estuarine discharge.

6) Certain riverine, estuarine and nearshore habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and threatened by large-scale, long-term or frequent hydrologic alterations:

e) freshwater riverine reaches and/or wetlands used for anadromous spawning;
f) downstream freshwater, brackish and mid-salinity portions of rivers and estuaries serving as nursery areas for anadromous and estuarine-dependant species; and
g) nearshore oceanic habitats off estuary mouths.

7) Large sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC**,** as well as the Mid-Atlantic Fishery Management Council (MAFMC) in the case of North Carolina. Potentially affected species and their EFH under federal management include (SAFMC, 1998) include:

a) summer flounder (various nearshore waters, including the surf zone and inlets; certain offshore waters).
b) bluefish (various nearshore waters, including the surf zone and inlets)
c) red drum (ocean high-salinity surf zones and unconsolidated bottoms in the nearshore).
d) many snapper and grouper species (live hard bottom from shore to 600 feet, and – for estuarine-dependent species [e.g., gag grouper and gray snapper] – unconsolidated bottoms and live hard bottoms to the 100 foot contour).
e) black sea bass (various nearshore waters, including unconsolidated bottom and live hard bottom to 100 feet, and hard bottoms to 600 feet).
f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas, including the surf zone and inlets).
g) coastal migratory pelagics (e.g., king mackerel, Spanish mackerel) (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream; all coastal inlets).
h) corals of various types (hard substrates and muddy, silt bottoms from the subtidal to the shelf break).
i) areas identified as EFH for Highly Migratory managed by the Secretary of Commerce (e.g., sharks / inlets and nearshore waters, including pupping and nursery grounds).

8) Projects which entail hydrologic alterations also threaten important fish habitats for anadromous species under federal, interstate and state management (in particular, riverine spawning habitats, riverine and estuarine habitats, including state designated areas - e.g. Primary and Secondary Nursery Areas of North Carolina), as well as essential overwintering grounds in nearshore and offshore waters. All diadromous species are under management by the Atlantic States Marine Fisheries Commission and the states. The SAFMC also identified essential habitats of anadromous and catadromous species in the region (inlets and nearshore waters).

9) Numerous habitats that have been by these projects causing hydrologic alterations have been identified as EFH-HAPCs by the SAFMC. The specific fishery management plan is provided in parentheses:

   a) all nearshore hard bottom areas (SAFMC, snapper-grouper).
   b) all coastal inlets (SAFMC, penaeid shrimps, red drum, and snapper-grouper).
   c) near-shore spawning sites (SAFMC, penaeid shrimps, and red drum).
   d) benthic *Sargassum* (SAFMC, snapper-grouper).
   e) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; *Phragmatopora* (worm reefs) reefs off the central coast of Florida and near-shore hard-bottom south of Cape Canaveral (SAFMC, coastal migratory pelagics).
   f) Atlantic coast estuaries with high numbers of Spanish mackerel and Cobia from ELMR, to include Bogue Sound, New River, North Carolina; Broad River, South Carolina (SAFMC, coastal migratory pelagics).
   g) Florida Bay, Biscayne Bay, Card Sound, and coral hard bottom habitat from Jupiter Inlet through the Dry Tortugas, Florida (SAFMC, Spiny Lobster)
   h) Hurl Rocks (South Carolina), The Phragmatopoma (worm reefs) off central east coast of Florida, nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral top Broward County); offshore (5-30 meters; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary (SAFMC, Coral, Coral Reefs and Live hard Bottom Habitat).
   i) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region (NMFS, Highly Migratory Species).

10) Habitats likely to be affected by projects which alter hydrologic regimes include many recognized in state level fishery management plans. Examples of these habitats include Critical Habitat Areas established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans.

Threats to Marine and Estuarine Resources from Hydrologically-Altering Activities
The SAFMC finds that activities which alter normative hydrologic regimes of rivers, estuaries, inlets and nearshore oceanic habitats threaten or potentially threaten EFH through the following mechanisms:

Direct mortality of organisms at withdrawal points through hydrologic regimes

In addition, the interactions between cumulative and direct (sub-lethal) effects among the above factors certainly trigger non-linear impacts that are completely unstudied.

SAFMC Policies for Flow-altering Projects
The SAFMC establishes the following general policies related projects resulting in hydrologic alterations, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC 1998a; SAFMC 1998b):

1) Projects should avoid, minimize and where possible offset damage to EFH and EFH-HAPCs.

2) Projects requiring expanded EFH consultation should provide detailed analyses of possible impacts to each type of EFH, with careful and detailed analyses of possible impacts to EFH-HAPCs and state Critical Habitat Areas (CHAs), including short and long term, and population and ecosystem scale effects. Agencies with oversight authority should require expanded EFH consultation.

3) Projects requiring expanded EFH consultation should provide a full range of alternatives, along with assessments of the relative impacts of each on each type of EFH, HAPC and CHAs.

4) Projects should avoid impacts on EFH, HAPCs and CHAs that are shown to be avoidable through the alternatives analysis, and minimize impacts that are not.

5) Projects should include assessments of potential unavoidable damage to EFH and other marine resources, using conservative assumptions.

6) Projects should be conditioned on the avoidance of avoidable impacts, and should include compensatory mitigation for all reasonably predictable impacts to EFH, taking into account uncertainty about these effects. Mitigation should be local, up-front and in-kind, and should be adequately monitored, wherever possible.

7) Projects should include baseline and project-related monitoring adequate to document pre-project conditions and impacts of the projects on EFH.

8) All assessments should be based upon the best available science, and be appropriately conservative so follow and precautionary principles as developed for various federal and state policies.

9) All assessments should take into account the cumulative impacts associated with other projects in the same southeast watershed.

References

SAFMC. 1998a. Final habitat plan for the South Atlantic region: Essential Fish Habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. 457 pp plus appendices.

SAFMC. 1998b. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 136pp.

SAFMC Policy for Protection and Enhancement of Marine Submerged Aquatic Vegetation (SAV) Habitat

The South Atlantic Fishery Management Council (SAFMC) and the Habitat and Environmental Protection Advisory Panel has considered the issue of the decline of Marine Submerged Aquatic Vegetation SAV (or seagrass) habitat in Florida and North Carolina as it relates to Council habitat policy. Subsequently, the Council's Habitat Committee requested that the Habitat Advisory Panel develop the following policy statement to support Council efforts to protect and enhance habitat for managed species.

Description and Function

In the South Atlantic region, SAV is found primarily in the states of Florida and North Carolina where environmental conditions are ideal for the propagation of seagrasses. The distribution of SAV habitat is indicative of its importance to economically important fisheries: in North Carolina, total SAV coverage is estimated to be 200,000 acres; in Florida, the total SAV coverage is estimated to be 2.9 million acres. SAV serves several valuable ecological functions in the marine systems where it occurs. Food and shelter afforded by SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that is important both to the overall system ecology as well as to commercial and recreationally important fisheries. SAV habitat is valuable both ecologically as well as economically; as feeding, breeding, and nursery ground for numerous estuarine species, SAV provides for rich ecosystem diversity. Further, a number of fish and shellfish species, around which is built several vigorous commercial and recreational fisheries, rely on SAV habitat for a least a portion of their life cycles. For more detailed discussion, please see Appendix 1.

