South Atlantic Coastal Migratory Pelagics Framework Action 2013

June 2013

DRAFT

Environmental Assessment Regulatory Impact Review

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Abbreviations and Acronyms Used in the FMP

ABC	acceptable biological catch
ACL	annual catch limits
AM	accountability measures
ACT	annual catch target
B	a measure of stock biomass in either weight or other appropriate unit
$\mathbf{B_{MSY}}$	the stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
$\mathbf{B_{OY}}$	the stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
$\mathbf{B_{CURR}}$	The current stock biomass
CPUE	catch per unit effort
DEIS	draft environmental impact statement
EA	environmental assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
F	a measure of the instantaneous rate of fishing mortality
$\mathbf{F_{30\%SPR}}$	fishing mortality that will produce a static SPR = 30%
$\mathbf{F_{CURR}}$	the current instantaneous rate of fishing mortality
$\mathbf{F_{MSY}}$	the rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
$\mathbf{F_{OY}}$	the rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	final environmental impact statement
FMP	fishery management plan
FMU	fishery management unit
M	natural mortality rate
MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MFMT	maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	minimum stock size threshold
MSY	maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
OY	optimum yield
RIR	regulatory impact review
SAMFC	South Atlantic Fishery Management Council
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SIA	social impact assessment
SPR	spawning potential ratio
SSC	Scientific and Statistical Committee

South Atlantic Coastal Migratory Pelagics Framework Action with Environmental Assessment, Regulatory Impact Review, and Fishery Impact Statement

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Proposed action:

Lead agency:

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Summary

The South Atlantic Council is considering changes for the Atlantic migratory group king mackerel component of the coastal migratory pelagic management unit in response to concerns about the utility of the current size limit restriction on the species (24 inches fork length (FL)) because any undersize king mackerel captured in gillnets, in excess of the 5% allowance, would be discarded dead. Additionally, potential changes in commercial trip limits for Atlantic king mackerel may help to minimize lost opportunities to fish for the species due to the current system of trip limits, which may increase the rate of harvest causing the commercial sector to close before Lent, the most lucrative part of the fishing season.

The South Atlantic Council is considering changes to the restrictions on transfer at sea and gillnet allowances for the Atlantic migratory group Spanish mackerel commercial sector. Currently transfer at sea is prohibited for any species under a commercial trip limit, and only two gillnets are allowed on a vessel. Provisions to allow a portion of a third net to be transferred from a vessel that has met the Spanish mackerel trip limit to another vessel that has not yet reached the trip limit is intended to reduce dead discards and minimize waste when catch in one net exceeds the trip limit for the vessel.

Atlantic migratory group Spanish mackerel are currently managed through a complex system of trip limit step-downs throughout the fishing year with separate trip limits the weekends during a specific time of the year, and no trip limit at all during other parts of the year. The South Atlantic Council may wish to streamline the management system for Atlantic migratory group Spanish mackerel to remove the use of the "adjusted quota" and various other elements currently contained in the management regime to increase efficiency of Spanish mackerel management in the South Atlantic.

The Framework Actions in this amendment include modification to:

- the Atlantic migratory group king mackerel minimum size limit;
- restrictions on transfer at sea and gillnet allowances for Atlantic migratory group Spanish mackerel;
- king mackerel trip commercial limits for the Florida East Coast subzone;
- the system of quota and trip limit adjustments for Atlantic migratory group Spanish mackerel.

In accordance with the provisions set forth in the Magnuson-Stevens Fishery Conservation and Management Act, the intent of the Framework Actions is to: minimize dead discards and reduce the potential of lost fishing opportunities for mackerel fishermen in the Atlantic, and optimize utilization of the resource while minimizing adverse biological impacts.

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Chapter 1. Introduction

1.1 What Actions Are Being Proposed?

Framework actions include a modification to the Atlantic migratory group king mackerel minimum size limit (recreational and/or commercial); modifications to restrictions on transfer of fish at sea and gillnet allowances for Atlantic migratory group Spanish mackerel; changes to the commercial trip limit for king mackerel in the Florida East Coast subzone; and modifications to the commercial quota and trip limit system for Atlantic migratory group Spanish mackerel.

1.2 Who is Proposing the Actions?

The South Atlantic Fishery Management Council (South Atlantic Council) is proposing the actions with approval by the Gulf of Mexico Fishery Management Council. The South Atlantic Council develops the fishery management plans and amendments, and submits them to the National Marine Fisheries Service (NMFS) who ultimately approves, disapproves, or partially approves the actions in the amendment on behalf of the Secretary of Commerce. NMFS is an agency in the National Oceanic and Atmospheric Administration.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks
- Consists of 13 voting members who are appointed by the Secretary of Commerce and 4 non-voting members
- Management area is from 3 to 200 mi off the coasts of North Carolina, South Carolina, Georgia, and Florida through the Atlantic side of Key West
- Develops management plans/amendments and recommends regulations to NMFS for implementation

1.3 Why is the South Atlantic Council Considering Action?

Atlantic Migratory Group King Mackerel

The South Atlantic Council is considering changes for the Atlantic migratory group king mackerel component of the coastal migratory pelagic management unit in response to concerns about the utility of the current size limit restriction on the species (24 inches fork length (FL)) because any undersize king mackerel captured in gillnets, in excess of the 5% allowance, would be discarded dead. Additionally, potential changes in commercial trip limits for Atlantic king mackerel may help to minimize lost opportunities to fish for the species due to the current system of trip limits, which may increase the rate of harvest causing the commercial sector to close before Lent, the most lucrative part of the fishing season.

Atlantic Migratory Group Spanish Mackerel

The South Atlantic Council is considering changes to the restrictions on transfer at sea and gillnet allowances for the Atlantic migratory group Spanish mackerel commercial sector. Currently transfer at sea is prohibited for any species under a commercial trip limit, and only two gillnets are allowed on a vessel. Provisions to allow a portion of a third net to be transferred from a vessel that has met the Spanish mackerel trip limit to another vessel that has not yet reached the trip limit is intended to reduce dead discards and minimize waste when catch in one net exceeds the trip limit for the vessel.

Atlantic migratory group Spanish mackerel are currently managed through a complex system of trip limit step-downs throughout the fishing year with separate trip limits the weekends during a specific time of the year, and no trip limit at all during other parts of the year. The South Atlantic Council may wish to streamline the management system for Atlantic migratory group Spanish mackerel to remove the use of the “adjusted quota” and various other elements currently contained in the management regime to increase efficiency of Spanish mackerel management in the South Atlantic.

The current management objectives in the joint Fishery Management Plan (FMP) for Coastal Migratory Pelagic Resources in the Gulf of Mexico and Atlantic Region (CMP FMP) (GMFMC/SAFMC 1982) as amended are:

1) The primary objective of this FMP is to stabilize yield at the maximum sustainable yield, allow recovery of overfished populations, and maintain population levels sufficient to ensure adequate recruitment.
2) To provide a flexible management system for the resource which minimizes regulatory delay while retaining substantial Council and public input in management decisions and which can rapidly adapt to changes in resource abundance, new scientific information, and changes in fishing patterns among user groups or by areas.
3) To provide necessary information for effective management and establish a mandatory reporting system for monitoring catch.
4) To minimize gear and user group conflicts.

5) To distribute the total allowable catch of Atlantic migratory group Spanish mackerel between recreational and commercial user groups based on the catches that occurred during the early to mid-1970s, which is prior to the development of the deep water run-around gillnet fishery and when the resource was not overfished.
6) To minimize waste and bycatch in the fishery.
7) To provide appropriate management to address specific migratory groups of king mackerel.
8) To optimize the social and economic benefits of the coastal migratory pelagic fisheries.

The actions proposed in the amendment specifically help to meet FMP Objectives 1, 6, 7 and 8.

Purpose for Actions

The purpose of this amendment is to modify the following management measures in the Atlantic migratory group king mackerel and Atlantic migratory group Spanish mackerel: (1) minimum size limit for king mackerel, (2) the restrictions on transfer-at-sea and gillnet allowances for Spanish mackerel, (3) the king mackerel trip limit, and (4) the system of quota and trip limit adjustments for Spanish mackerel.

Need for Actions

The need for the action is to modify current king and Spanish mackerel regulations to minimize dead discards and reduce the potential of lost fishing opportunities for mackerel fishermen in the Atlantic, and optimize utilization of the resource, while minimizing adverse biological impacts.

1.4 Which species and areas would be affected by the actions?

Three species—king mackerel, Spanish mackerel, and cobia—are included in the CMP FMP. The proposed actions in this amendment would affect king mackerel and Spanish mackerel, and could affect fishermen harvesting king mackerel and Spanish mackerel in the federal waters of North Carolina, South Carolina, Georgia, the east coast of Florida, and the Florida Keys.

The CMP FMP, approved in 1982 and implemented by regulations effective February 1983, treated king and Spanish mackerel each as one U.S. stock. The present management regime for mackerel recognizes two migratory groups of king and Spanish mackerel, the Gulf migratory group and the Atlantic migratory group.

King mackerel: These two migratory groups seasonally mix off the east coast of Florida through Monroe County, Florida. For management and assessment purposes, a boundary between these migratory groups of king mackerel was specified at the Volusia/Flagler County border on the Florida east coast in the winter (November 1 - March 31) and the Monroe/Collier County border on the Florida southwest coast in the summer (April 1 - October 31) (**Figures 1.4.1** and **1.4.2**).

Spanish mackerel: Although these two migratory groups mix in south Florida, abundance trends along each coast of Florida are different, indicating sufficient isolation between the two migratory groups. Consequently, the boundary for Spanish mackerel is fixed at the Miami-Dade/Monroe County border on Florida's southeast coast (**Figure 1.4.3**). Within the Atlantic migratory group there are different regulations in Florida (Atlantic Migratory group South) and north of Florida (Atlantic Migratory group North).

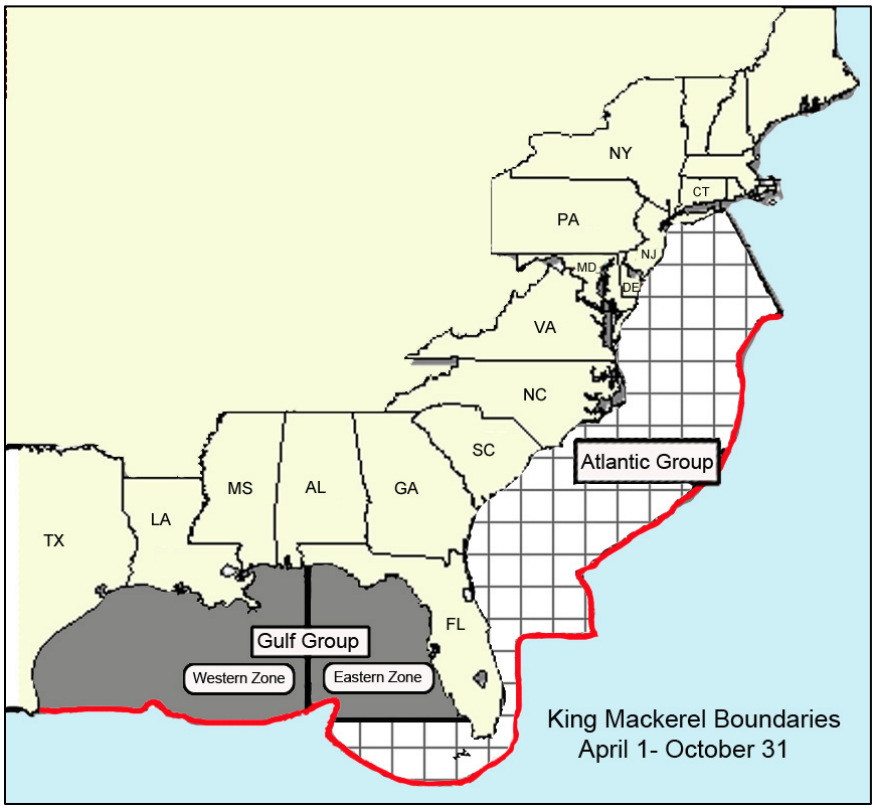

Figure 1.4.1. King mackerel seasonal boundaries April 1-October 31.

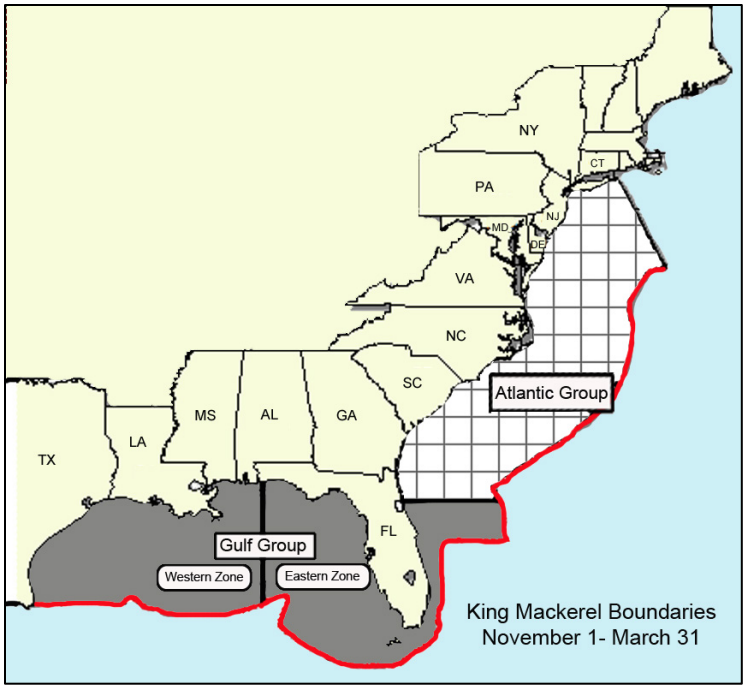

Figure 1.4.2. King mackerel seasonal boundaries November 1- March 31.

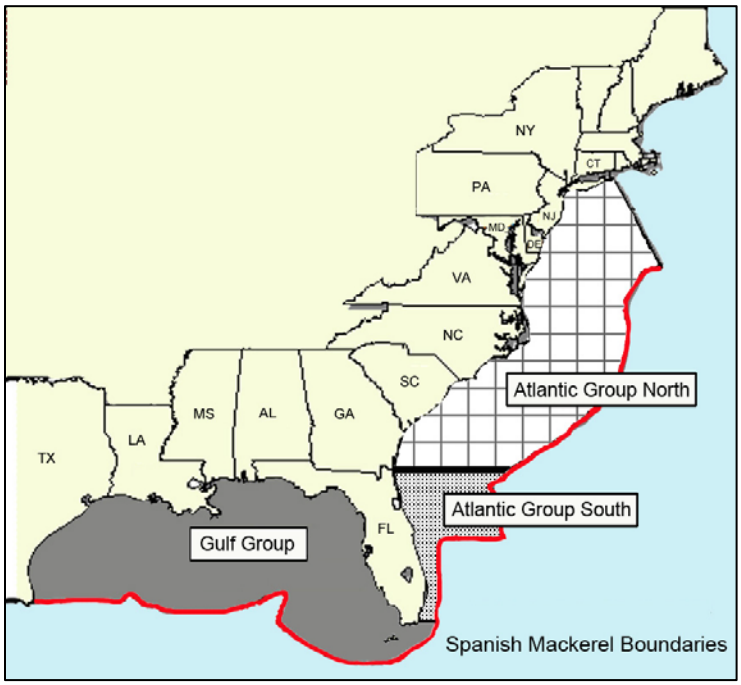

Figure 1.4.3. Spanish mackerel boundaries.

Chapter 2. Proposed Actions

Action 1: Modify the Atlantic migratory group king mackerel minimum size limit.

Alternative 1 (No Action). Do not change the Atlantic migratory group king mackerel minimum size limit of 24 inches fork length (FL) for the commercial and recreational sectors.

Alternative 2. Reduce the Atlantic migratory group king mackerel recreational and commercial minimum size limit to 23 inches FL.

Alternative 3. Reduce the Atlantic migratory group king mackerel recreational and commercial minimum size limit to 22 inches FL.

Alternative 4. Reduce the Atlantic migratory group king mackerel commercial minimum size limit to 23 inches FL for the commercial sector only, from the Georgia/Florida line south to the Miami-Dade/Monroe County line. The commercial minimum size limit in areas north of the Georgia/Florida state line and South of the Miami-Dade/Monroe County line would remain 24 inches FL. The recreational minimum size limit would remain 24 inches FL.

Discussion:

Amendment 9 to the joint Fishery Management Plan for the Coastal Migratory Pelagic Resources in the South Atlantic and Gulf of Mexico Regions (CMP FMP) (GMFMC/SAFMC 1998) included an action to increase the minimum size limit for Gulf migratory group king mackerel from 20 inches fork length (FL) FL to 24 inches FL with the intention of reducing risk of exceeding the total allowable catch (now known as an annual catch limit or ACL) and to improve likelihood that the fish would reach spawning size before harvest. The South Atlantic Fishery Management Council (South Atlantic Council) modified the Atlantic migratory group king mackerel minimum size limit from 20 inches FL to 24 inches FL through a Framework Adjustment in August 1998. The primary intention of the increased minimum size limit was to improve consistency for compliance and enforcement by having the same minimum size limit for both Gulf migratory group and Atlantic migratory group king mackerel in addition to the biological benefits noted by the Amendment 9 modification.