Status

SAV habitat is currently threatened by the cumulative effects of overpopulation and consequent commercial development and recreation in the coastal zone. The major anthropogenic threats to SAV habitat include:

(1) mechanical damage due to:
- (a) propeller damage from boats,
- (b) bottom-disturbing fish harvesting techniques,
- (c) dredging and filling;

(2) biological degradation due to:
- (a) water quality deterioration by modification of temperature, salinity, and light attenuation regimes;
- (b) addition of organic and inorganic chemicals.

SAV habitat in both Florida and North Carolina has experienced declines from both natural and anthropogenic causes. However, conservation measures taken by state and federal agencies have produced positive results. The national Marine Fisheries Service has produced maps of SAV habitat in the Albemarle-Pamlico Sound region of North Carolina to help stem the loss of this critical habitat. The threats to this habitat and the

potential for successful conservation measures highlight the need to address the decline of SAV. Therefore, the South Atlantic Council recommends immediate and direct action be taken to stem the loss of this essential habitat. For more detailed discussion, please see Appendix 2.

Management

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws and regulations apply to modifications, either direct or indirect, to SAV habitat. However, to date the state and federal regulatory process has accomplished little to slow the decline of SAV habitat. Furthermore, mitigative measures to restore or enhance impacted SAV have met with little success. These habitats cannot be readily restored; the South Atlantic Council is not aware of any seagrass restoration project that has ever prevented a net loss of SAV habitat. It has been difficult to implement effective resource management initiatives to preserve existing seagrass habitat resources due to the lack of adequate documentation and specific cause/effect relationships. (for more detailed discussion, please see Appendix 3)

Because restoration/enhancement efforts have not met with success, the South Atlantic Council considers it imperative to take a directed and purposeful action to protect remaining SAV habitat. The South Atlantic Council strongly recommends that a comprehensive strategy to address the disturbing decline in SAV habitat in the South Atlantic region. Furthermore, as a stepping stone to such a long-term protection strategy, the South Atlantic Council recommends that a reliable status and trend survey be adopted to verify the scale of local declines of SAV.

The South Atlantic Council will address the decline of SAV, and consider establishing specific plans for revitalizing the SAV resources of the South Atlantic region. This may be achieved by the following integrated triad of efforts:

Planning

- The Council promotes regional planning which treats SAV as a integral part of an ecological system.

- The Council supports comprehensive planning initiatives as well as interagency coordination and planning on SAV matters.

- The Council recommends that the Habitat Advisory Panel members actively seek to involve the Council in the review of projects which will impact, either directly or indirectly, SAV habitat resources.

Monitoring and Research

- Periodic surveys of SAV in the region are required to determine the progress toward the goal of a net resource gain.

- The Council supports efforts to
  (1) standardize mapping protocols,

(2) develop a Geographic Information System databases for essential habitat including seagrass, and
(3) (3) research and document causes and effects of SAV decline including the cumulative impacts of shoreline development.

Education and Enforcement

- The Council supports education programs designed to heighten the public's awareness of the importance of SAV. An informed public will provide a firm foundation of support for protection and restoration efforts.

- Existing regulations and enforcement need to be reviewed for their effectiveness.

- Coordination with state resource and regulatory agencies should be supported to assure that existing regulations are being enforced.

SAFMC SAV Policy Statement- Appendix 1

DESCRIPTION AND FUNCTION

Worldwide, Submerged Aquatic Vegetation (SAV) constitutes one of the most conspicuous and common shallow-water habitat types. These angiosperms have successfully colonized standing and flowing fresh, brackish, and marine waters in all climatic zones, and most are rooted in the sediment. Marine SAV beds occur in the low intertidal and subtidal zones and may exhibit a wide range of habitat forms, from extensive collections of isolated patches to unbroken continuous beds. The bed is defined by the presence of either aboveground vegetation, its associated root and rhizome system (with living meristem), or the presence of a seed bank in the sediments, as well as the sediment upon which the plant grows or in which the seed back resides. In the case of patch beds, the unvegetated sediment among the patches is considered seagrass habitat as well.

There are seven species of seagrass in Florida's shallow coastal areas: turtle grass (*Thalassia testudium*); manatee grass (*Syringodium filiforme*); shoal grass (*Halodule wrightii*); star grass (*Halophila engelmanni*); paddle grass (*Halophila decipiens*); and Johnson's seagrass (*Halophila johnsonii*) (See distribution maps in Appendix 4). Recently, *H. johnsonii* has been proposed for listing by the National Marine Fisheries Service as an endangered plant species. Areas of seagrass concentration along Florida's east coast are Mosquito Lagoon, Banana River, Indian River Lagoon, Lake Worth and Biscayne Bay. Florida Bay, located between the Florida Keys and the mainland, also has an abundance of seagrasses, but is currently experiencing an unprecedented decline in SAV distribution.

The three dominant species found in North Carolina are shoalgrass (*Halodule wrightii),* eelgrass (*Zostera marina*), and widgeongrass (*Ruppia maritima*). Shoalgrass, a subtropical species has its northernmost distribution at Oregon Inlet, North Carolina. Eelgrass, a temperate species, has its southernmost distribution in North Carolina. Areas

of seagrass concentration in North Carolina are southern and eastern Pamlico Sound, Core Sound, Back Sound, Bogue Sound and the numerous small southern sounds located behind the beaches in Onslow, Pender, Brunswick, and New Hanover Counties (See distribution maps in Appendix 4 [of Habitat Plan (SAFMC 1998a)].

Seagrasses serve several valuable ecological functions in the marine estuarine systems where they occur. Food and shelter afforded by the SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that are important both ecologically and to commercial and recreational fisheries. Organic matter produced by these seagrasses is transferred to secondary consumers through three pathways: herbivores that consume living plant matter; detritivores that exploit dead matter; and microorganisms that use seagrass-derived particulate and dissolved organic compounds. The living leaves of these submerged plants also provide a substrate for the attachment of detritus and epiphytic organisms, including bacteria, fungi, meiofauna, micro- and marcroalgae, macroinvertebrates. Within the seagrass system, phytoplankton are also present in the water column, and macroalgae and microalgae are associated with the sediment. No less important is the protection afforded by the variety of living spaces in the tangled leaf canopy of the grass bed itself. In addition to biological benefits, the SAVs also cycle nutrients and heavy metals in the water and sediments, and dissipate wave energy (which reduces shoreline erosion and sediment resuspension).

There are several types of association fish may have with the SAVs. Resident species typically breed and carry out much of their life history within the meadow (e.g., gobiids and syngnathids). Seasonal residents typically breed elsewhere, but predictably utilize the SAV during a portion of their life cycle, most often as a juvenile nursery ground (e.g., sparids and lutjanids). Transient species can be categorized as those that feed or otherwise utilize the SAV only for a portion of their daily activity, but in a systematic or predictable manner (e.g., haemulids).

In Florida many economically important species utilize SAV beds as nursery and/or spawning habitat. Among these are spotted seatrout (*Cynoscion nebulosus*), grunts (Heaemulids), snook (*Centropomus sp.*), bonefish (*Albula vulpes*), tarpon (*Megalops atlanticus*) and several species of snapper (Lutianids) and grouper (Serranids). Densities of invertebrate organisms are many times greater in seagrass beds than in bare sand habitat. Penaeid shrimp, spiny lobster (*Panulirus argus*), and bay scallops (*Argopecten irradians*) are also dependent on seagrass beds.

In North Carolina 40 species of fish and invertebrates have been captured on seagrass beds. Larval and juvenile fish and shellfish including gray trout (*Cynoscion regalis*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), mullet (*Mugil cephalus)*, spot (*Leiostomus xanthurus*), pinfish (*Orthopristis chrysoptera*), gag (*Mycteroperca microlepis*), white grunt (*Haemulon plumieri*), silver perch (*Bairdiella chrysoura*), summer flounder (*Paralichthys dentatus*), southern flounder (*P. lethostigma*), blue crabs (*Callinectes sapidus*), hard shell clams (*Mercenaria mercenaria*), and bay scallops (*Argopecten irradains*) utilize the SAV beds as nursery areas. They are the sole nursery grounds for bay scallops in North Carolina. SAV meadows are also frequented

by adult spot, spotted seatrout, bluefish (*Pomatomus saltatrix*), menhaden (*Brevortia tyrannus*), summer and southern flounder, pink and brown shrimp, hard shell clams, and blue crabs. Offshore reef fishes including black sea bass (*Centropristis striata*), gag (*Mycteroperca microlepis*), gray snapper (*Lutjanus griseus*), lane snapper (*Lutjanus synagris*), mutton snapper (*Lutjanus annalis*), and spottail pinfish (*Diplodus holbrooki*). Ospreys, egrets, herons, gulls and terns feed on fauna in SAV beds, while swans, geese, and ducks feed directly on the grass itself. Green sea turtles (*Chelonia mydas*) also utilize seagrass beds, and juveniles may feed directly on the seagrasses.

SAFMC SAV Policy Statement- Appendix 2

Status

The SAV habitat represents a valuable natural resource which is now threatened by overpopulation in coastal areas. The major anthropogenic activities that impact seagrass habitats are: 1) dredging and filling, 2) certain fish harvesting techniques and recreational vehicles, 3) degradation of water quality by modification of normal temperature, salinity, and light regimes, and 4) addition of organic and inorganic chemicals. Although not caused by man, disease ("wasting disease" of eelgrass) has historically been a factor. Direct causes such as dredging and filling, impacts of bottom disturbing fishing gear, and impacts of propellers and boat wakes are easily observed, and can be controlled by wise management of our seagrass resources (See Appendix 3). Indirect losses are more subtle and difficult to assess. These losses center around changes in light availability to the plants by changes in turbidity and water color. Other indirect causes of seagrass loss may be ascribed to changing hydrology which may in turn affect salinity levels and circulation. Reduction in flushing can cause an increase in salinity and the ambient temperature of a water body, stressing the plants. Increase in flushing can mean decreased salinity and increased turbidity and near-bottom mechanical stresses which damage or uproot plants.

Increased turbidity and decreasing water transparency are most often recognized as the cause of decreased seagrass growth and altered distribution of the habitats. Turbidity may result from upland runoff, either as suspended sediment or dissolved nutrients. Reduced transparency due to color is affected by freshwater discharge. The introduction of additional nutrients from terrigenous sources often leads to plankton blooms and increased epiphytization of the plants, further reducing light to the plants. Groundwater enriched by septic systems also may infiltrate the sediments, water column, and near-shore seagrass beds with the same effect. Lowered dissolved oxygen is detrimental to invertebrate and vertebrate grazers. Loss of these grazers results in overgrowth by epiphytes.

Large areas of Florida where seagrasses were abundant have now lost these beds from both natural and man-induced causes. (This is not well documented on a large scale except in the case of Tampa Bay). One of these depleted areas is Lake Worth in Palm Beach County. Here, dredge and fill activities, sewage disposal and stormwater runoff have almost eliminated this resource. North Biscayne Bay lost most of its seagrasses

from urbanization. The Indian River Lagoon has lost many seagrass beds from stormwater runoff has caused a decrease in water transparency and reduced light penetration. Many seagrass beds in Florida have been scarred from boat propellers disrupting the physical integrity of the beds. Vessel registrations, both commercial and recreational, have tripled from 1970-71 (235, 293) to 1992-93 (715,516). More people engaged in marine activities having an effect on the limited resources of fisheries and benthic communities, Florida's assessment of dredging/propeller scar damage indicates that Dade, Lee, Monroe, and Pinellas Counties have the most heavily damaged seagrass beds. Now Florida Bay, which is rather remote from human population concentrations, is experiencing a die-off of seagrasses, the cause of which has not yet been isolated. Cascading effects of die-offs cause a release of nutrients resulting in algal blooms which, in turn, adversely affect other seagrass areas, and appear to be preventing recolonization and natural succession in the bay. It appears that Monroe County's commercial fish and shellfish resources, with a dockside landing value of $50 million per year, is in serious jeopardy.

In North Carolina total SAV coverage is estimated at 200,000 acres. Compared to the state's brackish water SAV community, the marine SAVs appear relatively stable. The drought and increased water clarity during the summer of 1986 apparently caused an increase in SAV abundance in southeastern Pamlico Sound and a concomitant increase in bay scallop densities. Evidence is emerging, however, that characteristics of "wasting disease" are showing up in some of the eelgrass populations in southern Core Sound, Back Sound, and Bogue Sound. The number of permits requested for development activities that potentially impact SAV populations is increasing. The combined impacts of a number of small, seemingly isolated activities are cumulative and can lead to the collapse of large seagrass biosystems. Also increasing is evidence of the secondary removal of seagrasses. Clam-kicking (the harvest of hard clams utilizing powerful propeller wash to dislodge the clams from the sediment) is contentious issue within the state of North Carolina. The scientific community is convinced that mechanical harvesting of clams damages SAV communities. The scallop fishery also could be harmed by harvest-related damage to eelgrass meadows.