Recently the South Atlantic Council has resurrected discussions of the utility of the minimum size limit due to the increased chance of catching undersized king mackerel in late winter and early spring, and some concern about discard mortality, particularly in Florida. The South Atlantic Council is considering a reduction in the minimum size limit to reduce dead discards and optimize use of the resource. There is no known harvest reduction target associated with this action.

Amendment 8 to the CMP FMP (GMFMC/SAFMC 1996) established the Councils' responsibilities for regulating the migratory groups of king mackerel, Spanish mackerel, and cobia, including allowing the South Atlantic Council to set regulations within what is now called the East Coast Subzone for Gulf migratory group king mackerel. Amendment 18 (GMFMC/SAFMC 2011) created a new framework for the CMP FMP that provided the Councils and the National Marine Fisheries Service (NMFS) the flexibility to respond quickly to changes in the CMP fishery. Measures that can be changed under the procedure are identified, as well as the appropriate process needed for each type of change. However, the provision to allow each Council to set regulations for their respective migratory groups and to allow the South Atlantic Council to set regulations in the East Coast Subzone was inadvertently not retained. Amendment 20 to the CMP FMP proposes to correct that omission, but until that amendment is approved, both Councils must approve any action affecting the CMP fishery.

Comparison of Alternatives:

Keeping the current 24-inch FL size limit under **Alternative 1 (No Action)** is not expected to increase or decrease the rate of harvest of the species, nor would it be likely to negatively impact overall abundance. Retaining the current minimum size limit would increase the probability that king mackerel would be able to spawn at least once before being harvested when compared to the other alternatives under consideration. Although a higher minimum size limit may result in a greater number of fish able to spawn to support future biomass stability (**Alternatives 2-4**), it also results in a greater the number of discards and higher discard mortality rate than a smaller minimum size limit.

However, reducing size limits may not necessarily have economic effects in the commercial fishery. The only way there could be economic effects from the various alternatives from this action would be if price per pound would be affected by the sale of smaller fish. There is insufficient data to know what reducing the size limit as in **Alternatives 2-4** would to the price per pound of king mackerel. The recreational sector is not likely to be affected by the change in size limit because **Alternatives 2- 4** are not expected to significantly change the number of fish caught. The positive economic effects of allowing fishermen to retain more fish can help increase trip efficiency and reduce waste in the commercial sector (**Alternatives 2-4)**, and improve recreational fishing opportunities for anglers and for-hire clients who want to keep the fish (**Alternatives 2** and **3**).

Action 2. Modify restrictions on transfer-at-sea and gillnet allowances for Atlantic migratory group Spanish mackerel.

Alternative 1 (No Action). No more than two gillnets, including any net in use, may be possessed at any one time; provided, however, that if two gillnets, including any net in use, are possessed at any one time, they must have stretched mesh sizes (as allowed under the regulations) that differ by at least 0.25 inch (0.64 cm) (622.41(c)(3)(ii)(B)(*3*). A species subject to a trip limit specified in this section taken in the EEZ may not be transferred at sea, regardless of where such transfer takes place, and such species may not be transferred in the EEZ (§ 622.44).

Alternative 2: Modify commercial gear specifications for Atlantic migratory group Spanish mackerel.

Option a. Remove the maximum number of gillnets.
Option b. Remove the requirement for different mesh sizes.
Option c. Allow federally-permitted Spanish mackerel vessels to possess three gillnets.
Option d. Allow three gillnets for the vessel receiving transfer.

Alternative 3. Allow transfer of a portion an Atlantic migratory group Spanish mackerel gillnet and its catch from one vessel that has reached its trip limit to another vessel that has not caught the trip limit.

a) Transfer is allowed if directed harvesting gear used to harvest the Spanish mackerel being transferred is allowable net gear. Spanish mackerel harvested with other than directed allowable net harvesting gear shall not be transferred.
b) Transfer shall only take place in the EEZ between vessels with valid Spanish mackerel commercial permits.
c) The Spanish mackerel removed from the directed harvesting gear aboard the harvesting vessel shall be isolated aboard the vessel and shall not exceed the applicable daily vessel limit specified in this subsection. All fish exceeding the applicable daily vessel limit shall remain entangled in the meshes of the net until transfer. The quantity of fish transferred to any single vessel shall not exceed the applicable daily harvest limit.
d) Call-in required for both vessels engaged in the transfer.

Discussion:

At times, a vessel harvesting Spanish mackerel with gillnet will exceed the trip limit with one set. Overages are difficult to estimate when the gillnet is in the water and fish caught in this gear tend to not survive when released. Modification to the prohibition on transfer at sea and to gear specification for Spanish mackerel commercial harvest would provide provisions to allow part of the gillnet and its contents to be transferred to another vessel that has not met its trip limit, and would prevent waste in the sector, because fish caught in gillnets have high discard mortality.

The South Atlantic Council considered allowing transfer at sea in the Spanish mackerel commercial gillnet sector when a trip limit had been exceeded in Amendment 8 (GMFMC/SAFMC 1996) but did not approve the alternative, concluding that transfer at sea precludes effective enforcement and may reduce the effectiveness of trip limits.

In 2003, the Mid-Atlantic Fishery Management Council (Mid-Atlantic Council) created a provision for transfer-at-sea to address a similar problem in the commercial scup fishery (MAFMC 2003). At times, a daily vessel limit for scup would be exceeded in one set of otter net, and the Mid-Atlantic Council created an exception to allow transfer at sea in this situation to reduce discards and waste when the vessel trip limit was exceeded.

Comparison of Alternatives:

If the anecdotal information shared by the fishery participants is accurate, under **Alternative 1 (No Action)** the biological impacts would likely be negligible. If part of a net does need to be cut free to maintain harvest levels under the trip limit, some fish would be released dead. However, if this action does not occur on a frequent basis, the overall impact to the sustainability of the stock is assumed to be extremely small. Making any of the first three modifications to the regulations under **Alternative 2** would not address the issue of fishermen needing to cut a portion of a net to stay within the applicable trip limit. However, if the South Atlantic Council were to allow transfer at sea of Spanish mackerel harvested in excess of the trip limits by creating a provision under **Alternative 3**, the last option under **Alternative 2** could result in the use of "runner boats" that could take trips back fourth from the lead vessel to the dock with the excess fish. Because commercial Spanish mackerel is managed under a 3.87 million pound ACL, overall harvest would be capped at that level and no biological impacts would be expected, although the ACL could be reached faster if trip limits were exceeded on a regular basis.

Establishment of a provision to allow transfer at sea for the Spanish mackerel gillnet sector through **Alternatives 2** and **3** would likely primarily result in benefits to the commercial gillnet fleet by reducing waste and maximizing economic trip efficiency. Nevertheless, commercial fishermen have indicated that they avoid this situation when possible. By allowing the transfer of Spanish mackerel at sea, Spanish mackerel regulatory discards can be converted into landings. Under **Alternative 1 (No Action)** the potential benefits to the commercial Spanish mackerel fleet would not occur.

Alternatives 1 (No Action), **2** and **3** are expected to have no economic impact (short or long run) on recreational fishing because anglers on board private and for-hire vessels do not use gillnets to take Spanish mackerel in the EEZ.

Alternative 1 (No Action) and **Alternative 4**, would have no effect on the administrative environment because there is currently a system of trip limits and trip limit increases that is triggered when a certain amount of harvest has been verified. **Alternatives 2** and **3** would hold the trip limit constant through the entire fishing season, and thus, would result in positive administrative impacts in the form of a reduced public notification burden and ease enforcement burden.

Action 3. Modify the king mackerel commercial trip limit in the East Coast Florida Subzone.

Alternative 1 (No Action). Retain the current commercial trip limit regulations in place for East Coast Florida Subzone king mackerel. In the Florida East Coast Subzone (Flagler/Volusia County line south to the Miami-Dade/Monroe County line, November 1 – March 31 each year), king mackerel in or from the EEZ may be possessed on board at any time or landed in a day from a vessel with a commercial permit for king mackerel as follows:

(A) From November 1 through January 31--not to exceed 50 fish.

(B) Beginning on February 1 and continuing through March 31--

(1) If 75 percent or more of the [Gulf group] Florida east coast subzone quota has been taken-- not to exceed 50 fish.

(2) If less than 75 percent of the [Gulf group] Florida east coast subzone quota has been taken --not to exceed 75 fish.

Alternative 2. Change the king mackerel commercial trip limit in the Florida East Coast Subzone to 50 fish for the entire fishing season (November 1- March 31).

Alternative 3. Change the king mackerel commercial trip limit in the Florida East Coast Subzone to 75 fish for the entire fishing season (November 1- March 31).

Alternative 4. In the Florida East Coast Subzone, king mackerel in or from the EEZ may be possessed on board at any time or landed in a day from a vessel with a commercial permit for king mackerel as follows:

(A) From November 1 through the end of February--not to exceed 50 fish.

(B) Beginning on <u>March 1</u> and continuing through March 31--

(1) If <u>70 percent</u> or more of the [Gulf group] Florida east coast subzone quota has been taken-- not to exceed 50 fish.

(2) If less than <u>70 percent</u> of the [Gulf group] Florida east coast subzone quota has been taken --not to exceed 75 fish.

<u>Discussion:</u>

The trip limit increase if 75% of the quota is not reached by February 1 was originally implemented at the request of king mackerel fishermen because they were not harvesting the full quota before the end of the fishing season (SAFMC 2000). However, in the 2011/2012 fishing year, less than 75% of the quota was reached by February 1, triggering the trip limit increase to 75 fish when the king mackerel are abundant. This in turn allowed the quota to be filled quickly, requiring NMFS to close the subzone in March (**Table 2.1**) which is around Lent, the most profitable time of the year for these fishermen. The South Atlantic Council may wish to reverse this trend and implement measures to slow the rate of harvest by enough to extend fishing opportunities through the Lent season each year.

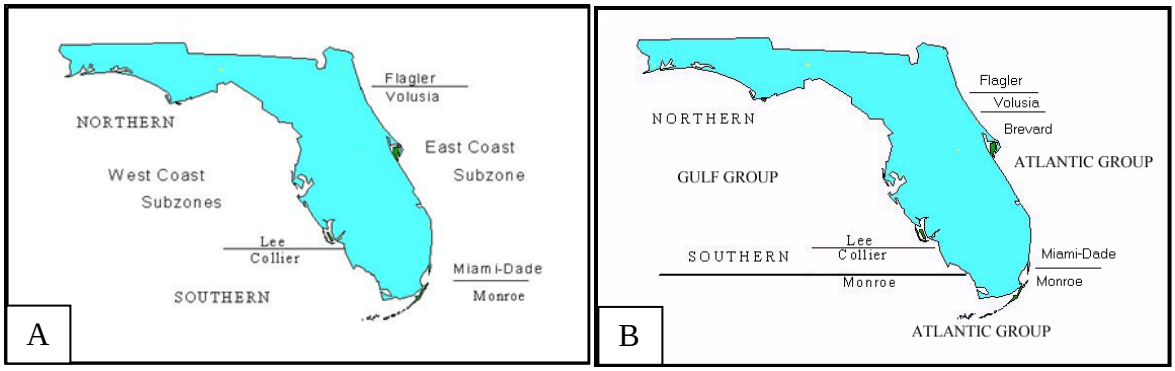

Figure 2.1. Gulf migratory group king mackerel Eastern zone subzones for A) November 1 – March 31 and B) April 1- October 31.

Table 2.1. Trip limit increases and closures dates for the Florida East Coast Subzone for the most recent 12 years. Note: This area is considered to contain Atlantic migratory group king mackerel beginning April 1, at which time harvesting can resume under the Atlantic quota.

Fishing Season	Trip limit increase to 75 fish?	Closure date
2001/2002	Yes	None
2002/2003	Yes	None
2003/2004	Yes	None
2004/2005	Yes	None
2005/2006	Yes	None
2006/2007	Yes	None
2007/2008	Yes	2/21/2008
2008/2009	No	3/6/2009
2009/2010	No	2/4/10 (reopened for an additional 6 days)
2010/2011	No	2/26/2011
2011/2012	Yes	3/14/2012
2012/2013	Yes	None

Comparison of Alternatives:

Under **Alternative 1 (No Action)** the current system of trip limits and the trip limit increase would not be modified and fishermen could reach the commercial ACL prior to the Lenten season. The biological impacts of **Alternatives 1-4** are expected to be neutral or positive as there would be in increase in overall harvest, and in-season accountability measures (AMs) are in place to close the fishery when the ACL is met. However, regardless of which trip limit is implemented, total harvest of king mackerel is limited to the ACL, landings are monitored in-season, and the commercial sector is closed when the commercial ACL is projected to be met. Based on this information, changes in the trip limit would not result in negative biological impacts even though the ACL may be met early in the fishing season.

A modification to the trip limit system for king mackerel in the Florida East Coast Subzone could have positive and negative social and economic effects. This area of Florida has several of the most important commercial fishing communities in the king mackerel sector in the South Atlantic region, including Cocoa Beach, Fort Pierce, and Palm Beach (**Table 3.3.3.1**). In the current environmental and market conditions of this portion of the CMP fishery, the trip limit system under **Alternative 1 (No Action)** could trigger the higher trip limit of 75 fish and reach the ACL before the end of the fishing year, which may impact the supply of king mackerel in the spring. **Alternatives 2** and **3** would provide for more stability in the supply of king mackerel, which would be beneficial to fish houses and mackerel dealers. However, the 50-fish limit under **Alternative 2** could prevent the ACL for the Florida East Coast Subzone from being met, while the 75-fish limit under **Alternative 3** would likely increase the rate of harvest and potentially cause the ACL to be met earlier than usual. **Alternative 4** would be expected to allow the step-up to be triggered but only if necessary, which would be expected to be most beneficial to the fishermen and dealers. The stability in the supply of fish would be maintained for a longer period under **Alternative 4** while allowing some flexibility in reaching the ACL.

Action 4. Modify the system of quota and trip limit adjustments for Atlantic migratory group Spanish mackerel.

Alternative 1 (No Action). The quota for the northern and southern zones of Atlantic migratory group Spanish mackerel is 3.87 million pounds (mp), and is adjusted to 3.62 mp and the fishing year begins March 1. Currently for the southern zone, the trip limit is 3,500 lbs starting March 1, and then starting December 1 trips are not limited on week days and are 1,500 lbs on weekends. This unlimited time period continues until 75 percent of the adjusted quota is landed, after which the trip limit is 1,500 lbs every day. When 100 percent of the adjusted quota is reached, the trip limit is reduced to 500 lbs until the end of the fishing year or until the full quota is met or projected to be met. In the northern zone, the trip limit is 3,500 lbs year-round or until the quota is met or projected to be met.

Alternative 2. Remove the use of an adjusted quota for Atlantic migratory group Spanish mackerel in the southern zone and:

> **Sub-Alternative 2a.** Remove all trip limit changes for the southern zone. The trip limit would remain 3,500 lbs year-round. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.
>
> **Sub-Alternative 2b.** Remove the period of unlimited trips for the southern zone that starts December 1 each year. The southern zone trip limit would start at 3,500 lbs on March 1 of each year. When 75% of the commercial ACL has been landed or projected to be landed the trip limit would be reduced to 1,500 lbs. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.
>
> **Sub-Alternative 2c.** Remove the period of unlimited trips for the southern zone that starts December 1 each year. The southern zone trip limit would start at 3,500 lbs on March 1 of each year. When 75% of the commercial ACL has been landed or projected to be landed the trip limit would be reduced to 500 lbs. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.

Alternative 3. Retain the adjusted commercial quota but remove the period of unlimited trips for the southern zone that starts December 1 each year. The southern zone trip limit would start at 3,500 lbs on March 1 of each year. When 75% of the adjusted commercial ACL has been landed or projected to be landed the trip limit would be reduced to 1,500 lbs. When 100% of the adjusted commercial quota is reached, the trip limit is reduced to 500 lbs until the end of the fishing year or until the commercial ACL is met or projected to be met.

Discussion:
The current system for Atlantic migratory group Spanish mackerel southern zone commercial trip limits and quota was established through the 2000 Framework Adjustment (SAFMC 2000) as a modification of similar systems in earlier years that used unlimited trips, step-downs, and adjusted quotas. The unlimited trips during the week between December 1 and February 28 allowed larger vessels to maximize efficiency on trips until the landed ACL reached 75%, when the 1,500-lb trip limit went into place all days of the week. Currently the adjusted quota is 250,000 lbs less than the full quota (commercial ACL). The adjusted quota was expected to allow vessels to continue fishing for the remainder of the fishing season. Originally, no closure provision was in place for Atlantic migratory group Spanish mackerel, but a closure provision when the full quota is met or projected to be met was implemented through Amendment 18 (GMFMC/SAFMC 2011). Therefore, the 500 lbs trip limit is only effective until the additional 250,000 lbs are landed.