SAFMC SAV Policy Statement- Appendix 3
MANAGEMENT

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws require permits for modification and/or development in SAV. These include Section 10 of the Rivers and Harbors Act (1899), Section 404 of the Clean Water Act (1977), and the states' coastal area management programs. Section 404 prohibits deposition of dredged or fill material in waters of the United States without a permit from the U.S. Army Corps of Engineers. The Fish and Wildlife Coordination Act gives federal and state resource agencies the authority to review and comment on permits, while the National Environmental Policy Act requires the development and review of Environmental Impact Statements. The Magnuson Fisheries Conservation and Management Act has been amended to require that each fishery management plan include a habitat section. The Council's habitat

subcommittee may comment on permit requests submitted to the Corps of Engineers when the proposed activity relates to habitat essential to managed species.
State and federal regulatory processes have accomplished little to slow the decline of SAV habitat. Many of the impacts cannot be easily controlled by the regulations as enforced. For example, water quality standards are written so as to allow a specified deviation from background concentration, in this manner standards allow a certain amount of degradation. An example of this is Florida's class III water transparency standard, which defines the compensation depth to be where 1% of the incident light remains. The compensation depth for seagrass is in excess of 10% and for some species is between 15 and 20%. The standard allows a deviation of 10% in the compensation depth which translates into 0.9% incident light or an order of magnitude less than what the plants require. Mitigative measures to restore or enhance impacted areas have met with little success. SAV habitats cannot be readily restored; in fact, the South Atlantic Council is not aware of any seagrass restoration project that has ever avoided a net loss of seagrass habitat. It has been difficult to implement effective resource management initiatives to preserve seagrass habitat due to the lack of documentation on specific cause/effect relationships. Even though studies have identified certain cause/effect relationships in the destruction of these areas, lack of long-term, ecosystem-scale studies precludes an accurate scientific evaluation of the long-term deterioration of seagrasses. Some of the approaches to controlling propeller scar damage to seagrass beds include: education, improved channel marking restricted access zones, (complete closure to combustion engines, pole or troll areas), and improved enforcement. The South Atlantic Council sees the need for monitoring of seagrass restoration and mitigation not only to determine success from plant standpoint but also for recovery of faunal populations and functional attributes of the essential habitat type. The South Atlantic Council also encourages long-term trend analysis monitoring of distribution and abundance using appropriate protocols and Geographic Information System approaches.

SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities

Ocean Dredged Material Disposal Sites (ODMDS) and SAFMC Policies.
The shortage of adequate upland disposal sites for dredged materials has forced dredging operations to look offshore for sites where dredged materials may be disposed. These Ocean Dredged Material Disposal Sites (ODMDSs) have been designated by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as suitable sites for disposal of dredged materials associated with berthing and navigation channel maintenance activities. The South Atlantic Fishery Management Council (SAFMC; the Council) is moving to establish its presence in regulating disposal activities at these ODMDSs. Pursuant to the Magnuson Fishery Conservation and Management Act of 1976 (the Magnuson Act), the regional fishery management Councils are charged with management of living marine resources and their habitat within the 200 mile Exclusive Economic Zone (EEZ) of the United States. Insofar as dredging and disposal activities at the various ODMDSs can impact fishery resources or essential habitat under Council jurisdiction, the following policies address the Council's role in the designation, operation, maintenance, and enforcement of activities in the ODMDSs:

The Council acknowledges that living marine resources under its jurisdiction and their essential habitat may be impacted by the designation, operation, and maintenance of ODMDSs in the South Atlantic. The Council may review the activities of EPA, COE, the state Ports Authorities, private dredging contractors, and any other entity engaged in activities which impact, directly or indirectly, living marine resources within the EEZ.

The Council may review plans and offer comments on the designation, maintenance, and enforcement of disposal activities at the ODMDSs.

ODMDSs should be designated or redesignated so as to avoid the loss of live or hard bottom habitat and minimize impacts to all living marine resources.

Notwithstanding the fluid nature of the marine environment, all impacts from the disposal activities should be contained within the designated perimeter of the ODMDSs.

The final designation of ODMDSs should be contingent upon the development of suitable management plans and a demonstrated ability to implement and enforce that plan. The Council encourages EPA to press for the implementation of such management plans for all designated ODMDSs.

All activities within the ODMDSs are required to be consistent with the approved management plan for the site.

The Council's Habitat and Environmental Protection Advisory Panel when requested by the Council will review such management plans and forward comment to the Council. The Council may review the plans and recommendations received from the advisory sub-panel and comment to the appropriate agency. All federal agencies and entities receiving

a comment or recommendation from the Council will provide a detailed written response to the Council regarding the matter pursuant to 16 U.S.C. 1852 (i). All other agencies and entities receiving a comment or recommendation from the Council should provide a detailed written response to the Council regarding the matter, such as is required for federal agencies pursuant to 16 U.S.C. 1852 (i).

ODMDSs management plans should indicate appropriate users of the site. These plans should specify those entities/ agencies which may use the ODMDSs, such as port authorities, the U.S. Navy, the Corps of Engineers, etc. Other potential users of the ODMDSs should be acknowledged and the feasibility of their using the ODMDSs site should be assessed in the management plan.

Feasibility studies of dredge disposal options should acknowledge and incorporate ODMDSs in the larger analysis of dredge disposal sites within an entire basin or project. For example, Corps of Engineers analyses of existing and potential dredge disposal sites for harbor maintenance projects should incorporate the ODMDSs as part of the overall analysis of dredge disposal sites.

The Council recognizes that EPA and other relevant agencies are involved in managing and/or regulating the disposal of all dredged material. The Council recognizes that disposal activities regulated under the Ocean Dumping Act and dredging/filling carried out under the Clean Water Act have similar impacts to living marine resources and their habitats. Therefore, the Council urges these agencies apply the same strict policies to disposal activities at the ODMDSs. These policies apply to activities including, but not limited to, the disposal of contaminated sediments and the disposal of large volumes of fine-grained sediments. The Council will encourage strict enforcement of these policies for disposal activities in the EEZ. Insofar as these activities are relevant to disposal activities in the EEZ, the Council will offer comments on the further development of policies regarding the disposal/ deposition of dredged materials.

The Ocean Dumping Act requires that contaminated materials not be placed in an approved ODMDS. Therefore, the Council encourages relevant agencies to address the problem of disposal of contaminated materials. Although the Ocean Dumping Act does not specifically address inshore disposal activities, the Council encourages EPA and other relevant agencies to evaluate sites for the suitability of disposal and containment of contaminated dredged material. The Council further encourages those agencies to draft management plans for the disposal of contaminated dredge materials. A consideration for total removal from the basin should also be considered should the material be contaminated to a level that it would have to be relocated away from the coastal zone.

Offshore and Nearshore Underwater Berm Creation

The use of underwater berms in the South Atlantic region has recently been proposed as a disposal technique that may aid in managing sand budgets on inlet and beachfront areas. Two types of berms have been proposed to date, one involving the creation of a long offshore berm, the second involving the placement of underwater berms along

beachfronts bordering an inlet. These berms would theoretically reduce wave energy reaching the beaches and/or resupply sand to the system.

The Council recognizes offshore berm construction as a disposal activity. As such, all policies regarding disposal of dredged materials shall apply to offshore berm construction. Research should be conducted to quantify larval fish and crustacean transport and use of the inlets prior to any consideration of placement of underwater berms. Until the impacts of berm creation in inlet areas on larval fish and crustacean transport is determined, the Council recommends that disposal activities should be confined to approved ODMDSs. Further, new offshore and near shore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

Open Water Disposal

The SAFMC is opposed to the open water disposal of dredged material into aquatic systems which may adversely impact habitat that fisheries under Council jurisdiction are dependent upon. The Council urges state and federal agencies, when reviewing permits considering open water disposal, to identify the direct and indirect impacts such projects could have on fisheries habitat.

The SAFMC concludes that the conversion of one naturally functioning aquatic system at the expense of creating another (marsh creation through open water disposal) must be justified given best available information.

Policies for the Protection and Restoration of Essential Fish Habitats from Marine Aquaculture

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of Essential Fish Habitat (EFH) and Essential Fish Habitat - Habitat Areas of Particular Concern (EFH-HAPCs) from potential impacts associated with marine aquaculture. The policies are designed to be consistent with the overall habitat protection policies of the SAFMC as formulated in the Habitat Plan (SAFMC 1998a) and adopted in the Comprehensive EFH Amendment (SAFMC 1998b) and the various Fishery Management Plans (FMPs) of the Council.

The findings presented below assess potential impacts, negative and positive to EFH and EFH-HAPCs posed by activities related to marine aquaculture in offshore and coastal waters, riverine systems and adjacent wetland habitats, and the processes which could place those resources at risk. The policies and recommendations established in this document are designed to avoid, minimize, and offset potential impacts from these activities, in accordance with the general habitat policies of the SAFMC as mandated by law. To address any future marine aquaculture projects in the South Atlantic region, or as legislation is developed to provide additional guidelines, the SAFMC will revise this policy when more information becomes available.

The recommendations presented here should be applied to aquaculture facilities in reasonable proximity to EFH and EFH-HAPCs, however managed. Current laws, regulations and policies differ for offshore aquaculture, and for aquaculture activities in nearshore and inshore waters managed by the various states. As the federal FMPs in the region are amended to address offshore aquaculture as "fishing" activities, then these recommendations should be factored into those FMPs. Where aquaculture remains outside federal FMP-based management, then EFH protection mechanisms for "non-fishing" activities should be used to protect EFH, wherever possible.

EFH Potentially At Risk from Marine Aquaculture Activities

The SAFMC finds that:

1. Properly sited, designed and managed marine aquaculture operations can have beneficial economic and environmental outcomes. However, marine aquaculture activities or associated support facilities can have the potential to cause adverse impacts to a variety of habitats across the shelf and to nearshore systems including:

    a) waters and benthic habitats in or near marine aquaculture sites,
    b) exposed hardbottom (e.g. reefs and live bottom) in shallow and deep waters,
    c) submerged aquatic vegetation beds,
    d) shellfish beds,
    e) spawning and nursery areas,
    f) coastal wetlands, and
    g) riverine systems and associated wetlands.

2. Certain offshore, nearshore and riverine habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and are potentially threatened by marine offshore aquaculture activities, including:

    a) coral, coral reef and live/hardbottom habitat, including deepwater coral communities;
    b) marine and estuarine waters;
    c) estuarine wetlands, including mangroves and marshes;
    d) submerged aquatic vegetation;
    e) waters that support diadromous fishes, and their spawning and nursery habitats; and
    f) waters hydrologically and ecologically connected to waters that support EFH.

3. Construction and operation of poorly sited and/or designed aquaculture support facilities could adversely impact wetlands, other EFH and protected species' habitats.

4. Sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC. Potentially affected species and their EFH under federal management include (SAFMC, 1998b):

    a) summer flounder (various nearshore waters; certain offshore waters);
    b) bluefish (various nearshore waters);

c) red drum (unconsolidated bottoms in the nearshore);
d) many snapper and grouper species (live hardbottom from shore to 600 feet, and – for estuarine-dependent species (e.g., gag grouper and gray snapper) – unconsolidated bottoms and live hardbottoms to the 100 foot contour);
e) black sea bass (various nearshore waters, including unconsolidated bottom and live hardbottom to 100 feet, and hardbottoms to 600 feet);
f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas);
g) coastal migratory pelagics (e.g., king mackerel, Spanish mackerel) (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream);
h) corals of various types and associated organisms (on hard substrates in shallow, midshelf, and deep water);
i) muddy, silt bottoms from the subtidal to the shelf break, deepwater corals and associated communities; and
j) areas identified as EFH for Highly Migratory Species managed by the Secretary of
Commerce (e.g., sharks: inlets and nearshore waters, including pupping and nursery grounds).

5. Many of the habitats potentially affected by these activities have been identified as EFH-HAPCs by the SAFMC. Each habitat and FMP is provided as follows:

a) all hardbottom areas (SAFMC snapper grouper);
b) nearshore spawning and nursery sites (SAFMC penaeid shrimps and red drum);
c) benthic Sargassum (SAFMC snapper grouper);
d) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; and *Phragmatopoma* (worm reefs) reefs off the central coast of Florida and near shore hardbottom south of Cape Canaveral (SAFMC coastal migratory pelagics);
e) Hurl Rocks (South Carolina); the *Phragmatopoma* (worm reefs) off central east coast of Florida; nearshore (0-4 meters; 0-12 feet) hardbottom off the east coast of Florida from Cape Canaveral to Broward County; offshore (5-30 meters; 15-90 feet) hardbottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary (SAFMC Coral, Coral Reefs and Live Hardbottom Habitat);
f) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region (NMFS Highly Migratory Species);
g) *Oculina* Bank HAPC and proposed deepwater coral HAPCs (SAFMC Coral, Coral Reefs and Live Hardbottom Habitat); and
h) HAPCs for diadromous species adopted by the Atlantic States Marine Fisheries Commission (ASMFC).

6. Habitats likely to be affected by marine aquaculture activities include many recognized in state-level fishery management plans and interstate fishery management plans of the ASMFC. Examples of these habitats include state-designated Critical Habitat Areas (CHAs) or Strategic Habitat Areas (SHAs) established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans. Many state-managed and interstate-managed species serve as key prey for SAFMC-managed species.

7. Scientists have documented exceptionally important habitat values for East coast Florida nearshore hardbottom used by over 500 species of fishes and invertebrates, including juveniles of many reef fishes. Equivalent scientific work is just beginning in other South Atlantic states, but life histories suggest that similar habitat use patterns will be found.

Threats to EFH from Marine Aquaculture Activities

Aquaculture-related development without adequate safeguards may threaten wild stocks and the habitats that support them. The future of some aquaculture sectors is inextricably intertwined with fisheries and the health of marine ecosystems. Some coastal forms of aquaculture are known to degrade marine ecosystems, and may result in a net loss of fish. Finfish netpens in offshore waters may pose risks similar to netpens in inshore waters, where several potential environmental issues have been documented (summarized in Naylor et al., 2000; and Nash, ed, 2005).

Experimental or small-scale commercial fish farms are unlikely to have major environmental effects. However, if marine aquaculture booms, and becomes a major means of food production, the potential impacts on marine ecosystems and wild fisheries – and the communities that depend upon them – could be significant. An analysis of the potential cumulative impacts of aquaculture development in the Southeast region is essential prior to any large-scale expansion, onshore or offshore.

The SAFMC finds the following to constitute potential threats to EFH:

1) *Escapement:* Ecological damage caused by escaped organisms has been documented, including the introduction of non-native species, and reduced fitness of wild stocks as a result of interbreeding with escapees of the same species. The likelihood of escapes from farms may be high, if cages are sited in storm-prone areas, either offshore on nearshore.