Some fishermen have expressed concern about the unlimited trips but wish to retain the adjusted quota so that the 500-lb trip limit can remain in place after the adjusted ACL is met. However, the adjusted quota is 92% of the full quota. It is unlikely NMFS could implement the 500-lb trip limit reduction before the full quota is projected to be met, if landings rates are too high. In the Gulf of Mexico, the Florida west coast subzones have a reduction to 500 lbs at 75% of the quota that in some years could not be implemented before the quota was projected to be met; a trip limit reduction at 92% of the quota would be even less likely to be implemented.

Table 2.2. Comparison of trip limits for Atlantic migratory group Spanish mackerel in the southern zone for each alternative under Action 4.

	Alt 1	**Alt 2a**	**Alt 2b**	**Alt 2c**	**Alt 3**
March 1-Nov 30	**3,500** lbs	**3,500** lbs	**3,500** lbs with step-down to **1,500** lbs when 75% of ACL is met	**3,500** lbs with step-down to **500** lbs when 75% of ACL is met	**3,500** lbs with step-down to **1,500** lbs when 75% of adjusted quota is met; step-down to **500** lbs when 100% of adjusted quota is met.
Dec 1-Feb 28	No limit if 0-74% adjusted quota has been landed weekdays, **1,500** lbs weekends				
	1,500 lbs if 75-99% adjusted quota has been landed				
	500 lbs if 100% adjusted quota has been landed				
	0 lbs if 100% ACL has been landed				

The biological impacts expected under **Alternative 1 (No Action)** are expected to be neutral because overall harvest would not increase or decrease over the status quo and ultimately total harvest of the stocks is limited to the commercial ACL. If the ACL is projected to be met, commercial harvest in both zones is closed for the duration of the fishing season, which prevents overfishing from occurring. It should be noted that projections for the 2014/2015 fishing season show a quota closure in mid-February with the current system of trip limit reductions (**Table 4.4.1**).

By removing the trip limit step-downs under **Sub-Alternative 2a** there may be a greater chance the ACL may be met in-season and the commercial sector could close earlier in the season than in previous years. An in-season closure under **Sub-Alternative 2b** could be expected to occur in early February of the 2014-2015 fishing season (**Table 4.4.1**), which would not extend fishing opportunities further into the fishing season as desired. **Sub-Alternative 2c** is the only option that is projected to allow the commercial sector to remain open through the entire fishing year. **Alternative 3** does little to extend fishing opportunities further into the fishing season and NMFS projects that the in-season closure under **Alternative 3** would occur around the same time as the projected in-season closure under **Alternative 1 (No Action)**. Biological effects under this alternative are likely to be neutral since overall harvest is limited by the commercial ACL and AMs that would limit harvest to the ACL would be maintained.

None of the alternatives would have an impact on recreational fishing beyond the status quo. No economic effects are expected for the recreational sector because of the separation of the commercial ACL from the recreational ACL. Because landings are constrained by the ACL and the expected variability of the length of the season for all alternatives is approximately one month in length, none of the alternatives in this action are expected to have significant economic effects to harvesters of Atlantic migratory group Spanish mackerel.

The social effects would be associated with economic costs and benefits for the commercial fleet, because there would not be any expected biological impacts on the overall stock that could restrict future fishing opportunities. The primary communities that would be affected by changes in the Atlantic migratory group Spanish mackerel quota and trip limit system are the Florida communities of Fort Pierce, Cocoa Beach, Palm Beach, and Stuart (**Table 3.3.3.2**). However, Spanish mackerel is not the only economically important species in these communities and while changes may affect fishermen and individual fish houses or dealers, the impact at the community level is expected to be minimal.

An earlier closure date for Spanish mackerel commercial harvest could have some impact on the commercial fleet and the supply of Spanish mackerel in the market. The longest season (no closure) is projected to be under **Alternative 2c** and would eliminate the chance of any impacts on the fishermen or fish houses from an early closure.

The administrative impacts under **Alternative 1 (No Action)** and **Alternative 3** would be very similar since they both retain the use of the adjusted quota and a series of trip limit reductions when certain harvest thresholds are met. **Sub-Alternative 2a** would result in the greatest

administrative benefits, and Sub-**Alternatives 2b** and **2c** would have similar administrative impacts because they would both require the trip limit to be reduced to specific level when 75% of the actual quota is harvested. **Sub-Alternatives 2b** and **2c**, however, represent a decreased administrative burden compared to the status quo because they both only include one trip limit decrease due to the removal of the use of the adjusted quota under **Alternative 2**.

****This action has not yet been added to the amendment.*****

Possible Action 5. **Modify the Annual Catch Limit (ACL) for Atlantic Migratory group Spanish Mackerel**

Alternative 1 (No Action): Maintain ACL = OY = ABC (currently 5.69 mp which is the 3rd highest year of landings recommended by the SSC; Recreational Sector ACL = 45% = 2.56 mp; Commercial
Sector ACL = 55% = 3.13 mp)

Alternative 2. For Atlantic Migratory Group Spanish Mackerel, retain the current ACL and ACT formulas and revise the ACLs and recreational ACT for the 2013/2014 fishing season and beyond until modified as shown in the table below. ACL = OY = ABC The specified OY, ABC, ACLs, and recreational ACT would remain in place until modified.

Alternative 3. For Atlantic Migratory Group Spanish Mackerel, revise the total ACL, sector ACLs, recreational ACT, and OY values based on results from the new stock assessment. Change the ACL formula to: ACL = OY = X% of ABC = _____ mp The specified OY, ABC, ACLs, and recreational ACT would remain in place until modified.

Option a. ACL = 75%ABC
Option b. ACL = 80%ABC
Option c. ACL = 85%ABC
Option d. ACL = 95% ABC
Option e. ACL = 90% ABC

Alternative 4. For Atlantic Migratory Group Spanish Mackerel, revise the total ACL, sector ACLs, recreational ACT, and OY values based on results from the new stock assessment. Change the ACL formula to ACL = OY = yield at 75%FMSY. The specified OY, ABC, ACLs, and recreational ACT would remain in place until modified.

Chapter 3. Affected Environment

This section describes the affected environment in the proposed project area. The affected environment is divided into four major components:

- **Habitat environment** (Section 3.1)
- **Biological environment** (Section 3.2)
- **Human environment** (Sections 3.3)
- **Administrative environment** (Section 3.4)

3.1 Habitat Environment

The South Atlantic Fishery Management Council (South Atlantic Council) has management jurisdiction of the federal waters (3-200 nm) offshore of North Carolina, South Carolina, Georgia, and Florida. The continental shelf off the southeastern U.S., extending from the Dry Tortugas, Florida, to Cape Hatteras, North Carolina, encompasses an area in excess of 100,000 square km (Menzel 1993). Based on physical oceanography and geomorphology, this environment can be divided into two regions: Dry Tortugas, Florida, to Cape Canaveral, Florida, and Cape Canaveral, Florida, to Cape Hatteras, North Carolina. The continental shelf from the Dry Tortugas, Florida, to Miami, Florida, is approximately 25 km wide and narrows to approximately 5 km off Palm Beach, Florida. The shelf then broadens to approximately 120 km off of Georgia and South Carolina before narrowing to 30 km off Cape Hatteras, North Carolina. The Florida Current/Gulf Stream flows along the shelf edge throughout the region. In the southern region, this boundary current dominates the physics of the entire shelf (Lee et al. 1994).

In the northern region, additional physical processes are important and the shelf environment can be subdivided into three oceanographic zones (Atkinson et al. 1985; Menzel 1993), the outer shelf, mid-shelf, and inner shelf. The outer shelf (40-75 m) is influenced primarily by the Gulf Stream and secondarily by winds and tides. On the mid-shelf (20-40 m), the water column is almost equally affected by the Gulf Stream, winds, and tides. Inner shelf waters (0-20 m) are influenced by freshwater runoff, winds, tides, and bottom friction. Water masses present from the Dry Tortugas, Florida, to Cape Canaveral, Florida, include Florida Current water, waters originating in Florida Bay, and shelf water. From Cape Canaveral, Florida, to Cape Hatteras,

North Carolina four water masses found are: Gulf Stream water; Carolina Capes water; Georgia water; and Virginia coastal water.

Spatial and temporal variation in the position of the western boundary current has dramatic effects on water column habitats. Variation in the path of the Florida Current near the Dry Tortugas induces formation of the Tortugas Gyre (Lee et al. 1992 and 1994). This cyclonic eddy has horizontal dimensions on the order of 100 km and may persist in the vicinity of the Florida Keys for several months. The Pourtales Gyre, which has been found to the east, is formed when the Tortugas Gyres moves eastward along the shelf. Upwelling occurs in the center of these gyres, thereby adding nutrients to the near surface (<100 m) water column. Wind and input of Florida Bay water also influence the water column structure on the shelf off the Florida Keys (Smith 1994; Wang et al. 1994). Further downstream, the Gulf Stream encounters the "Charleston Bump", a topographic rise on the upper Blake Ridge where the current is often deflected offshore resulting in the formation of a cold, quasi-permanent cyclonic gyre and associated upwelling (Brooks and Bane 1978). On the continental shelf, offshore projecting shoals at Cape Fear, North Carolina, Cape Lookout, North Carolina, and Cape Hatteras, North Carolina affect longshore coastal currents and interact with Gulf Stream intrusions to produce local upwelling (Blanton et al. 1981; Janowitz and Pietrafesa 1982). Shoreward of the Gulf Stream, seasonal horizontal temperature and salinity gradients define the mid-shelf and inner-shelf fronts. In coastal waters, river discharge and estuarine tidal plumes contribute to the water column structure.

The water column from Dry Tortugas, Florida, to Cape Hatteras, North Carolina, serves as habitat for many marine fish and shellfish. Most marine fish and shellfish release pelagic eggs when spawning and thus, most species utilize the water column during some portion of their early life history (Leis 1991; Yeung and McGowan 1991). There are a large number of fishes that inhabit the water column as adults. Pelagic fishes include numerous clupeoids, flying fish, jacks, cobia, bluefish, dolphin, barracuda, and the mackerels (Schwartz 1989). Some pelagic species are associated with particular benthic habitats, while other species are truly pelagic.

3.2 Biological and Ecological Environment

3.2.1 Fish Populations Affected by this Amendment

A description of the biological environment for CMP species is provided in Amendment 18 (GMFMC/ SAFMC 2011), and is incorporated herein by reference.

Species in the fishery management plan are migratory and move into specific areas to spawn. King mackerel, for example, move from the southern portion of their range to more northern areas for the spawning season. However, environmental factors, such as temperature can change the timing and extent of their migratory patterns (Williams and Taylor 1980). King mackerel \mature at ages of 2-3 years and Spanish mackerel mature at age 1-2.

The mackerel family, Scombridae, includes tunas, mackerels and bonitos are among the most important commercial and sport fishes. The habitat of adults in the coastal pelagic management unit is the coastal waters out to the edge of the continental shelf in the Atlantic Ocean. Within the area, the occurrence of coastal migratory pelagic species is governed by temperature and salinity. All species are seldom found in water temperatures less than 20°C. Salinity preference varies, but these species generally prefer high salinity, less than 36 ppt. Salinity preference of little tunny and cobia is not well defined. The habitat for eggs and larvae of all species in the coastal pelagic management unit is the water column. Within the spawning area, eggs and larvae are concentrated in the surface waters.

King Mackerel

King mackerel is a marine pelagic species that is found throughout the Gulf of Mexico and Caribbean Sea and along the western Atlantic from the Gulf of Maine to Brazil and from the shore to 200 meter depths. Adults are known to spawn in areas of low turbidity, with salinity and temperatures of approximately 30 ppt and 27°C, respectively. There are major spawning areas off Louisiana and Texas in the Gulf (McEachran and Finucane 1979); and off the Carolinas, Cape Canaveral, and Miami in the western Atlantic (Wollam 1970; Schekter 1971; Mayo 1973).

Spanish Mackerel

Spanish mackerel is also a pelagic species, occurring in depths 75 meters throughout the coastal zones of the western Atlantic from southern New England to the Florida Keys and throughout the Gulf of Mexico (Collette and Russo 1979). Adults usually are found from the low-tide line to the edge of the continental shelf, and along coastal areas. They inhabit estuarine areas, especially the higher salinity areas, during seasonal migrations, but are considered rare and infrequent in many Gulf estuaries.

3.2.2 Protected Species

There are 40 species protected by federal law that may occur in the EEZ of the South Atlantic Region and are under the purview of NMFS. Thirty-one of these species are marine mammals protected under the Marine Mammal Protection Act (MMPA). Six of these marine mammal species are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). In addition to those six marine mammals, five species of sea turtles (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; five distinct population segments (DPSs) of Atlantic sturgeon; and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]) are also protected under the ESA. Portions of designated critical habitat for North Atlantic right whales and *Acropora* corals also occur within the South Atlantic Council's jurisdiction. **Section 3.5** in the Comprehensive ACL Amendment (SAFMC 2011), and **Section 3.2.2** in Snapper Grouper Regulatory Amendment 13 (SAFMC 2012), describe the life history characteristics in detail for these species. **Section 3.5** of the Comprehensive ACL Amendment and **Section 3.2.2** of Regulatory Amendment 13 are hereby incorporated by reference and may be found at:

http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx and http://sero.nmfs.noaa.gov/sf/pdfs/Reg13_FINAL_Dec2012.pdf, respectively. The potential impacts from the continued authorization of the mackerel fishery on all ESA-listed species have been considered in previous ESA Section 7 consultations. Summaries of those consultations and their determination are in **Appendix G.** Those consultations indicate that of the species listed above, sea turtles and smalltooth sawfish are the most likely to interact with the mackerel fishery. Due to the ESA listing of five distinct population segments of Atlantic sturgeon, NMFS has reinitiated consultation on the CMP FMP. However, in a January 11, 2013, 7(a)(2)7(d) memo, the NMFS determined the continued authorization of the CMP FMP during the reinitiation period is not likely to impede the recovery of any Atlantic sturgeon DPS with respect to threats identified in the final rule.

3.3 Human Environment

3.3.1 Economic Description of the Fishery

An economic description of the commercial fisheries for the CMP species is contained in Vondruska (2010) and is incorporated herein by reference. Select summary statistics are provided in **Table 3.3.1.1**.

Table 3.3.1.1. Five-year1 average performance statistics, including number of vessels landing each species, value of the species for those vessels, value of all species for those vessels, and the average value for those vessels.

Species	Vessels	Ex-vessel Value[2] Species from Column 1 (millions)	Ex-vessel Value All Species (millions)	Average Ex-vessel Value per Vessel
Atlantic Migratory group King Mackerel	742	$4.57	$23.41	$31,600
Atlantic Migratory group Spanish Mackerel	349	$1.85	$9.76	$28,000

[1]Fishing-year (2004/2005, 2005/2006,…, 2008/2009) for king and Spanish mackerel.
[2]2008 dollars.
Source: NMFS SEFSC Coastal Fisheries Logbook and NMFS NEFSC Commercial Fisheries Data Base System

Economic Activity

Estimates of the average annual economic activity (impacts) associated with the commercial fisheries for CMP species addressed in the amendment were derived using the model developed for and applied in NMFS (2009) and are provided in **Table 3.3.1.2**. Business activity for the commercial sector is characterized in the form of full-time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

As noted in **Table 3.3.1.1**, the annual period refers to either the fishing year or calendar year, as

appropriate to the management of the species. The estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors). Estimates are provided for the economic activity associated with the ex-vessel revenues from the individual CMP species as well as the revenues from all species harvested by these same vessels. The estimates of ex-vessel value are replicated from **Table 3.3.1.1**.

Table 3.3.1.2. Average annual economic activity associated with the king mackerel and Spanish mackerel fisheries in the South Atlantic.

Species	Average Ex-vessel Value[1] (millions)	Total Jobs	Harvester Jobs	Output (Sales) Impacts (millions)	Income Impacts (millions)
Atlantic Migratory group King Mackerel	$4.57	862	112	$60.21	$25.66
- All Species[2]	$23.41	4,412	576	$308.26	$131.38
Atlantic Migratory group Spanish Mackerel	$1.85	348	45	$24.31	$10.36
- All Species	$9.76	1,840	240	$128.52	$54.77

[1]2008 dollars.
[2]Includes ex-vessel revenues and economic activity associated with the average annual harvests of all species harvested by vessels that harvested the subject CMP species.

Permits
The numbers of commercial permits associated with the king mackerel and Spanish mackerel fishery as of March 1, 2013, are provided in **Table 3.3.1.3**.

Table 3.3.1.3. Number of commercial permits associated with the king mackerel and Spanish mackerel fishery.

	Valid[1]
King Mackerel	1,366
King Mackerel Gillnet	22
Spanish Mackerel	1,747

[1]Non-expired. Expired permits may be renewed within one year of expiration.

3.3.2 Economic Description of the Recreational Fishery

The recreational fishery is comprised of the private sector and for-hire sector. The private sector

includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire sector is composed of the charter vessel and headboat (also called party boat) sectors. Charter vessels generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person.

Harvest
Recreational harvest information is provided in **Section 3.2.1**.

Effort
Extrapolated recreational effort derived from the MRFSS/MRIP database can be characterized in terms of the number of trips as follows:

> *Target effort* - The number of individual angler trips, regardless of trip duration, where the angler indicated that the species was targeted as either the first or the second primary target for the trip. The species did not have to be caught.
>
> *Catch effort* - The number of individual angler trips, regardless of trip duration and target intent, where the individual species was caught. The fish caught did not have to be kept.
>
> *All recreational trips* - The total estimated number of recreational trips taken, regardless of target intent or catch success.