Moreover, species potentially targeted for offshore or nearshore production may spawn in netpens. Ocean fish cages are incapable of containing fish eggs. The impacts of fertilized egg releases on the health of wild fisheries could be significant if farmed fish are genetically less well adapted to the ocean environment, as a result of selective breeding, genetic engineering, or simply because animals being farmed were taken from a geographic area with different ecological conditions

2) *Spread of pathogens and use of antibiotics and other drugs:* Concentration of large numbers of animals in a small area can facilitate outbreaks of disease and parasites,

potentially jeopardizing wild stocks. Disease and parasite outbreaks can also lead producers to administer antibiotics and other drugs, usually via feed. Drugs can end up in marine ecosystems where they can select for resistant bacteria, sometimes in species targeted by fisheries (Ervik et al., 1994). Note that the U.S. Food and Drug Administration regulates the use of drugs in aquaculture and there are only a very few drugs approved for controlled and limited use.

3) *Water pollution:* Concentrated animal production operations use substantial amounts of feeds. Even very efficient operations may lose a portion of the nutrients in feeds through uneaten food and through oxygen-demanding wastes, which are transmitted to surrounding waters.

Nitrogen is the nutrient primarily responsible for eutrophication in marine waters in the U.S. southeast, resulting in algal blooms and deoxygenation. In inshore waters, both nitrogen and phosphorus are nutrients of concern.

Nutrient impacts can be considerable in oligotrophic oceanic systems at levels significantly below those used as benchmarks for pollution in inshore and estuarine waters. The importance of the surface microlayer to larval ecology and its vulnerability to perturbations from airborne or locally-sourced excess nutrients cannot be overstated. Standards and criteria for nutrient-related water quality impacts on these oceanic ecological functions do not yet exist, and compliance with state-based water quality standards and national water quality criteria for nutrients may not prevent loading-based impacts.

Fish farms may cluster geographically near infrastructure such as processing plants and transportation, like terrestrial hog farms, concentrating potential impacts. However, widely-spaced marine farms sited in areas with strong currents and strong mixing would have less localized impact.

Finally, other feed additives, including metals and persistent organic pollutants, may contribute to longer-term bioaccumulation.

SAFMC Policies for Marine Aquaculture Projects

The SAFMC establishes the following general policies related to marine aquaculture projects, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC 1998a; SAFMC 1998b):

1. The Council strongly supports thorough public review and effective regulation of marine aquaculture activities in the South Atlantic EEZ. South Atlantic fisheries are exceptionally dependent upon healthy habitat already under attack from many sources.

2. Permits should be for at least a ten-year duration with annual reporting requirements (activity reports) and a five-year comprehensive operational review with the option for revocation at any time in the event there is no prolonged activity or there is

documented adverse impacts to marine resources. Given the changes underway in coastal ecosystems in response to storm events, rising seas and introduced species, such a review cycle is essential.

3. Environmental review and performance expectation are paramount. This is a new and totally optional class of private uses being imposed on already at-risk ecosystems where unacceptable ecological cascades could occur. The Council is committed to ensuring that marine aquaculture activities are held to the same level of EFH conservation protections as are other non-fishing[1] activities.

4. The Council approves of use of therapeutic agents and feed additives, that have been approved by the FDA specifically for use in offshore open-water or net pen aquaculture.

5. The use of genetically modified and non-native species should be prohibited.

6. Given the critical nature of proper siting, the applicant should provide all needed information to evaluate in full the suitability of potential sites. If sufficient information is not provided in the application review time allotted by existing processes, the permit should be denied or held in abeyance until required information is available.

7. Monitoring plans should be developed by the applicant/permit holder and approved by NOAA Fisheries with input from the Council. Monitoring plans should be reviewed, approved, and funded prior to implementation.

8. Permitees must have adequate resources legally committed to ensure proper decommissioning of obsolete or storm-damaged facilities.

9. The issuing agency should have clear authority to repeal or condition permits in order to prevent environmental damage and exercise its authority to repeal permits if it becomes evident that environmental damage is occurring or if permit conditions are not met.

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[1] The reference to non-fishing activities is meant to clarify that the Council's role is to comment on aquaculture activities similar to process the Council uses for non-fishing activities. The MSA currently defines aquaculture as a fishing activity. However, the proposed Aquaculture Bill would remove aquaculture as a fishing activity. The Council applies the same EFH standards to both fishing and non-fishing impacts.

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Appendix E. Glossary

Acceptable Biological Catch (ABC): Maximum amount of fish stock than can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

ALS: Accumulative Landings System. NMFS database which contains commercial landings reported by dealers.

Biomass: Amount or mass of some organism, such as fish.

B_{MSY}: Biomass of population achieved in long-term by fishing at F_{MSY}.

Bycatch: Fish harvested in a fishery, but not sold or kept for personal use. Bycatch includes economic discards and regulatory discards, but not fish released alive under a recreational catch and release fishery management program.

Caribbean Fishery Management Council (CFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The CFMC develops fishery management plans for fisheries off the coast of the U.S. Virgin Islands and the Commonwealth of Puerto Rico.

Catch Per Unit Effort (CPUE): The amount of fish captured with an amount of effort. CPUE can be expressed as weight of fish captured per fishing trip, per hour spent at sea, or through other standardized measures.

Charter Boat: A fishing boat available for hire by recreational anglers, normally by a group of anglers for a short time period.

Cohort: Fish born in a given year. (See year class.)

Control Date: Date established for defining the pool of potential participants in a given management program. Control dates can establish a range of years during which a potential participant must have been active in a fishery to qualify for a quota share.

Constant Catch Rebuilding Strategy: A rebuilding strategy where the allowable biological catch of an overfished species is held constant until stock biomass reaches B_{MSY} at the end of the rebuilding period.

Constant F Rebuilding Strategy: A rebuilding strategy where the fishing mortality of an overfished species is held constant until stock biomass reached BMSY at the end of the rebuilding period.

Directed Fishery: Fishing directed at a certain species or species group.

Discards: Fish captured, but released at sea.

Discard Mortality Rate: The percent of total fish discarded that do not survive being captured and released at sea.

Derby: Fishery in which the TAC is fixed and participants in the fishery do not have individual quotas. The fishery is closed once the TAC is reached, and participants attempt to maximize their harvests as quickly as possible. Derby fisheries can result in capital stuffing and a race for fish.

Effort: The amount of time and fishing power (i.e., gear size, boat size, horsepower) used to harvest fish.

Exclusive Economic Zone (EEZ): Zone extending from the shoreline out to 200 nautical miles in which the country owning the shoreline has the exclusive right to conduct certain activities such as fishing. In the United States, the EEZ is split into state waters (typically from the shoreline out to 3 nautical miles) and federal waters (typically from 3 to 200 nautical miles).

Exploitation Rate: Amount of fish harvested from a stock relative to the size of the stock, often expressed as a percentage.

F: Fishing mortality.

Fecundity: A measurement of the egg-producing ability of fish at certain sizes and ages.

Fishery Dependent Data: Fishery data collected and reported by fishermen and dealers.

Fishery Independent Data: Fishery data collected and reported by scientists who catch the fish themselves.