Estimates of average annual recreational effort, 2007-2011, for the CMP species addressed in this amendment are provided in **Tables 3.3.2.1-2**. In each table, where appropriate, the "total" refers to the total number of target or catch trips, as appropriate, while "all trips" refers to the total number of trips across all species regardless of target intent of catch success. The estimates were evaluated by calendar year and not fishing year. As a result, while the results may not be fully reflective of effort associated with specific stocks (e.g., Gulf migratory group versus Atlantic migratory group for king or Spanish mackerel), the results are consistent with fishing activity based on area fished.

The effort situation is somewhat different for the South Atlantic states (**Table 3.3.2.1**). While Spanish mackerel still records the highest average number of catch trips per year, the difference over king mackerel is not as pronounced as in the Gulf. Further, more trips target king mackerel than Spanish mackerel (and cobia). Further, both species, as well as cobia, are subject to more target effort than catch effort. East Florida dominates for all three species and effort type.

In the South Atlantic, the private mode leads for all three species and effort type (**Table 3.3.2.2**).

Table 3.3.2.1. Average annual (calendar year) recreational effort (thousand trips) in the South Atlantic, by species and by state, across all modes, 2007-2011.

	Target Trips					
	East Florida	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
King Mackerel	365	11	166	86	629	19,842
Spanish Mackerel	186	4	258	64	512	
	Catch Trips					
King Mackerel	263	7	63	22	355	19,842
Spanish Mackerel	242	9	200	54	505	

Source: NMFS MRFSS/MRIP and SERO.

Table 3.4.2.2. Average annual (calendar year) recreational effort (thousand trips) in the South Atlantic, by species and by mode, across all states, 2007-2011.

	Target Trips				
	Shore	**Charter**	**Private**	**Total**	**All Trips**
King Mackerel	102	27	500	629	19,842
Spanish Mackerel	231	8	273	512	
	Catch Trips				
King Mackerel	7	49	298	355	19,842
Spanish Mackerel	189	22	294	505	

Source: NMFS MRFSS/MRIP and SERO.

Tables 3.3.2.3-6 contain estimates of the average annual (2007-2011) target trips and catch trips, by species, for each state and mode.

Table 3.3.2.3. Average annual (calendar year) recreational effort (thousand trips), East Florida, by species and by mode, 2007-2011.

	Shore		**Charter**		**Private**		**Total**	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
King Mackerel	18	5	19	35	328	223	365	263
Spanish Mackerel	119	116	1	3	67	123	186	242

Source: NMFS MRFSS/MRIP and SERO.

Table 3.3.2.4. Average annual (calendar year) recreational effort (thousand trips), Georgia, by species and by mode, 2007-2011.

	Shore		**Charter**		**Private**		**Total**	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
King Mackerel	0	0	0	0	11	7	11	7
Spanish Mackerel	2	2	0	1	2	7	4	9

Source: NMFS MRFSS/MRIP and SERO.

Table 3.3.2.5. Average annual (calendar year) recreational effort (thousand trips), North Carolina, by species and by mode, 2007-2011.

	Shore		**Charter**		**Private**		**Total**	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
King Mackerel	37	1	2	9	128	53	166	63
Spanish Mackerel	67	41	4	12	187	148	258	200

Source: NMFS MRFSS/MRIP and SERO.

Table 3.3.2.6. Average annual (calendar year) recreational effort (thousand trips), South Carolina, by species and by mode, 2007-2011.

	Shore		**Charter**		**Private**		**Total**	
	Target	Catch	Target	Catch	Target	Catch	Target	Catch
King Mackerel	47	1	5	5	33	16	86	22
Spanish Mackerel	43	31	3	7	17	16	64	54

Source: NMFS MRFSS/MRIP and SERO.

Similar analysis of recreational effort is not possible for the headboat sector because the headboat data are not collected at the angler level. Estimates of effort in the headboat sector are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats.

Headboat effort and harvest data, however, is collected through the NMFS Southeast Fisheries Science Center Headboat Survey (Headboat Survey) program. The average annual (2007-2011) number of headboat angler days is presented in **Table 3.3.2.7**. Due to confidentiality issues, Georgia estimates are combined with those of East Florida on the Atlantic, while Alabama is combined with West Florida as part of the summarization process for the Gulf (i.e., as part of the estimation process and not a result of confidentiality merging). As shown in **Table 3.4.2.13**, in both regions, Florida dominates, followed by Texas in the Gulf and South Carolina in the South Atlantic.

Table 3.3.2.7. Southeast headboat angler days, 2007-2011.

	South Atlantic			
	East Florida/ Georgia	**North Carolina**	**South Carolina**	**Total**
2007	157,150	29,002	60,729	246,881
2008	124,119	16,982	47,287	188,388
2009	136,420	19,468	40,919	196,807
2010	123,662	21,071	44,951	189,684
2011	124,041	18,457	44,645	187,143
5-year Average	133,078	20,996	47,706	201,781

Source: Headboat Survey, NMFS, SEFSC, Beaufort Lab.
*Confidential

**Because the average totals are used to represent expectations of future activity, the 2011 number of trips is provided as best representative of the emergent headboat sector in Mississippi.

Permits

The numbers of pelagic for-hire (charter or headboat) permits as of March 1, 2013, are provided in Table 3.4.2.14. The for-hire permits do not distinguish between charter vessels and headboats, though information on the primary method of operation is collected on the permit application form. Some vessels may operate as both a charter vessel and a headboat, depending on the season or purpose of the trip. An estimated 70 headboats in the Gulf and an estimated 75 headboats in the South Atlantic participate in the Headboat Survey.

There are no specific federal permitting requirements for recreational anglers to harvest coastal migratory pelagic species. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions.

Table 3.3.2.8. Number of pelagic for-hire (charter vessel/headboat) permits.

	Valid[1]
Gulf of Mexico	1,180
Gulf Historical Captain	32
South Atlantic	1,441

[1]Non-expired. Expired permits may be renewed within one year of expiration.

Economic Value, Expenditures, and Economic Activity

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The monetary value of this satisfaction is referred to as consumer surplus. The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips.

The estimated consumer surplus per fish for king mackerel to anglers in the South Atlantic, based on the estimated willingness-to-pay to avoid a reduction in the bag limit, is $7 (assumed 2006 dollars; Whitehead 2006). Comparable estimates have not been identified for Spanish mackerel.

While anglers receive economic value as measured by the consumer surplus associated with fishing, for-hire businesses receive value from the services they provide. Producer surplus is the measure of the economic value these operations receive. Producer surplus is the difference between the revenue a business receives for a good or service, such as a charter or headboat trip, and the cost the business incurs to provide that good or service. Estimates of the producer surplus associated with for-hire trips are not available. However, proxy values in the form of net operating revenues are available (D. Carter, NMFS SEFSC, personal communication, August

2010). These estimates were culled from several studies – Liese et al. (2009), Dumas et al. (2009), Holland et al. (1999), and Sutton et al. (1999). Estimates of net operating revenue per angler trip (2009 dollars) on representative charter trips (average charter trip regardless of area fished) are $146 for Louisiana through east Florida, $135 for east Florida, $156 for northeast Florida, and $128 for North Carolina. For charter trips into the EEZ only, net operating revenues are $141 in east Florida and $148 in northeast Florida. For full-day and overnight trips only, net operating revenues are estimated to be $155-$160 in North Carolina. Comparable estimates are not available for Georgia, South Carolina, or Texas.

Net operating revenues per angler trip are lower for headboats than for charter boats. Net operating revenue estimates for a representative headboat trip are $48 in the Gulf (all states and all of Florida), and $63-$68 in North Carolina. For full-day and overnight headboat trips, net operating revenues are estimated to be $74-$77 in North Carolina. Comparable estimates are not available for Georgia and South Carolina.

These value estimates should not be confused with angler expenditures or the economic activity (impacts) associated with these expenditures. While expenditures for a specific good or service may represent a proxy or lower bound of value (a person would not logically pay more for something than it was worth to them), they do not represent the net value (benefits minus cost), nor the change in value associated with a change in the fishing experience.

The desire for recreational fishing generates economic activity as consumers spend their income on the various goods and services needed for recreational fishing. This spurs economic activity in the region where the recreational fishing occurs. It should be clearly noted that, in the absence of the opportunity to fish, the income would presumably be spent on other goods and services. As such, the analysis below represents a distributional analysis only.

Estimates of the regional economic activity (impacts) associated with the recreational fishery for king mackerel and Spanish mackerel were derived using average coefficients for recreational angling across all fisheries (species), as derived by an economic add-on to the MRFSS, and described and utilized in NMFS (2009) and are provided in Tables 3.4.2.15-20. Business activity is characterized in the form of FTE jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Job and output (sales) impacts are equivalent metrics across both the commercial and recreational sectors. Income and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values. Neither income nor value-added impacts should be added to output (sales) impacts because this would result in double counting. Job and output (sales) impacts, however, may be added across sectors.

Estimates of the average expenditures by recreational anglers are provided in NMFS (2009) and are incorporated herein by reference. Estimates of the average recreational effort (2007-2011) and associated economic impacts (2008 dollars) are provided in **Table 3.3.2.9**. Target trips were used as the measure of recreational effort. As previously discussed, more trips may catch some

species than target the species. Where such occurs, estimates of the economic activity associated with the average number of catch trips can be calculated based on the ratio of catch trips to target trips because the average output impact and jobs per trip cannot be differentiated by trip intent. For example, if the number of catch trips is three times the number of target trips for a particular state and mode, the estimate of the associated activity would equal three times the estimate associated with target trips. **Table 3.3.2.9.** contains estimates of the average annual (2007-2011) target trips and catch trips, by species, for each state and mode.

It should be noted that output impacts and value added impacts are not additive and the impacts for each species should not be added because of possible duplication (some trips may target multiple species). Also, the estimates of economic activity should not be added across states to generate a regional total because state-level impacts reflect the economic activity expected to occur within the state before the revenues or expenditures "leak" outside the state, possibly to another state within the region. Under a regional model, economic activity that "leaks" from, for example, Alabama into Louisiana, would still occur within the region and continue to be tabulated. As a result, regional totals would be expected to be greater than the sum of the individual state totals. Regional estimates of the economic activity associated with the fisheries for these species are unavailable at this time.

The distribution of the estimates of economic activity by state and mode are consistent with the effort distribution with the exception that charter anglers, on average, spend considerably more money per trip than anglers in other modes. As a result, the number of charter trips can be a fraction of the number of private trips, yet generate similar estimates of the amount of economic activity.

Table 3.3.2.9. Summary of king mackerel target trips (2007-2011 average) and associated economic activity (2012 dollars), South Atlantic states. Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	East Florida
	Shore Mode			
Target Trips	37,113	47,408	0	17,947
Output Impact	$9,912,562	$5,147,891	$0	$546,734
Value Added Impact	$5,519,852	$2,866,467	$0	$317,409
Jobs	112	59	0	5
	Private/Rental Mode			
Target Trips	127,556	33,068	11,070	328,019
Output Impact	$7,424,590	$1,551,501	$184,435	$13,227,424
Value Added Impact	$4,186,496	$905,280	$111,875	$7,904,088
Jobs	75	17	2	130
	Charter Mode			
Target Trips	1,540	5,476	318	19,418
Output Impact	$639,289	$1,969,232	$21,318	$8,115,065
Value Added Impact	$358,770	$1,112,535	$12,442	$4,777,567
Jobs	8	24	0	78

	All Modes			
Target Trips	166,209	85,952	11,388	365,384
Output Impact	$17,976,441	$8,668,624	$205,752	$21,889,223
Value Added Impact	$10,065,119	$4,884,283	$124,317	$12,999,064
Jobs	195	99	2	214

Source: Effort data from the NMFS MRFSS/MRIP, economic activity results calculated by NMFS SERO using the model developed for NMFS (2009).

Table 3.3.2.10. Summary of Spanish mackerel target trips (2007-2011 average) and associated economic activity (2012 dollars), South Atlantic states. Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	East Florida
	Shore Mode			
Target Trips	66,917	43,394	1,623	118,706
Output Impact	$17,872,953	$4,712,022	$27,878	$3,616,236
Value Added Impact	$9,952,630	$2,623,766	$16,717	$2,099,424
Jobs	202	54	0	36
	Private/Rental Mode			
Target Trips	187,165	17,139	2,113	66,616
Output Impact	$10,894,222	$804,136	$35,204	$2,686,302
Value Added Impact	$6,142,915	$469,203	$21,354	$1,605,208
Jobs	110	9	0	26
	Charter Mode			
Target Trips	4,404	3,000	89	595
Output Impact	$1,828,200	$1,078,834	$5,966	$248,659
Value Added Impact	$1,025,990	$609,497	$3,482	$146,393
Jobs	22	13	0	2
	All Modes			
Target Trips	258,486	63,533	3,825	185,917
Output Impact	$30,595,375	$6,594,993	$69,049	$6,551,197
Value Added Impact	$17,121,534	$3,702,465	$41,553	$3,851,024
Jobs	334	76	1	65

Source: Effort data from the NMFS MRFSS/MRIP, economic activity results calculated by NMFS SERO using the model developed for NMFS (2009).

As previously noted, the values provided in the tables above only reflect effort derived from the MRFSS/MRIP. Because the headboat sector in the Southeast Region is not covered by the MRFSS/MRIP, the results do not include estimates of the economic activity associated with headboat anglers. While estimates of headboat effort are available, species target information is not collected in the Headboat Survey, which prevents the generation of estimates of the number of headboat target trips for individual species. Further, because the model developed for NMFS (2009) was based on expenditure data collected through the MRFSS/MRIP, expenditure data from headboat anglers was not available and appropriate economic expenditure coefficients have not been estimated. As a result, estimates of the economic activity associated with the headboat sector comparable to those of the other recreational sector modes cannot be provided.

3.3.3 Social and Cultural Environment

Coastal growth and development affects many coastal communities, especially those with either or both commercial and recreational working waterfronts. The rapid disappearance of these types of waterfronts has important implications as the disruption of various types of fishing-related businesses and employment. The process of "gentrification," which tends to push those of a lower socio-economic class out of traditional communities as property values and taxes rise has become common along coastal areas of the U.S. and around the world. Working waterfronts tend to be displaced with development that is often stated as the "highest and best" use of waterfront property, but often is not associated with water-dependent occupations. However, with the continued removal of these types of businesses over time the local economy becomes less diverse and more reliant on the service sector and recreational tourism. As home values increase, people within lower socio-economic strata find it difficult to live within these communities and eventually must move. Consequently they spend more time and expense commuting to work, if jobs continue to be available. Newer residents often have no association with the water-dependent employment and may see that type of work and its associated infrastructure as unappealing. They often do not see the linkage between those occupations and the aesthetics of the community that produced the initial appeal for many migrants. The demographic trends within counties can provide some indication as to whether these types of coastal change may be occurring if an unusually high rate of growth or change in the demographic character of the population is present. A rise in education levels, property values, fewer owner occupied properties and an increase in the median age can at times indicate a growing process of gentrification. Demographic profiles of coastal communities can be found in Amendment 18 (GMFMC/ SAFMC 2011).

The figures below present the top fifteen communities based upon a regional quotient of commercial landings and value for coastal migratory pelagic species (**Figures 3.3.3.1 – 3.3.3.2**). The regional quotient is the proportion of landings and value out of the total landings and value of that species for that region. The Keys communities are included in both South Atlantic and Gulf communities to allow comparison within each region. In **Figure 3.3.3.1**, Cocoa, Florida lands over 25% of all king mackerel for South Atlantic fishing communities and those landings

represent over 30% of the value. Only four North Carolina communities make up the top fifteen, and no South Carolina or Georgia communities are included in this graph.

Those communities that are categorized within the top fifteen for regional quota are profiled under their county description that includes the top fifteen species landed within each community by local quotient (lq) and represents those species ranked according to their contribution to landings and value out of total landings and value for each community. Only those communities that have landings or landed value of 3% or more will be profiled under a county description.