Fishery Management Plan: Management plan for fisheries operating in the federal produced by regional fishery management councils and submitted to the Secretary of Commerce for approval.

Fishing Effort: Usually refers to the amount of fishing. May refer to the number of fishing vessels, amount of fishing gear (nets, traps, hooks), or total amount of time vessels and gear are actively engaged in fishing.

Fishing Mortality: A measurement of the rate at which fish are removed from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Fishing Power: Measure of the relative ability of a fishing vessel, its gear, and its crew to catch fishes, in reference to some standard vessel, given both vessels are under identical conditions.

$F_{30\%SPR}$: Fishing mortality that will produce a static SPR = 30%.

$F_{45\%SPR}$: Fishing mortality that will produce a static SPR = 45%.

F_{OY}: Fishing mortality that will produce OY under equilibrium conditions and a corresponding biomass of B_{OY}. Usually expressed as the yield at 85% of F_{MSY}, yield at 75% of F_{MSY}, or yield at 65% of F_{MSY}.

F_{MSY}: Fishing mortality that if applied constantly, would achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}

Fork Length (FL): The length of a fish as measured from the tip of its snout to the fork in its tail.

Gear restrictions: Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

Growth Overfishing: When fishing pressure on small fish prevents the fishery from producing the maximum poundage. Condition in which the total weight of the harvest from a fishery is improved when fishing effort is reduced, due to an increase in the average weight of fishes.

Gulf of Mexico Fishery Management Council (GFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The GFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Head Boat: A fishing boat that charges individual fees per recreational angler onboard.

Highgrading: Form of selective sorting of fishes in which higher value, more marketable fishes are retained, and less marketable fishes, which could legally be retained are discarded.

Individual Fishing Quota (IFQ): Fishery management tool that allocates a certain portion of the TAC to individual vessels, fishermen, or other eligible recipients.

Longline: Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. Gear is either fished on the bottom or in the water column.

Magnuson-Stevens Fishery Conservation and Management Act: Federal legislation responsible for establishing the fishery management councils and the mandatory and discretionary guidelines for federal fishery management plans.

Marine Recreational Fisheries Statistics Survey (MRFSS): Survey operated by NMFS in cooperation with states that collects marine recreational data.

Maximum Fishing Mortality Threshold (MFMT): The rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized.

Maximum Sustainable Yield (MSY): The largest long-term average catch that can be taken continuously (sustained) from a stock or stock complex under average environmental conditions.

Minimum Stock Size Threshold (MSST): The biomass level below which a stock would be considered overfished.

Modified F Rebuilding Strategy: A rebuilding strategy where fishing mortality is changed as stock biomass increases during the rebuilding period.

Multispecies fishery: Fishery in which more than one species is caught at the same time and location with a particular gear type.

National Marine Fisheries Service (NMFS): Federal agency within NOAA responsible for overseeing fisheries science and regulation.

National Oceanic and Atmospheric Administration: Agency within the Department of Commerce responsible for ocean and coastal management.

Natural Mortality (M): A measurement of the rate at which fish are removed from a population by natural causes. Natural mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Optimum Yield (OY): The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Overfished: A stock or stock complex is considered overfished when stock biomass falls below the minimum stock size threshold (MSST) (e.g., current biomass < MSST = overfished).

Overfishing: Overfishing occurs when a stock or stock complex is subjected to a rate of fishing mortality that exceeds the maximum fishing mortality threshold (e.g., current fishing mortality rate > MFMT = overfishing).

Quota: Percent or annual amount of fish that can be harvested.

Recruitment (R): Number or percentage of fish that survives from hatching to a specific size or age.

Recruitment Overfishing: The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

Scientific and Statistical Committee (SSC): Fishery management advisory body composed of federal, state, and academic scientists, which provides scientific advise to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fisheries Management Council (SAFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The SAFMC develops fishery management plans for fisheries off North Carolina, South Carolina, Georgia, and the east coast of Florida.

Spawning Potential Ratio (Transitional SPR): Formerly used in overfished definition. The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR) of a fished stock divided by the SSBR of the stock before it was fished.

% Spawning Per Recruit (Static SPR): Formerly used in overfishing determination. The maximum spawning per recruit produced in a fished stock divided by the maximum spawning per recruit, which occurs under the conditions of no fishing. Commonly abbreviated as %SPR.

Spawning Stock Biomass (SSB): The total weight of those fish in a stock which are old enough to spawn.

Spawning Stock Biomass Per Recruit (SSBR): The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

Total Allowable Catch (TAC): The total amount of fish to be taken annually from a stock or stock complex. This may be a portion of the Allowable Biological Catch (ABC) that takes into consideration factors such as bycatch.

Total Length (TL): The length of a fish as measured from the tip of the snout to the tip of the tail.

Appendix F. Shrimp Amendment 7 Scoping Comments Summary

The Council held three scoping meetings for this amendment in Cape Canaveral, FL; Atlantic Beach, NC; and Charleston, SC. Six Written letters were received. Nine individuals gave oral comments at the Cape Canaveral meeting and seven did so in Atlantic Beach. Below is a summary of comments received for each of the alternatives under each issue included in the Scoping Document for this amendment.

Issue #1 – The 15,000 lb landing requirement

Background: To address the potential overfishing of rock shrimp, latent permits and supply issues in the rock shrimp fishery a "use it or lose it" policy was implemented through Shrimp Amendment 5 (SAFMC 2002). The policy requires that rock shrimp permit holders land a minimum of 15,000 pounds of rock shrimp in any one year over a 4-year period in order to remain eligible for a rock shrimp permit.

Alternative 1. No action. Do not remove the landing requirement – fishermen who supported NOT removing the requirement maintained that those who have worked hard to maintain their landing requirement should be rewarded. They maintain that 4 years is long enough to meet this requirement. They also feel that the Council should not back down from its regulations.

Recommendation that the landing requirement be lowered and those who had no landings have their permit removed.

Alternative 2. Remove the 15,000 lb requirement – Most comments supported this alternative. Some comments maintained that the current rock shrimp fishery is very different now than when the "use it or lose it" policy was implemented and it is no longer necessary to prevent overcapitalization in this fishery.

In North Carolina, fishermen who hold a rock shrimp endorsement would be adversely affected by the landing requirement since many of them do not have regular participation on the fishery but need the ability to continue to participate in this fishery. North Carolina supported removing the landing requirement.

Fishermen who were also for removing the landing requirement also consistently cited increased fuel costs and scarcity of shrimp for not being able to meet the requirement and support its removal.

Alternative 3. Extend the time allowed to meet the 15,000 pound requirement for not more than 2 years; this would allow a total of 6 years – There was no support for

extending the landing requirement period and this alternative was removed from consideration by the Council.

Alternative 4. Allow application for renewal as an inactive permit holder. This would keep the 15,000 pound requirement but allow those individual that do not meet the requirement to renew as an inactive permit holder. Fishermen did not understand how this would work. Many fishermen requested clarification on what an inactive endorsement would mean. This alternative was later removed from Council consideration.

Issue # 2 – Permits lost due to not meeting the 15,000 lb landing requirement by 12/31/2007

Alternative 1. No action. Do not reinstate lost permits.