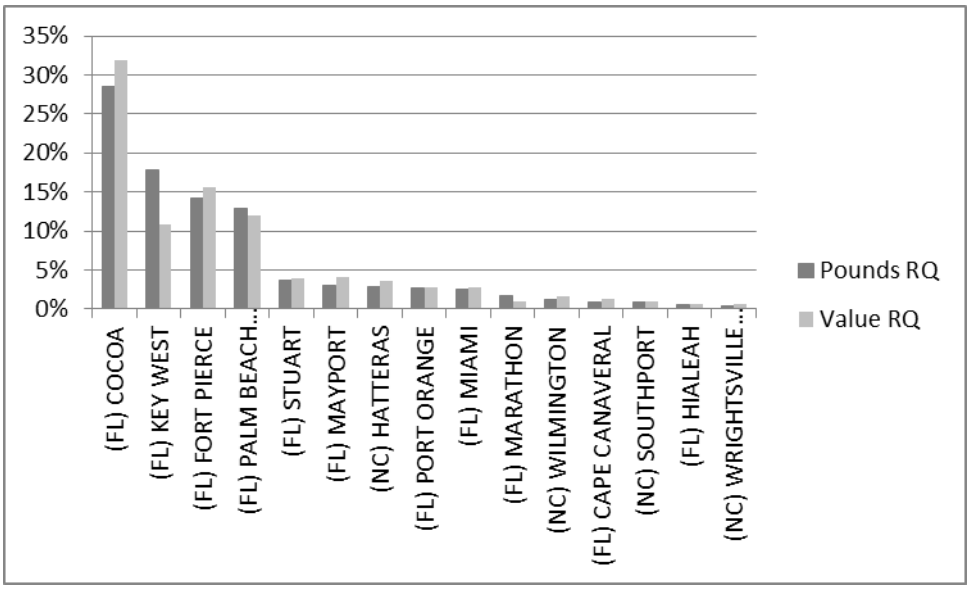

Figure 3.3.3.1. Top Fifteen South Atlantic Communities Ranked by Pounds and Value Regional Quotient of King Mackerel. Source: ALS 2010

For Spanish mackerel in the Atlantic (**Figure 3.3.3.2**), Fort Pierce has almost 35% of the landings and just almost 30% of the value. Cocoa is second with just over 20% of landings and about 17% of value. Although Hatteras, North Carolina ranked third for value, the community had lower landings than Palm Beach Gardens, Florida. No South Carolina or Georgia communities are included in the top fifteen for Spanish mackerel.

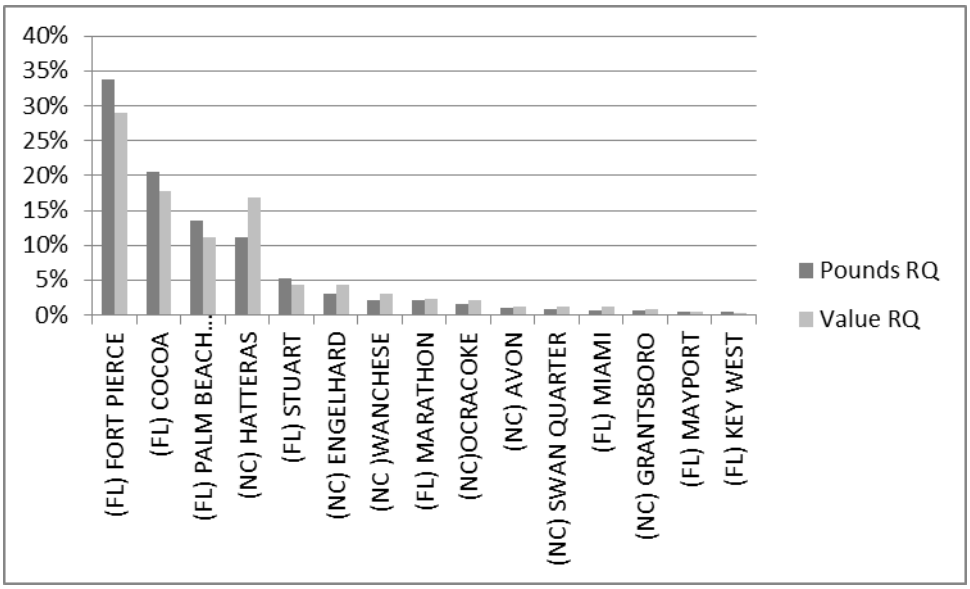

Figure 3.3.3.2. Top Fifteen South Atlantic Communities Ranked by Pounds and Value of Regional Quotient of Spanish Mackerel. Source: ALS 2010

Recreational Fishing Communities

Recreational fishing communities in the South Atlantic are listed in **Table 3.3.3.1.** These communities were selected by their ranking on a number of criteria including number of charter permits per thousand population and recreational fishing infrastructure as listed under the MRIP survey identified within each community.

Table 3.3.3.1. South Atlantic Recreational Fishing Communities.

Community	State	Community	State
Jekyll Island	GA	Cape Carteret	NC
Hatteras	NC	Kill Devil Hill	NC
Manns Harbor	NC	Murrells Inlet	SC
Manteo	NC	Little River	SC
Atlantic Beach	NC	Georgetown	SC
Wanchese	NC	Islamorada	FL
Salter Path	NC	Cudjoe Key	FL
Holden Beach	NC	Key West	FL
Ocean Isle	NC	Tavernier	FL
Southport	NC	Little Torch Key	FL
Wrightsville Beach	NC	Ponce Inlet	FL
Marshallberg	NC	Marathon	FL
Carolina Beach	NC	Sugarloaf Key	FL
Oriental	NC	Palm Beach Shores	FL
Topsail Beach	NC	Big Pine Key	FL
Swansboro	NC	Saint Augustine	FL
Nags Head	NC	Key Largo	FL
Harkers Island	NC	Summerland Key	FL
Calabash	NC	Sebastian	FL
Morehead City	NC	Cape Canaveral	FL

3.3.4 Environmental Justice (EJ)

Executive Order 12898 requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. This executive order is generally referred to as environmental justice (EJ).

To evaluate EJ considerations for the proposed actions, information on poverty and minority rates is examined at the county level. Information on the race and income status for groups at the different participation levels (vessel owners, crew, dealers, processors, employees, employees of associated support industries, etc.) is not available. Because the proposed actions would be expected to affect fishermen and associated industries in several communities along the South Atlantic coast and not just those profiled, it is possible that other counties or communities have poverty or minority rates that exceed the EJ thresholds.

In order to identify the potential for EJ concern, the rates of minority populations (non-white, including Hispanic) and the percentage of the population that was below the poverty line were examined. The threshold for comparison that was used was 1.2 times the state average for minority population rate and percentage of the population below the poverty line. If the value for the community or county was greater than or equal to 1.2 times the state average, then the community or county was considered an area of potential EJ concern. Census data for the year 2010 was used. Estimates of the state minority and poverty rates, associated thresholds, and community rates are provided in **Table 3.3.4.1**; note that only communities that exceed the minority threshold and/or the poverty threshold are included in the table**.**

While some communities expected to be affected by this proposed amendment may have minority or economic profiles that exceed the EJ thresholds and, therefore, may constitute areas of concern, significant EJ issues are not expected to arise as a result of this proposed amendment. No adverse human health or environmental effects are expected to accrue to this proposed amendment, nor are these measures expected to result in increased risk of exposure of affected individuals to adverse health hazards. The proposed management measures would apply to all participants in the affected area, regardless of minority status or income level, and information is not available to suggest that minorities or lower income persons are, on average, more dependent on the affected species than non-minority or higher income persons.

Table 3.3.4.1. Environmental Justice thresholds (2010 U.S. Census data) for counties in the South Atlantic region. Only coastal counties (east coast for Florida) with minority and/or poverty rates that exceed the state threshold are listed.

State	County	Minority Rate	Minority Threshold*	Poverty Rate	Poverty Threshold*
Florida		**47.4**	**56.88**	**13.18**	**15.81**
	Broward	52.0	-4.6	11.7	4.11
	Miami-Dade	81.9	-34.5	16.9	-1.09
	Orange County	50.3	-2.9	12.7	3.11
	Osceola	54.1	-6.7	13.3	2.51
Georgia		**50.0**	**60.0**	**15.0**	**18.0**
	Liberty	53.2	-3.2	17.5	0.5
South Carolina		**41.9**	**50.28**	**15.82**	**18.98**
	Colleton	44.4	-2.5	21.4	-2.42
	Georgetown	37.6	4.3	19.3	-0.32
	Hampton	59.0	-17.1	20.2	-1.22
	Jasper	61.8	-19.9	9.9	-0.92
North Carolina		**39.1**	**46.92**	**15.07**	**18.08**
	Bertie	64.6	-25.50	22.5	-4.42
	Chowan	39.2	-0.1	18.6	-0.52
	Gates	38.8	0.3	18.3	-0.22
	Hertford	65.3	-26.2	23.5	-5.42
	Hyde	44.5	-5.4	16.2	1.88
	Martin	48.4	-9.3	23.9	-5.82

State	County	Minority Rate	Minority Threshold*	Poverty Rate	Poverty Threshold*
	Pasquotank	43.4	-4.3	16.3	1.78
	Perquimans	27.7	11.4	18.6	-0.52
	Tyrrell	43.3	-4.2	19.9	-1.82
	Washington	54.7	-15.6	25.8	-7.72

*The county minority and poverty thresholds are calculated by comparing the county minority rate and poverty estimate to 1.2 times the state minority and poverty rates. A negative value for a county indicates that the threshold has been exceeded.

King mackerel and Spanish mackerel are part of an important commercial fishery throughout the South Atlantic and Gulf regions, and specifically in Florida, and the fish are also targeted by recreational fishermen. Cobia has less importance commercially but is an extremely important recreational species, particularly in the Carolinas and for the for-hire sector on the Florida panhandle. The actions in this proposed amendment are expected to incur social and economic benefits to users and communities by implementing management measures that would contribute to conservation of the coastal pelagic stocks and to maintaining the commercial and recreational sectors of the fishery. Although there will be some short-term impacts due to some of the proposed management measures, the overall long-term benefits are expected to contribute to the social and economic health of South Atlantic and Gulf coastal communities.

Finally, the general participatory process used in the development of fishery management measures (e.g., scoping meetings, public hearings, and open South Atlantic and Gulf Council meetings) is expected to provide sufficient opportunity for meaningful involvement by potentially affected individuals to participate in the development process of this amendment and have their concerns factored into the decision process. Public input from individuals who participate in the fishery has been considered and incorporated into management decisions throughout development of the amendment.

3.4 Administrative Environment

3.4.1 The Fishery Management Process and Applicable Laws

3.4.1.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nm 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 between 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. In most cases, the Secretary has delegated this authority to NMFS.

The South Atlantic 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 mi offshore from the seaward boundary of North Carolina, South Carolina, Georgia, and east Florida to Key West. The South Atlantic Council has thirteen voting members: one from NMFS; 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 South Atlantic Council Committees have full voting rights at the Committee level but not at the full South Atlantic Council level. South Atlantic Council members serve three-year terms and are recommended by state governors and appointed by the Secretary 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 South Atlantic Council uses its SSC 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 Procedure Act, in the form of “notice and comment” rulemaking.

3.4.1.2 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 South Atlantic 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 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 is also represented at the South Atlantic Council level, but does not have voting authority at the South Atlantic Council level.

NMFS's 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.

3.4.1.3 Enforcement

Both the NMFS Office for Law 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. The Final Penalty Policy was issued and announced on April 14, 2011 (76 FR 20959).

Chapter 4. Environmental Effects and Comparison of Alternatives

4.1 Action 1: Modify the Atlantic migratory group king mackerel minimum size limit.

Alternative 1 (No Action). Do not change the Atlantic migratory group king mackerel minimum size limit of 24 inches fork length (FL) for the commercial and recreational sectors.

Alternative 2. Reduce the Atlantic migratory group king mackerel recreational and commercial minimum size limit to 23 inches FL.

Alternative 3. Reduce the Atlantic migratory group king mackerel recreational and commercial minimum size limit to 22 inches FL.

Alternative 4. Reduce the Atlantic migratory group king mackerel commercial minimum size limit to 23 inches FL for the commercial sector only, from the Georgia/Florida line south to the Miami-Dade/Monroe County line. The commercial minimum size limit in areas north of the Georgia/Florida state line and South of the Miami-Dade/Monroe County line would remain 24 inches FL. The recreational minimum size limit would remain 24 inches FL.

4.1.1 Biological Effects

Alternative 1 (No Action) would continue the current 24 inch FL size limit for the Atlantic migratory group king mackerel and would thus continue the biological benefits associated with controlling the rate of harvest and ensuring that most king mackerel have the opportunity to spawn before being harvested. Female king mackerel may reach first maturity at 17.7-19.6 inches and all females are usually sexually mature by the time they reach 35.4 inches FL in length (GMFMC/SAFMC 2011). Therefore, retaining the current minimum size limit would increase the probability that king mackerel would be able to spawn at least once before being harvested when compared to the other alternatives under consideration. The lower the minimum size limit is set, the lower biological benefits of the size limit. However, during the April 2013 Snapper Grouper Advisory Panel (Snapper Grouper AP) meeting, anecdotal information was presented regarding the high number of undersized discards in the Atlantic migratory group king mackerel commercial sector. Although a higher minimum size limit may result in a greater number of fish able to spawn to support future biomass stability, it also results in a greater the number of discards and higher discard mortality rate than a smaller minimum size limit.

The results of a discard study conducted from 2002 through 2006 that included discard information from 3,733 South Atlantic trips, indicate that 58% of those trips reported discards and, only 1.7% of those trips reported king mackerel discards. According to the Southeast Data, Assessment, and Review (SEDAR) 16 report (SEDAR 2009), less than 20% of discarded king mackerel in the South Atlantic commercial hook-and-line sector were reported as mostly dead between the years of 2002 and 2006, and the stock assessment considered commercial discards negligible. During this sampling time series the 24-inch FL minimum size limit was in place. Furthermore, fishermen may possess undersized king mackerel less than or equal to 5% by weight of the king mackerel on board, which allows for some undersized fish to be retained so not all undersized fish must be discarded. Therefore, the risk of increasing fishing-related mortality of king mackerel as a result of maintaining the current level of regulatory discards is not significant. Retaining the current 24-inch FL size limit is not expected to increase or decrease the rate of harvest of the species, nor would it be likely to negatively impact overall abundance.

Alternative 2 would reduce the minimum size limit from 24 inches FL to 23 inches FL for the commercial and recreational sectors. A lower minimum size limit would result in fishermen being able to keep more smaller king mackerel, and may reduce the number of discarded fish. According to anecdotal information presented by an individual at the April 2013 Mackerel Advisory Panel (AP) meeting, approximately 25% of the fish caught by fishermen targeting Atlantic migratory group king mackerel during the months of March and April are smaller than the 24-inch minimum size limit. The same AP member also estimated that one out of every three 23-inch king mackerel are released dead due to hooking injuries.

Because Atlantic migratory group king mackerel are managed under a commercial ACL of 3.71 million pounds and quantities of king mackerel retained on each trip are limited through a series of trip limits, there is little probability that decreasing the minimum size limit would lead to increased harvest in the commercial sector. For the commercial hook-and-line sector: in the Florida East Coast Sub-Zone the trip limit is 75 fish per day; from New York to the Flagler/Volusia County line from April 1 to March 31 the trip limit is 3,500 pounds; from the Flagler/Volusia county line to the Volusia/Brevard County line from April to October 31 the trip limit is 75 fish; and in Monroe County from April to October 31 the trip limit is 1,250 pounds. These trip limits control the rate of harvest of the stock and allow landings to be accurately tracked in-season to prevent ACL overages, and trigger in-season closures when necessary. Therefore, regardless of the minimum size limit, the total commercial harvest of king mackerel each year is caped at the ACL.

Recreational harvest of Atlantic migratory group king mackerel is controlled through a system of bag limits. From New York to Georgia, the bag limit is three fish per person per day, and the bag limit off Florida is two per person per day. The federal and state bag limits may not be combined, and in federal waters off Florida the bag limit is the same as the state bag limit. The bag limit in state waters off Georgia, South Carolina, and North Carolina is three fish per person per day. Because recreational harvest is controlled by possession limits, decreasing the minimum size limit for the recreational sector to 23 inches FL is not expected to result in an

increase in overall harvest. Rather, fishermen would be able to keep slightly smaller king mackerel, which may reduce discards and discard mortality of undersized fish by a small degree. As stated previously, most female king mackerel reach first sexual maturity at 17.7-19.6 inches and sexual maturity usually occurs by the time they reach 35.4 inches in length. Therefore, reducing the minimum size limit to 23 inches FL under **Alternative 2** would be unlikely to substantially impact the number king mackerel able to spawn before being harvested; however, more fish that may not have had a chance to spawn may be removed from the population when compared to **Alternative 1 (No Action)**.

Alternative 3 would reduce the commercial and recreational minimum size limit from 24 inches FL to 22 inches FL. Similar to **Alternative 2**, reducing the minimum size limit by two inches would allow fishermen to retain more smaller fish without increasing overall harvest of the species, which is limited by the commercial ACL, and the aforementioned series of trip limits and bag limits. **Alternative 3** would result in slightly greater negative biological impacts since it would allow more fish to be harvested that may have not yet reached sexual maturity and had a chance to spawn. Compared to all the alternatives under consideration, **Alternative 3** would result in the greatest level of potential negative biological impacts on the spawning population of Atlantic migratory group king mackerel.

Alternative 4 is tailored to allow smaller king mackerel to be harvested by the commercial sector in the area where fishermen have indicated they have the highest level of discarded undersize king mackerel. According to anecdotal information from fishery participants, regulatory discards are most prevalent for commercial fishing operations from the Georgia/Florida line south to the Miami-Dade/Monroe County line. Therefore, reducing the minimum size limit to 23 inches FL in that specific area for the commercial sector only could reduce regulatory discards where it is needed the most while still ensuring a maximum number of potential spawners would remain in the population. Compared to **Alternatives 2** and **3**, **Alternative 4** would result in the lowest level of negative biological impacts. Under this alternative, fewer younger fish would be removed from the population, and fewer subsequent impacts on the spawning stock would be realized.