Several fishermen felt that if a shrimper was not eligible to apply for a permit or was eligible but didn't, then they shouldn't be allowed to do so. However, many fishermen stated that if the Council chose this alternative, then rock shrimp permits would not be worth much over the long term and those fishermen who worked hard to maintain their landing requirement will be at a disadvantage.

Alternative 2. Reinstate permits lost due to not meeting the requirement – This alternative received the most support including that of the Deepwater Shrimp Advisory Panel. Fishermen maintained that when the fishery was in need of reducing effort to prevent overcapitalization and overfishing of the stocks, those shrimpers that withdrew from the fishery played a key role in its recovery. It is therefore unfair to deny these fishermen future participation in the fishery.

Recommendation: Have a set number of endorsements available each year based on landings. This would allow Gulf boats to harvest rock shrimp in the South Atlantic if they wanted to apply for an endorsement. This person felt that this would work because high fuel prices and low landing over the past few years are limiting access to the fishery already.

Issue # 3 – Permits lost due to not renewing the rock shrimp endorsement

Alternative 1. No action. Do not reinstate permits lost. -- Input received during the Deepwater Shrimp AP meeting indicated that a number of individuals did not renew their endorsements because it was not as clear to them as it would have been had a separate limited access permit been issued.

Alternative 2. Reinstate permits lost due to non-renewal of the endorsement – This alternative received the most support. Many fishermen were not aware that endorsements had to be renewed each year. Some felt that the Council should do whatever it takes to

keep this a viable fishery and they support reinstating lost endorsements. Some maintained that lost endorsements will ultimately hurt the fishery by reducing participation too much. Also, because of high fuel prices and scarcity of rock shrimp, it is not feasible for Gulf boats catch rock shrimp in the South Atlantic to maintain their landing requirement and therefore their endorsement.

Issue # 4 – Require all shrimp permit holders to provide economic data if selected.

Alternative 1. No Action. Do not require all shrimp permit holders to provide economic data. -- This would continue to prevent the Council from conducting the legally-mandated economic analyses.

Alternative 2. Require all shrimp permit holders to provide economic data if selected. Few comments on this alternative but all in support of it.

2007 Annual Economic Survey of Federal Gulf Shrimp Permit Holders

Permit owner name: «Primary_Mailing_Recipient» Permit #: «Permit»

Vessel name: «Vessel Name» Vessel ID: «VESID»

Even if this vessel was **inactive** in 2007 please complete this survey.

Enter "**0**" if you did not have any expenses in a category. **Do not leave blank!**

Total 2007 Expenses:

- On this page we would like you to enter the total **financial expenses** (actual dollar payments) you incurred during 2007 for the operation and keeping of the vessel listed above.
- For each question enter the **sum of all 2007 expenses**.
- Please **consult the detailed instructions** if you are unsure about any question.

1. Is the owner also the captain of this vessel? ☐ Yes ☐ No

2. Total amount paid to ***hired*** crew and captain(s) of this vessel: $ _ , _ _ _ , _ _ _ .00
(For example: from IRS Form(s) 1099-MISC or equivalent)

3. Is the owner paid a captain's share? ☐ Yes ☐ No

If Yes, total amount of captain's share: $ _ , _ _ _ , _ _ _ .00

4. Total amount paid for the fuel used by this vessel in 2007: $ _ , _ _ _ , _ _ _ .00

5. a) Estimated average price of fuel in 2007: $ _ . _ _ per gallon

b) Total amount of fuel purchased: _ _ _ , _ _ _ , _ _ _ gallons

6. Total amount paid for all ***trip related*** supplies or expenses (other than fuel): $ _ , _ _ _ , _ _ _ .00
(For example: ice, groceries, oil and lubricants, freezing, packaging, and cleaning supplies)

7. a) Total amount paid for any vessel maintenance, repair, replacement, new purchase or upgrade (including engine, gear, electronics, etc.) $ _ , _ _ _ , _ _ _ .00

b) The answer to Question 7. a) includes (check all that apply):

☐ Maintenance or regular repairs ☐ Major repairs or haul-out ☐ New purchase or upgrade

8. Overhead applicable to this vessel (***including*** loan payments and vessel insurance; ***excluding*** depreciation and income taxes): $ _ , _ _ _ , _ _ _ .00
(For example: loan payments, insurance, dockage, licenses, (share of) rent, utilities, prof. services, truck expenses)

9. **Total 2007 Expenses** (the above entries should sum to this value): **$ _ _ , _ _ _ , _ _ _ .00**

Other Important Economic Information (permit #: «Permit»)**:**

10. Vessel insurance in 2007 (check all that apply): ☐ None ☐ Hull ☐ P&I

If Hull insured, enter coverage level if vessel is lost: $ _ _, _ _ _, _ _ _.00
(do not enter monthly or annual insurance premium)

11. Appraised value of this vessel (if insured) or best estimate of this value (if not insured):

a) Market value of vessel with permit (anytime in 2007): $ _ _, _ _ _, _ _ _.00

b) Market value of vessel without permit (anytime in 2007): $ _ _, _ _ _, _ _ _.00

c) Original purchase price of vessel: $ _ _, _ _ _, _ _ _.00

12. Did you have any loan(s) on your vessel at any time during 2007: ☐ Yes ☐ No

If Yes: a) Total amount you still owe at ***end of*** 2007: $ _ _, _ _ _, _ _ _.00

b) Total loan payments in 2007: $ _ _, _ _ _, _ _ _.00

Please split b) into: c) Interest paid in 2007: $ _ _, _ _ _, _ _ _.00

d) Principal repaid in 2007: $ _ _, _ _ _, _ _ _.00

13. Depreciation of vessel as claimed for tax purposes (2007): $ _ _, _ _ _, _ _ _.00

14. During 2007 this vessel was active in (check all that apply):

☐ Shrimp Fishery ☐ Other Commercial Fisheries ☐ Non-Fishing Income Activities ☐ Not Active

15. Total gross revenue generated by this vessel in commercial fisheries ***other than shrimp*** in 2007 (if none enter "0"): $ _ _, _ _ _, _ _ _.00

16. Government payments received for this vessel in 2007; for example due to imports and low shrimp prices (tariff money; trade assistance adjustment payments) or hurricanes/disaster relief (if none enter "0"): $ _ _, _ _ _, _ _ _.00

I certify that the information contained on this form is accurate and complete to the best of my knowledge:

_____ _____
Signature of person completing report Date

_____ (_____)_____
Printed name of person signing report Phone number

Please return this completed form in the enclosed prepaid envelope!

[Mail to: NMFS; Miami Lab; P.O. Box 491500; Key Biscayne, FL 33149-9916]

Thank You!

Other Questions (voluntary)

1. Would you like to receive future economic surveys in Vietnamese? ☐ Yes ☐ No
2. In the future, would you prefer to fill out this survey online rather than on paper? ☐ Yes ☐ No
3. Please use the reverse side or a separate piece of paper for any comments. We appreciate any comments concerning this survey effort and any ideas on how to improve or simplify it.