Modifying the minimum size limits of Atlantic migratory group king mackerel in the southeast would not change how the fishery is prosecuted; nor would this action increase fishing or change fishing methods for species targeted within the CMP fishery. Therefore, no adverse effects to the protected species most likely to interact with mackerel fishing gear (e.g., sea turtles and smalltooth sawfish) are likely to result under any of the alternative considered as part of this action. Additionally, no negative effects on essential fish habitats (EFH), habitat areas of particular concern (HAPCs), or coral HAPCs are expected as a result of this action.

4.1.2 Economic Effects

Reducing size limits do not necessarily have economic effects in the commercial fishery. The only way there could be economic effects from the various alternatives from this action would be if price per pound would be affected by the sale of smaller fish. There is insufficient data to know what reducing the size limit as in **Alternatives 2** through **4** would to the price per pound of king mackerel. As stated in **Section 4.1.1**, the recreational sector is not likely to be affected by the change in size limit because **Alternatives 2** through **4** are not expected to significantly change the number of fish caught.

4.1.3 Social Effects

In general, negative social effects would be associated with any potential negative biological effects of reducing the minimum size limit, and positive social effects would be associated with any potential economic benefits. As discussed in Section 4.1.1, reducing the minimum size limit under **Alternatives 2-4** would not likely result in negative biological effects on the overall stock, but could decrease the numbers of spawning fish in the population. If the stock is impacted in the future because there are fewer spawning fish, the commercial and recreational fleet could be negatively impacted as well. **Table 3.3.3.1** shows the fishing communities with the highest commercial landings of king mackerel, and it would be expected that commercial fishermen in the Florida communities of Cocoa Beach, Key West, Fort Pierce, and Palm Beach could be impacted by a change in the minimum size limit. However, other fisheries are more likely to be important at the community level, such as shrimp in Cocoa Beach and spiny lobster in Key West. Additionally, the local economies in these areas of Florida also have large tourism industries, and it would be expected that a change in the minimum size limit for king mackerel would result in a minimal overall community-level impact.

The positive economic effects of allowing fishermen to retain more fish can help increase trip efficiency and reduce waste in the commercial sector (**Alternatives 2-4)**, and improve recreational fishing opportunities for anglers and for-hire clients who want to keep the fish (**Alternatives 2** and **3**).

Overall, **Alternative 1 (No Action)** would likely result in the minimum biological costs and the lowest economic benefits that would be associated with social effects. The reduced minimum size limits under **Alternatives 2** and **3** would allow both commercial and recreational fishermen to keep smaller fish, with the lowest size limit under **Alternative 2** as the most economically beneficial for the for-hire fleet and the commercial fleet, and the most harvest opportunities for private anglers. **Alternative 4** would only be economically beneficial to commercial fishermen on the Florida East Coast, and the limited change in the minimum size limit under **Alternative 4** would be expected to result in fewer potential benefits that could negatively affect fishing opportunities.

4.1.4 Administrative Effects

Alternative 1 (No Action) would result in no change to the administrative environment because no modification to the commercial or recreational minimum size limit for Atlantic group king mackerel would be made. Because a size limit is currently in place and being enforced, changing the minimum size limit under **Alternatives 2** and **3** would not increase or decrease the burden on law enforcement to monitor compliance. Under **Alternatives 2** and **3**, the public would be notified of the minimum size limit change, which would require minimal time and effort for the Southeast Regional Office staff. **Alternative 4** is the most administratively burdensome of all the alternatives considered. Because the minimum size limits would be different within a small area, law enforcement efforts may be complicated. Compliance with the minimum size limit may be difficult to determine for commercial fishermen who may be fishing along the Georgia/Florida and Miami-Dade/Monroe County lines. **Alternative 4** would also require the National Marine Fisheries Service (NMFS) to notify commercial fishermen of the modified size limit within the designated area.

Alternative 1 has no impact on federal law enforcement beyond the status quo. Presently, it is possible that a commercial or recreational fisher could harvest a 23-inch Spanish mackerel in the exclusive economic zone (EEZ) off New York and New Jersey, then claim it was caught in state waters. Because landings of Spanish mackerel are rare in these states, it is likely that no law enforcement costs are specifically directed to prevent poaching of 23-inch species in the EEZ off these two states.

Alternatives 2, 3 and **4** would have no impact on federal law enforcement beyond the status quo because each state's higher minimum size limit is the smallest lower bound.

4.2 Action 2. Modify restrictions on transfer-at-sea and gillnet allowances for Atlantic migratory group Spanish mackerel.

Alternative 1 (No Action). No more than two gillnets, including any net in use, may be possessed at any one time; provided, however, that if two gillnets, including any net in use, are possessed at any one time, they must have stretched mesh sizes (as allowed under the regulations) that differ by at least 0.25 inch (0.64 cm) (622.41(c)(3)(ii)(B)(*3*). A species subject to a trip limit specified in this section taken in the EEZ may not be transferred at sea, regardless of where such transfer takes place, and such species may not be transferred in the EEZ (§ 622.44).

Alternative 2: Modify commercial gear specifications for Atlantic migratory group Spanish mackerel.

Option a. Remove the maximum number of gillnets.
Option b. Remove the requirement for different mesh sizes.
Option c. Allow federally-permitted Spanish mackerel vessels to possess three gillnets.
Option d. Allow three gillnets for the vessel receiving transfer.

Alternative 3. Allow transfer of a portion an Atlantic migratory group Spanish mackerel gillnet and its catch from one vessel that has reached its trip limit to another vessel that has not caught the trip limit.

a) Transfer is allowed if directed harvesting gear used to harvest the Spanish mackerel being transferred is allowable net gear. Spanish mackerel harvested with other than directed allowable net harvesting gear shall not be transferred.
b) Transfer shall only take place in the EEZ between vessels with valid Spanish mackerel commercial permits.
c) The Spanish mackerel removed from the directed harvesting gear aboard the harvesting vessel shall be isolated aboard the vessel and shall not exceed the applicable daily vessel limit specified in this subsection. All fish exceeding the applicable daily vessel limit shall remain entangled in the meshes of the net until transfer. The quantity of fish transferred to any single vessel shall not exceed the applicable daily harvest limit.
d) Call-in required for both vessels engaged in the transfer.

4.2.1 Biological Effects

Currently, Spanish mackerel gillnet fishermen are limited to the use of two gillnets, which must have different mesh sizes. If, in the course of setting the nets a vessel harvests more than the trip limit, the excess fish must be discarded. Because the discard mortality rate of fish caught in gillnets is very high, most of the excess fish that are discarded would die. Under **Alternative 1 (No Action)** no change would be made to the current regulations that limit the number of nets fishermen may use when gillnetting for Spanish mackerel; nor would fishermen who catch excess poundage (fish in excess of the trip limit) be able to transfer those excess fish to another

vessel that has not yet reached the trip limit to prevent the excess catch from having to discarded. The AP met in April 2013 and discussed this issue at length. During the meeting Spanish gillnet fishermen stated that the need to transfer fish harvested in excess of the trip limits is extremely rare and thus did not warrant action taken by the South Atlantic Fishery Management Council (South Atlantic Council) to modify the current regulations. However, another AP member stated that when it does happen the numbers of fish that need to be discarded are significant, and at times double the trip limit could be caught in one set.

Based on this information the AP recommended the South Atlantic Council choose **Alternative 1 (No Action)** as their preferred. If the anecdotal information shared by the fishery participants is accurate, under **Alternative 1 (No Action)** the biological impacts would likely be negligible based on the rarity of occurrence. If part of a net does need to be cut free to maintain harvest levels under the trip limit, the fish in the cut away portion of the net would most likely be released dead. However, if this action does not occur on a frequent basis, the overall impact to the sustainability of the stock is assumed to be extremely small. Because the practice of cutting away a portion of a net and transferring to another vessel is currently prohibited it is not possible to obtain a true measure how prevalent this activity is. **Table 4.2.1.1** and **Table 4.2.1.2** illustrate the amount of Spanish mackerel harvested each year with gillnet gear. However, the proportion of harvest that is landed as a result to transferring a portion of gillnet to another vessel at sea is unknown.

Table 4.2.1.1. South Atlantic commercial Spanish mackerel landings (lbs ww) by gear.

Year	Gill Net	Hook and Line	Other	Total
2006	1,386,896	653,472	1,568,193	3,608,561
2007	1,705,634	714,690	1,329,200	3,749,524
2008	1,065,412	821,158	789,002	2,675,572
2009	1,420,139	941,620	1,228,516	3,590,275
2010	1,361,139	1,123,460	1,976,477	4,461,076
2011	1,183,603	1,226,150	1,882,132	4,291,885

Source: SEFSC ACL Data (Mar 2013). Note 2012 landings are incomplete, thus excluded.

Table 4.2.1.2 Percentage of commercial Spanish mackerel landings (lbs ww) in South Atlantic jurisdiction landed by gillnet.

Year	Gill Net
2006	41%
2007	33%
2008	25%
2009	26%
2010	39%
2011	40%

Source: SEFSC ACL Data (Mar 2013). Note 2012 landings are incomplete, thus excluded.

Alternative 2 would modify the currently regulations in one or more ways including: removing the maximum number of gillnets allowed to be used by Spanish mackerel gillnet operations, which would allow any number of gillnets to be used; removing the requirement for different mesh sizes; allowing federally-permitted Spanish mackerel vessels to possess three gillnets; and/or allowing three gillnets for the vessel receiving transfer. Because the first three options alone, or together, would not modify the trip limit or allow for transfer at sea, the biological implications of any one of those actions would not result in an increase or decrease in harvest. Simply removing the limit on the number gillnets or allowing three gillnets instead of two to be used does not change the fact that each trip is limited by the current system of trip limits that apply to the northern and southern zones. Therefore, making any of the first three modifications to the regulations would not address the issue of fishermen needing to cut a portion of a net off in order to stay within the applicable trip limit.

However, if the South Atlantic Council were to allow transfer at sea of Spanish mackerel harvested in excess of the trip limits under **Alternative 3**, the last option under **Alternative 2** could result in the use of "runner boats" that could take trips back fourth from the lead vessel to the dock with the excess fish. Because commercial Spanish mackerel is managed under a 3.87 million pound ACL, overall harvest would be capped at that level and no biological impacts would be expected. However, if transfer at sea of excess fish is allowed under **Alternative 3**, the ACL may be reached much faster than in previous years since more vessels, notably runner boats, may participate due the open access nature of the Spanish mackerel permit. The effects of such practices on market conditions are discussed under Section 4.2.2.

Alternative 3 would allow Spanish mackerel to be transferred to another vessel that has not harvested the trip limit. As stated previously, direct biological impacts of allowing this practice are likely to be neutral because overall harvest is limited to the commercial ACL. However, for the reasons discussed under **Alternative 2**, the ACL may be met much faster than compared to previous fishing years due to increase efficiency of fishing operations. For this reason the potential impacts of **Alternative 3** may be more predominant in the social and economic environments.

Alternative 1 (No Action) and **Alternative 3** would not modify the way in which the CMP fishery in the southeast could impact protected species. These alternatives will not increase fishing or change fishing methods for species targeted within the CMP FMP. Therefore, no adverse effects to the protected species most likely to interact with mackerel fishing gear (e.g., sea turtles and smalltooth sawfish) are likely to result under either alternative. Additionally, no negative effects on EFH, HAPCs, or coral HAPCs are expected as a result of these alternatives. Options under **Alternative 2** would allow an increase in the number of gillnets a vessel is permitted to possess, which could lead to an increase in fishing pressure if trip limits are exceeded on a regular basis. Theoretically, the potential for an increase in fishing effort per vessel could increase the amount of gear in the water at any one time. Under these circumstances, **Alternative 2** would have the fewest biological benefits for sea turtles and smalltooth sawfish relative to the other alternatives.

4.2.2 Economic Effects

Alternatives 1 (No Action), **2** and **3** are expected to have no impact (short or long run) on recreational fishing because anglers on board private and for-hire vessels do not use gillnets to take Spanish mackerel in the EEZ.

Potential increases in gillnet commercial landings are limited by existing state and federal trip limits. From New York through Georgia, the commercial trip limit is 3,500 lbs, whole weight, throughout the fishing year, which is the same as the federal trip limit in the EEZ off those states. These trip limits are also possession limits. Regardless of how many run-around gillnets that could be used by commercial fishing crews in federal waters north of Florida, they cannot land or possess more than 3,500 lbs of Spanish mackerel per trip per vessel.

According to Florida regulations, no vessel can land or possess more than 3,500 lbs of Spanish mackerel from April 1 through November 30. From December 1 (when the federal unlimited harvest begins), no vessel can harvest or possess at any one time while fishing in state waters more than 3,500 lbs from Monday through Friday and 1,500 on the weekends. That state trip limit does not prohibit a vessel from landing and possessing more than 3,500 lbs of Spanish mackerel if they were caught in federal waters Monday through Friday. Once the federal unlimited harvest season ends, both Florida's and the federal trip limit fall to 1,500 lbs, and when the federal trip limit is reduced to 500 lbs, the state's and federal trip limit are 500 lbs. Consequently, the time when the federal and state trip limits are different is when there is unlimited harvest in the EEZ: from December 1 until 75% of the adjusted quota is met. Gillnet is the primary gear used by North Carolina commercial fishing operations, but not so in the other states. In 2011, all categories of gillnets accounted for over 90% of North Carolina's landings of the species that year gillnets while they accounted for approximately 11% of Spanish mackerel landings on Florida's east coast. Gillnet landings represent a decreasing proportion of Florida east coast Spanish mackerel landings from 2000 through 2011 (Figure 4.2.2.1).

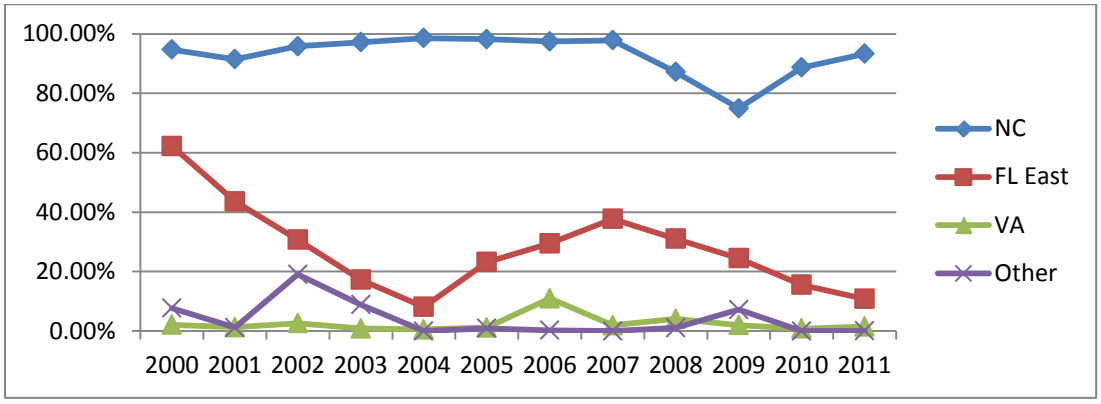

Figure 4.2.2.1. Percent of Spanish mackerel landings by all gillnets, 2000 through 2011. Source: NMFS OST, Online ALS (excludes confidential information).

The above commercial landings of Spanish mackerel represent three categories of gillnets: drift; run-around; and other (set). Set net gillnets are the most popular in North Carolina. In Florida, the only landings of gillnet are from run-around gillnets because of the gillnet prohibition in state waters. Consequently, when drift and other (set net) gillnets landings of Spanish mackerel landings are removed, 100% of Spanish mackerel landings in Florida are by run-around gillnet, but vary from 0.25% to 4.18% in North Carolina (**Figure 4.2.2.2**). From 2000 through 2006, the average annual percentage of landings from run-around gillnet was 0.63%, but from 2008 through 2011, the average was 2.45% because of a spike in 2008 and 2009.

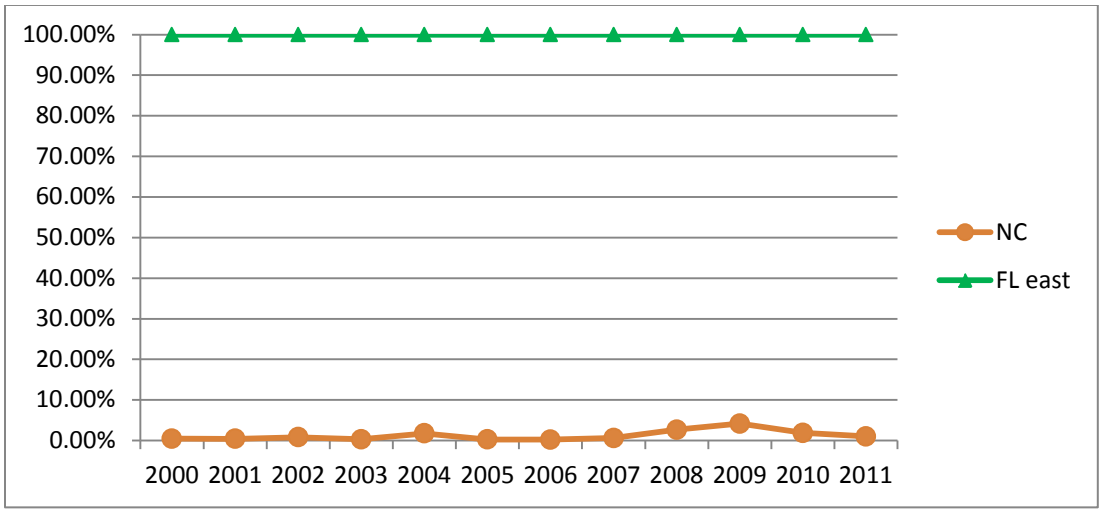

Figure 4.2.2.2. % of Spanish mackerel landings by run-around gillnet in North Carolina and Florida, 2000 through 2011. Source: NMFS OST, Online ALS (excludes confidential information).

For the commercial fishery, **Alternative 1 (No Action)** would have no economic effect beyond the status quo in the short and long run.
Alternative 2 Option A would directly benefit owners and crews of commercial vessels that could and would use more than two run-around gillnets in federal waters to increase their landings of Spanish mackerel, allowing them to be more efficient in their operations However, under **Option A,** safety-related trip costs would likely increase. **Alternative 2 Option C** could directly benefit owners and crews of commercial vessels that receive the third gillnet during a transfer or are capable of having a redundant gill net on board in the event one of the other two gillnets is damaged. Hence, **Alternative 2 Option A** may provide for the largest increase in landings, revenues and net revenues, followed in turn by **Option C**. However, neither option could increase landings beyond 3,500 lbs per trip per vessel from New York through Georgia. It is expected that North Carolina's fishermen would be the only fishermen north of Florida that could directly benefit from **Option A** or **C** because there were no reported run-around gillnet landings in those other states from 2000 through 2011.

There is presently an unlimited harvest in federal waters off Florida from December 1 until 75% of the adjusted quota is met. **Alternative 2**, **Option A** would allow for an unlimited increase in the use of run-around gillnet, which could substantially increase landings when trips are of unlimited harvest. However, the actual increases in the number of run-around gillnets used and Spanish mackerel landings per trip would be limited, to the most part, by the size of the vessel, its holding capacity and trip-associated costs, such as higher fuel costs for longer trips. The length of the unlimited harvest season may also be too short to justify the purchase and use of a third run-around gillnet. During the 2012-2013 fishing season, for example, 75% of the adjusted quota (2.88 million lbs) was met by early January and the trip limit in the southern zone was reduced to 1,500 lbs on January 6, 2013. If the number of gillnets used increases under **Alternative 2, Option A**, the season would be even shorter. An additional run-around gillnet purchased solely for use when harvest per trip is unlimited could be used for less than one month. If **Alternative 2** of **Action 4** is preferred, the unlimited harvest trip would end and the trip limit would be 3,500 lbs; thereby, also decreasing the likelihood, if any, of a vessel using more than two gillnets.

In theory, the ability to use more than two run-around gill nets is likely greater for larger vessels, so under **Alternative 2, Option A** the collective shares of Spanish mackerel landings, associated net revenues and incomes of owners and crews of the largest vessels operating in the South Atlantic could increase while the collective shares of owners and crews of smaller vessels decrease. However, any actual redistribution of benefits is unlikely if trip limits and other status-quo factors preclude any increased use of run-around gillnets.

Alternative 2, Option B could reduce the per-unit cost of purchasing and maintaining run-around gillnets if the gillnets that are used and possessed on the vessel (or stored and repaired) can be identical. **Alternative 1 (No Action)** would keep the current requirement that gillnets in use have stretched mesh sizes that differ by at least 0.25 inch (0.64 cm). **Alternative 1 (No Action)** may allow for a larger distribution of catch and landings by size, but **Alternative 2**, **Option B**, may be more consistent with commercial fishing operations' preferred distribution of catch and landings by size. Hence, **Alternative 2**, **Option B** may increase revenues and net revenues from Spanish mackerel landings beyond the status quo benefits of **Alternative 1 (No Action)** if it results in an increase of landings of more highly valued fish and/or lower gillnet costs.

Alternative 2, **Option D** would not change the existing two-gillnet limit on a vessel catching Spanish mackerel in the EEZ; however, it would allow a vessel that receives Spanish mackerel by transfer to possess a third run-around gillnet or piece of one that was used by another vessel without penalty. Under the status quo (**Alternative 1, No Action**), any vessel that possesses a third or piece of a third gillnet is in violation of regulation.

Alternative 2, **Option D**, would diminish law enforcement's ability to enforce the two gillnets-in-use limit if it made it easier for a vessel to illegally use three gillnets, while claiming the third net was received in a transfer. However, **Alternative 3**'s requirement that two vessels call in to report a transfer would likely reduce that incentive to cheat. Moreover, as described earlier,

physical and economic limitations may preclude the use of a third gillnet. Nonetheless, **Alternative 3** would create a new reporting requirement, which would impose additional costs on the operators of vessels involved in the transfer.

Alternative 3 would end the current prohibition against transfer, which was approved by the South Atlantic Council in Amendment 8 to prevent commercial vessels, especially larger vessels, from avoiding trip limits by dividing large catches into small ones and using runner vessels to land them. Fishermen have argued that allowing transfer at sea prevents waste through discards when their catch exceeds the trip limit because Spanish mackerel cannot be returned to the water alive and unharmed after being caught in a gillnet (SAFMC 1996). Overages occur because catches are difficult to estimate in the water. **Alternative 3** could favor businesses that own larger vessels and multiple vessels by increasing their shares of annual landings of Spanish mackerel and revenue and net revenue from those landings while decreasing small businesses' shares

4.2.3 Social Effects

Establishment of a provision to allow transfer at sea for the Spanish mackerel gillnet sector through **Alternatives 2** and **3** would likely primarily result in benefits to the commercial gillnet fleet by reducing waste and maximizing economic trip efficiency. The Spanish mackerel gillnet sector can be selective to a certain point; however, when large schools of fish are encountered, the vessel trip limit can be exceeded easily. Nevertheless, commercial fishermen have indicated that they avoid this situation when possible. By allowing the transfer of Spanish mackerel at sea, Spanish mackerel regulatory discards can be converted into landings. Under **Alternative 1 (No Action)** the potential benefits to the commercial Spanish mackerel fleet would not occur.

There are no data available to accurately determine how many vessels would participate in the transfer of Spanish mackerel at sea and how much Spanish mackerel would be transferred at sea if allowed under **Alternatives 2** and **3**. While all vessels participating in the Spanish mackerel gillnet sector could take advantage of a provision to allow transfer at sea, the number of vessels that would actually transfer Spanish mackerel at sea and the number of times that such transfers would occur would be expected to be low. Spanish mackerel transfer between donor and receiving vessels would have to be completed within a short time period to prevent spoilage and the transfer of Spanish mackerel at sea would likely be weather-dependent. That is, as the severity of the weather increases the transfer of Spanish mackerel at sea is less likely.

By allowing the transfer of Spanish mackerel at sea, both the donor and receiver vessels may economically benefit. The donor vessel may benefit by selling fish that would otherwise be discarded and the receiver vessel may benefit from obtaining fish employing less resources than under a typical fishing operation. However, while a provision for transfer under **Alternatives 2** and **3** would reduce Spanish mackerel discards, there may be no positive benefit from a business stand point.

It is possible that allowing transfer of Spanish mackerel at sea could close the commercial sector earlier because of increased landings of Spanish mackerel, especially if the commercial ACL is reduced, which would trigger an in-season closure. However, since there are no data available to accurately determine how many vessels would participate in the transfer of Spanish mackerel at sea and how much Spanish mackerel would be transferred at sea under **Alternatives 2** and **3**, the full impact of this alternative on early closures cannot be fully assessed.

There may be some negative impacts on the fleet due to possible impacts on the stock if the maximum number of gillnets allowed on board is changed under **Alternative 2**, particularly the removal of the limited number of gillnets under **Option a**. **Option d** could minimize potential negative impacts by restricting the three-gillnet allowance to receiving vessels only.

4.2.4 Administrative Effects

Alternative 1 (No Action) would not modify the current administrative environment and would not result in an increased or decreased administrative burden. **Alternative 2** would require NMFS notify fishery participants of any changes to the regulations. If the South Atlantic Council chooses to allow a portion of a Spanish mackerel gillnet and its contents to be transferred to another vessel at sea, the provisions under **Alternative 3** would help law enforcement track the transfer activity. However, the call in system would need to be established because such a system does not currently exist. This may represent a moderate administrative burden. It may be possible that the call in requirement may be folded into an existing call in system, but currently the details of what office fishermen would be calling to comply with this requirement are unknown.

Alternatives 1 and **2 (Options A, B and C)** would have no short-term or long-term impact on enforcement of regulations in state waters beyond the status quo. Because the use of gillnets is prohibited in Florida waters, **Alternative 3** should not affect Florida's ability to enforce its gillnet or transfer prohibitions in its waters. However, because North Carolina allows the use of gillnets in its waters, **Alternative 3** could impede the state's ability to enforce its ban on single operations landing more than 3,500 lbs because two vessels could more easily illegally transfer gillnet catch in state waters, but claim it occurred in federal waters.

Alternative 3 could require state management agencies, particularly in Florida and North Carolina, to incur short-run and long-run higher data management costs to differentiate landings of Spanish mackerel that were transferred to a vessel from those caught by a vessel. These states would also have to categorize landing trips, such as those that land: 1) solely a transferred catch, 2) transferred catch and own catch, 3) some of their catch having transferred some, and 4) all of their catch. Without federal funds to pay for those additional data costs, **Alternative 3** would represent an unfunded mandate if states are required to differentiate transferred landings from non-transferred landings and categorize trips.

On Federal Law Enforcement and Fisheries Management:
Alternative 1 would have no short- or long-run impact beyond the status quo. **Alternative 2, Options A** and **B** could reduce costs incurred by federal law enforcement to check for compliance with the 2-gillnet limit and the mesh size requirements, respectively. **Alternative 2, Option C** could complicate law enforcement's ability to enforce the 2-gillnet-in-use limit.

Alternative 3 would require the two vessels to call in to an unidentified federal agency when they are engaged in transferring of Spanish mackerel. That call-in requirement imposes an additional short-run and long-run cost on the federal government, which would receive and store that information. Also, there would be additional cost to federal law enforcement to ensure compliance with the new requirement. **Alternative 3** would also require NMFS to incur higher data management costs in the short- and long-run to differentiate landings and trips as described above.

4.3 Action 3. Modify the king mackerel commercial trip limit in the East Coast Florida Subzone.

Alternative 1 (No Action). Retain the current commercial trip limit regulations in place for East Coast Florida Subzone king mackerel. In the Florida East Coast Subzone (Flagler/Volusia County line south to the Miami-Dade/Monroe County line, November 1 – March 31 each year), king mackerel in or from the EEZ may be possessed on board at any time or landed in a day from a vessel with a commercial permit for king mackerel as follows:

(A) From November 1 through January 31--not to exceed 50 fish.

(B) Beginning on February 1 and continuing through March 31--

(1) If 75 percent or more of the [Gulf group] Florida east coast subzone quota has been taken-- not to exceed 50 fish.

(2) If less than 75 percent of the [Gulf group] Florida east coast subzone quota has been taken --not to exceed 75 fish.

Alternative 2. Change the king mackerel commercial trip limit in the Florida East Coast Subzone to 50 fish for the entire fishing season (November 1- March 31).

Alternative 3. Change the king mackerel commercial trip limit in the Florida East Coast Subzone to 75 fish for the entire fishing season (November 1- March 31).

Alternative 4. In the Florida East Coast Subzone, king mackerel in or from the EEZ may be possessed on board at any time or landed in a day from a vessel with a commercial permit for king mackerel as follows:

(A) From November 1 through the end of February--not to exceed 50 fish.

(B) Beginning on <u>March 1</u> and continuing through March 31--

(1) If <u>70 percent</u> or more of the [Gulf group] Florida east coast subzone quota has been taken-- not to exceed 50 fish.

(2) If less than <u>70 percent</u> of the [Gulf group] Florida east coast subzone quota has been taken --not to exceed 75 fish.

4.3.1 Biological Effects

In the 2011 fishing year, less than 75% of the quota was reached by February 1, triggering the trip limit increase to 75 fish when the king mackerel are abundant. This in turn allowed the quota to be filled quickly, requiring NMFS to close the subzone in March (**Table 2-1**), which is around Lent, the most profitable time of the year for these fishermen. Under **Alternative 1 (No Action)** the current system of trip limits and the trip limit increase would not be modified and fishermen could reach the commercial ACL prior to the Lenten season. Because commercial harvest of king mackerel is limited to the commercial ACL, regardless of the trip limit or trip limit increase proposed for each of the alternatives, overall harvest is expected to stay the same. What would change, based on each alternative, is the rate at which the fish are harvested and when the ACL is met. Because king mackerel in the Florida East Coast Subzone are not open during the spawning season, which occurs between May and October, and typically peaks in

September each year (McEachran and Finucane 1979), none of the alternatives in this action are likely to affect spawning king mackerel or disrupt spawning activities. It is important to note that the migratory group of king mackerel being addressed under this action is the Gulf migratory group, which migrates into Florida east coast waters during the winter and mixes with the Atlantic migratory group king mackerel. Therefore, for the purposes of this discussion, the collective term "king mackerel" is used to describe the mixed harvest of Gulf migratory group and Atlantic migratory group king mackerel in the Florida East Coast Subzone during the winter.

Alternative 2 would change the commercial trip limit for king mackerel in the Florida East Coast Subzone to 50 fish per vessel for the entire fishing season, November 1 – March 31. This alternative would not include a trip limit increase of any kind and would hold the trip limit constant throughout the fishing season. Without the trip limit increase in February, it is likely the fishing season would be extended to include Lent, which is the most profitable time of year for king mackerel fishermen in the East Coast Subzone. The biological impacts of this alternative are expected to be neutral because if there were an increase in overall harvest, in-season accountability measures (AMs) are in place to close commercial harvest of king mackerel when the ACL is met.

Alternative 3 would increase the commercial trip limit for king mackerel in the East Coast Subzone to 75 fish for the entire fishing season (November 1-March 31). Under this alternative, it is likely the ACL would be reached earlier in the year than in past years since the new trip limit would be permanently set at the higher level than what is currently in place under **Alternative 1 (No Action)**. Anecdotal information indicates the main reason why the ACL was met in 2011 fishing year is because the trip limit increase t was too great of an increase given the level of fishing effort and the rate of harvest. Therefore, setting the trip limit at 75 fish for the entire fishing season is not expected to prolong king mackerel harvest through the Lenten season. However, regardless of which trip limit is implemented, total harvest of king mackerel is limited to the ACL, is monitored in-season, and the commercial sector is closed when the commercial ACL is projected to be met. Based on this information, **Alternative 3** would not result in negative biological impacts to the stock even though the ACL may be met early in the fishing season.

Alternative 4 would modify the trip limits for king mackerel in the Florida East Coast Subzone by retaining the 50 fish trip limit through the end of February as opposed to the end of January. The trip limit for March would be based on what percentage of the quota has been caught. If 70% or more of the quota is harvested by March 1, then the March trip limit would not change and would remain 50 fish per trip. If less than 70% of the quota is harvested by March 1, the March trip limit would increase from 50 fish to 75 fish to allow for all of the ACL to be harvested. In addition to extending the initial 50 fish trip limit through the month of February, this alternative would also reduce the percentage of the quota that needs to be caught to trigger a trip limit increase. The combination of these modifications may limit the rate of harvest by a sufficient amount to prolong fishing opportunities for king mackerel through Lent, which is the objective of this action. As stated previously, regardless of which system of trip limits is established under this action, overall harvest of king mackerel in Florida East Coast Subzone is

limited by the ACL and the commercial AM; therefore, biological impacts under **Alternative 4** are expected to be neutral.

There is likely to be no additional biological benefit to protected species from any of the proposed alternatives. **Alternative 1 (No Action)** would perpetuate the existing level of risk for interactions between ESA-listed species and the CMP fishery. **Alternatives 2** and **4** could result in an increased number of fishing days, as trip limits would limit the number of mackerel harvested per outing. An increase in the number of fishing days would not be biologically beneficial for the protected species because it would increase the likelihood of interactions. The impacts from **Alternative 3** would be the most biologically beneficial for protected species as an increase in the trip limit could result in a decrease in fishing days, thereby reducing likelihood of an interaction.

4.3.2 Economic Effects

Whether a commercial fisherman harvests king mackerel in federal waters or not, Florida requires its commercial fishermen who land king mackerel to have a federal king mackerel permit. Consequently, the number of state commercially licensed fishermen who harvest the species, even if just in state waters, and the number of Florida federal permit holders who harvest king mackerel are the same.

. **Alternatives 1 (No Action)**, **3** and **4** continue federal trip limits that exceed Florida's limit. **Alternative 2** would establish a 50-fish trip limit in federal waters. Consequently, **Alternatives 1** through **4** would have no economic effect on Florida's commercial landings of king mackerel and trips beyond the status quo from November 1 through March 31.

4.3.3 Social Effects

A modification to the trip limit system for king mackerel in the Florida East Coast Subzone could have positive and negative social effects. This area of Florida has several of the most important commercial fishing communities in the king mackerel sector in the South Atlantic region, including Cocoa Beach, Fort Pierce, and Palm Beach (Table 3.3.3.1). In the current environmental and market conditions of this portion of the CMP fishery, the trip limit system under **Alternative 1 (No Action)** could trigger the higher trip limit of 75 fish and reach the ACL before the end of the fishing year, which may impact the supply of king mackerel in the spring. **Alternatives 2** and **3** would provide for more stability in the supply of king mackerel, which would be beneficial to fish houses and mackerel dealers. However, the 50-fish limit under **Alternative 2** could prevent the ACL for the Florida East Coast Subzone from being met, while the 75-fish limit under **Alternative 3** would likely increase the rate of harvest and potentially cause the ACL to be met earlier than usual. **Alternative 4** would be expected to allow the step-up to be triggered but only if necessary, which would be expected to be most beneficial to the fishermen and dealers. The stability in the supply of fish would be maintained for a longer period under **Alternative 4** while allowing some flexibility in reaching the ACL.

4.3.4 Administrative Effects

Alternative 1 (No Action) and **Alternative 4**, would have no effect on the administrative environment because there is currently a system of trip limits and trip limit increases that is triggered when a certain amount of harvest has been verified. **Alternative 4** therefore, would also not add or detract to the administrative burden of implementing the trip limits and/or trip limit changes throughout the fishing season because like **Alternative 1 (No Action)** they contain a series of trip limit reductions when certain harvest thresholds are met. **Alternatives 2** and **3** would hold the trip limit constant through the entire fishing season, and thus, would result in positive administrative impacts in the form of a reduced public notification burden and ease enforcement burden. Because there would be no change in the trip limit during each fishing season, there would be no need to develop outreach materials designed to inform fishery participants of the change.

4.4 Action 4. Modify the system of quota and trip limit adjustments for Atlantic migratory group Spanish mackerel.

Alternative 1 (No Action). The quota for the northern and southern zones of Atlantic migratory group Spanish mackerel is 3.87 million pounds (mp)=, and is adjusted to 3.62 million pounds and the fishing year begins March 1. Currently for the southern zone, the trip limit is 3,500 lbs starting March 1, and then starting December 1 trips are not limited on weekdays and are 1,500 lbs on weekends. This unlimited time period continues until 75 percent of the adjusted quota is landed, after which the trip limit is 1,500 lbs every day. When 100 percent of the adjusted quota is reached, the trip limit is reduced to 500 lbs until the end of the fishing year or until the full quota is met or projected to be met. In the northern zone, the trip limit is 3,500 lbs year-round.

Alternative 2. Remove the use of an adjusted quota for Atlantic migratory group Spanish mackerel and:

> **Sub-Alternative 2a.** Remove all trip limit changes for the southern zone. The trip limit would remain 3,500 lbs year-round. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.
>
> **Sub-Alternative 2b.** Remove the period of unlimited trips for the southern zone that starts December 1 each year. The southern zone trip limit would start at 3,500 lbs on March 1 of each year. When 75% of the commercial ACL has been landed or is projected to be landed the trip limit would be reduced to 1,500 lbs. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.
>
> **Sub-Alternative 2c.** Remove the period of unlimited trips for the southern zone that starts December 1 each year. The southern zone trip limit would start at 3,500 lbs on March 1 of each year. When 75% of the commercial ACL has been landed or is projected to be landed the trip limit would be reduced to 500 lbs. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.

Alternative 3. Retain the adjusted commercial ACL but remove the period of unlimited trips for the southern zone that starts December 1 each year. The southern zone trip limit would start at 3,500 lbs on March 1 of each year. When 75% of the adjusted commercial ACL has been landed or projected to be landed the trip limit would be reduced to 1,500 lbs. When 100% of the adjusted commercial ACL is reached, the trip limit is reduced to 500 lbs until the end of the fishing year or until the commercial ACL is met or projected to be met. Close commercial harvest of Atlantic migratory group Spanish mackerel when the commercial ACL is met or projected to be met.

4.4.1 Biological Effects

Alternative 1 (No Action) would perpetuate the current level of complexity for the management of the northern and southern zones of Atlantic migratory group Spanish mackerel. Under this alternative the adjusted quota would continue to be used, although it may no longer be necessary for controlling harvest since there is now an effective system of ACLs and AMs for this segment of the CMP fishery. . Currently the adjusted quota is 250,000 lbs less than the full quota (commercial ACL). The adjusted quota was expected to allow vessels to continue fishing for the remainder of the fishing season. Originally, no closure provision was in place for Atlantic migratory group Spanish mackerel, but a closure provision when the full quota is met or projected to be met was implemented through Amendment 18 (ref). Therefore, the 500 lbs trip limit is only effective until the additional 250,000 lbs are landed. Since the establishment of the current adjusted quota/trip limit system for Atlantic migratory group Spanish mackerel, ACLs and AMs have been implemented for the species and are now used to control harvest and prevent overfishing. Furthermore, the objectives of this action are to simplify the current management regime for Atlantic migratory group Spanish mackerel, which would benefit the fishing community and fishery managers, and extend fishing opportunities further into the fishing season. This alternative would not meet those objectives and confusion attributed to the regulatory complexities for Atlantic migratory group Spanish mackerel management would persist. Nor would this alternative extend fishing opportunities for Atlantic migratory group Spanish mackerel longer into the fishing season as indicated in **Table 4.4.1.1**. The biological impacts expected under **Alternative 1 (No Action)** are expected to be neutral because overall harvest would not increase or decrease over the status quo and ultimately total harvest of the stocks is limited to the commercial ACL. If the ACL is projected to be met, commercial harvest in both zones is closed for the duration of the fishing season, which prevents overfishing from occurring.

Table 4.4.1.1 shows the projected fishing season lengths and approximate closure dates for the 2014/2014 fishing season under each of the alternatives and sub-alternatives considered. These projections are based on a forecast of harvest from Southeast Fisheries Science Center ACL data, incorporating monthly catch rates. Seasonal dynamics in northern and southern zones of fishing were accounted for using mean percent harvest by zone from 2000-2012. Further explanation of the data sources and calculations used to develop the projections presented in **Table 4.4.1.1.** are included in **Appendix H** of this document.

Table 4.4.1.1. Projected fishing days and closure dates for the 2014-2015 fishing season for each alternative under Action 4. The fishing year is March – February.

Alternative	Alternative 1	Sub-Alt 2a	Sub-Alt 2b	Sub-Alt 2c	Alternative 3
Projected Closure Date	February 15, 2015	January 28, 2015	February 5, 2015	No Closure	February 15, 2015
Projected Fishing Days	351	333	341	365	351

Source: NMFS 2013

Alternative 2 would remove the use of the adjusted quota, which is no longer biologically necessary for maintaining harvest at sustainable levels given the newly implemented system of ACLs and AMs. For the southern zone, **Sub-Alternative 2a** would eliminate the unlimited trip period starting December 1 until 75% of the adjusted quota met, as well as the weekend trip limit of 1,500 lbs during the same time. Furthermore, there would be no trip limit reduction to 500 lbs when 100% of the adjusted quota is met. The trip limit under **Sub-Alternative 2a** would remain 3,500 lbs for the entire fishing year, and the current AM, which closes commercial harvest when the full quota is met or projected to be met would be maintained. Under this sub-alternative there would be no change in the current trip limit for the northern zone. By removing the trip limit step-downs under **Sub-Alternative 2a** there may be a greater chance the ACL may be met in-season and the commercial sector could close earlier in the season than in previous years. However, it is likely that the use of the 3,500 lb trip limit year-round would balance the removal of the unlimited trip starting December 1, and the rate of harvest could remain relatively unchanged from the status quo. According to projections provided in **Table 4.4.1**, the ACL would be met sometime in late January for the 2014/2015 fishing season; therefore, the commercial Spanish mackerel harvest would be likely to be closed prior to or during Lent. This option could result in a slightly shorter fishing season compared to the status quo alternative.

Sub-Alternative 2b would also remove the period of unlimited trips for the southern zone beginning on December 1 each year. This sub-alternative would keep the current trip limit of 3,500 lbs for the southern zone, but would reduce the trip limit to 1,500 lbs when 75% of the ACL is harvested. An in-season closure under this sub-alternative could be expected to occur in early February of the 2014/2015 fishing season (**Table 4.4.1**), which would not extend fishing opportunities further into the fishing season as desired. However, slowing the rate of harvest when the quota is close to being met, helps support in-season monitoring efforts, which often include a lag time between the time when fish are reported as landed and when fishery managers are able to process the data to determine what percentage of the quota has been harvested. A slower rate of harvest triggered by the meeting the 75% threshold level may be biologically beneficial if it allows fishery managers to more accurately predict when the ACL will be met in order to schedule a commercial closure when it is most appropriate.

Like **Sub-Alternatives 2a** and **2b**, **Sub-Alternative 2c** would also remove the unlimited trip starting December 1 from the system of Atlantic migratory group Spanish mackerel regulations. This sub-alternative would also maintain the current initial trip limit of 3,500 lbs starting March 1 each year; however, **Sub-Alternative 2c** would reduce the trip limit to 500 lbs when 75% of the actual quota is harvested or projected to be met. This sub-alternative represents a substantial trip limit reduction at the 75% threshold, and would significantly slow the rate of harvest after that threshold has been reached. Depending upon effort for Spanish mackerel, which can fluctuate since the commercial permit for Spanish mackerel is an open access permit available to anyone with a fishing vessel, such a low trip limit at the end of the season may result in the commercial sector staying open for the duration of the 2014/2015 fishing season (**Table 4.4.1**). **Sub-Alternative 2c** is the only option that is projected to allow the commercial sector to remain open through the entire fishing year. Additionally, reducing the trip limit by such a significant amount would allow fishery managers to carefully track landings in-season to ensure that

commercial harvest of Atlantic migratory group Spanish mackerel is closed when needed to avoid exceeding the ACL, which may be biologically beneficial.

Alternative 3 would retain the adjusted commercial quota for the northern and southern zones of the Atlantic migratory group Spanish mackerel fishery and would eliminate the unlimited trip limit that begins December 1 each year. However, this alternative retains the two trip limit reductions: when 75% of the adjusted quota is met for the southern zone the trip limit would be reduced from 3,500 lbs to 1,500 lbs; then when 100% of the adjusted quota is harvested the southern zone trip limit would be reduced again from 1,500 pounds to 500 lbs until the ACL is met or projected to be met. This alternative does little to simplify the current management regime for Atlantic migratory group Spanish mackerel, other than removing the unlimited trip limit after December 1. Furthermore, it retains the use of an adjusted quota, which may no longer be biologically necessary to maintain harvest at or below the sector ACL. **Alternative 3** does little to extend fishing opportunities further into the fishing season and NMFS projects that the in-season closure under **Alternative 3** would occur around the same time as the projected in-season closure under **Alternative 1 (No Action)**. Biological effects under this alternative are likely to be neutral since overall harvest is limited by the commercial ACL and AMs.

The biological impacts to protected species from alternatives under Action 4 are unclear. **Alternative 1 (No Action)** would perpetuate the existing level of risk for interactions between ESA-listed species and the CMP fishery. Options under **Alternative 2** could perpetuate the existing amount of fishing effort, increase effort, or decrease effort. Any change in effort could change the likelihood of interactions between protected species (turtles and smalltooth sawfish) and the fishery as a whole. Increases in effort provide the least amount of biological benefits. However, if these alternatives cause reductions in the overall amount of effort in the fishery, and do not simply shift effort elsewhere, the risk of interactions between protected species and the fishery may decrease. **Alternative 3** could lead to a longer season and therefore an increase in the number of fishing days. Increased effort provides the least amount of biological benefit for protected species.

4.4.2 Economic Effects

None of the alternatives would have an impact on recreational fishing beyond the status quo. No economic effects are expected for the recreational sector because of the separation of the commercial ACL from the recreational ACL.

None of the alternatives could increase landings beyond the ACL; however, the non-status quo alternatives may change the length of the open season and lengths of the periods within the open season for the commercial sector. According to **Table 4.4.1.**1 under all of the alternatives for **Action 4**, the season is expected to last from 333 days (**Alternative 2, Sub-Alternative 2a**) to 365 days (**Alternative 2, Sub-Alternative 2c**). Because landings are constrained by the ACL and the expected variability of the length of the season for all alternatives is approximately one month in length, none of the alternatives in this action are expected to have significant economic effects to harvesters of Atlantic migratory group Spanish mackerel.

4.4.3 Social Effects

Overall, the social effects would be associated with economic costs and benefits for the commercial fleet, because there would not be any expected biological impacts on the overall stock that could restrict future fishing opportunities. The primary communities that would be affected by changes in the Atlantic migratory group Spanish mackerel quota and trip limit system are the Florida communities of Fort Pierce, Cocoa Beach, Palm Beach, and Stuart (Table 3.3.3.2). However, Spanish mackerel is not the only economically important species in these communities and while changes may affect fishermen and individual fish houses or dealers, the impact at the community level is expected to be minimal.

The current system under **Alternative 1 (No Action)** would not be expected to have negative impacts on the commercial Spanish mackerel fleet, although some of the potential benefits under **Alternatives 2** and **3** would not be expected under the status quo.

An earlier closure date for Spanish mackerel commercial harvest could have some impact on the commercial fleet and the supply of Spanish mackerel in the market (Table 4.4.1.1). The projected length of the fishing season is projected to be shortest under **Sub-Alternative 2a**. The longest season (no closure) is projected to be under Sub-**Alternative 2c** and would eliminate the chance of any impacts on the fishermen or fish houses from an early closure.

4.4.4 Administrative Effects

The administrative impacts under **Alternative 1 (No Action)** and **Alternative 3** would be very similar since they both retain the use of the adjusted quota and a series of trip limit reductions when certain harvest thresholds are met. Because a similar management regime as **Alternative 3** is currently in place, no impacts over the status quo are expected; however, confusion due to the regulatory complexity of the existing system of trip limits would persist and public notification of each trip limit change throughout the year would continue to be required. **Alternative 3** does remove the unlimited trip limit starting December 1 for Atlantic migratory group Spanish mackerel, and thus would remove one layer of regulatory complexity from the current system of trip limits. However, because the adjusted quota is 92% of the ACL, it will be very difficult for NMFS to implement the 500-lb trip limit reduction before a closure must be implemented. For example, in the Gulf in some years, king mackerel have been caught at such a high rate that NMFS could not implement a reduction to 500 lbs at 75% of the ACL before the zone needed to be closed. In addition, because the adjusted quota is a set number of pounds less than the ACL (250,000 lbs) instead of a percentage, if the ACL increases, the adjusted quota would become greater than 92% of the ACL, creating even more difficulties.

Sub-Alternative 2a would result in the greatest administrative benefits because it would remove the use of the adjusted quota and remove the implementation of all trip limit reductions that are currently specified under **Alternative 1 (No Action)**. **Sub-Alternatives 2b** and **2c** would have similar administrative impacts because they would both require the trip limit to be reduced to specific level when 75% of the actual quota is harvested. **Sub-Alternatives 2b** and **2c**, however, represent a decreased administrative burden compared to the status quo because they both only

include one trip limit decrease due to the removal of the use of the adjusted quota under **Alternative 2**.

Chapter 5. Council's Choice for the Preferred Alternatives

5.1 Action 1: Modify the Atlantic migratory group king mackerel minimum size limit.

5.1.1 Mackerel Advisory Panel Comments and Recommendation

At the April 2013 meeting , the AP discussed impacts on the stock by allowing harvest of fish that had not spawned and the marketability of smaller fish. Members felt that the current minimum size limit should not be changed. The AP supported Alternative 1 as the preferred alternative.

5.1.2 Public Comments and Recommendations

5.1.3 South Atlantic Council Choice for Preferred Alternative

5.2 Action 2. Modify restrictions on transfer-at-sea and gillnet allowances for Atlantic migratory group Spanish mackerel.

5.2.1 Mackerel Advisory Panel Comments and Recommendation

At the April 2013 meeting, the AP discussed alternatives such as raising the trip limit or allowing an overage to be removed from a vessel's subsequent trip limit, but the majority decided felt there was a risk of vessels taking advantage of the provision. The AP supported Alternative 1 as the preferred alternative. (6 in favor, 2 opposed, 3 abstentions)

5.2.2 Public Comments and Recommendations

5.2.3 South Atlantic Council Choice for Preferred Alternative

5.3 **Action 3. Modify the king mackerel commercial trip limit in the East Coast Florida Subzone.**

5.3.1 Mackerel Advisory Panel Comments and Recommendations

At the April 2013 meeting, the AP supported Alternative 4 because it was developed by and supported by fishermen in the Florida East Coast subzone.

5.3.2 Public Comments and Recommendations

5.3.3 South Atlantic Council Choice for Preferred Alternative

5.4 **Action 4. Modify the system of quota and trip limit adjustments for Atlantic migratory group Spanish mackerel.**

5.4.1 Mackerel Advisory Panel Comments and Recommendations

At the April 2013 meeting, the AP supported removal of the unlimited trip limit provision and continuing the adjusted ACL provision and supported Alternative 3 as the preferred alternative.

5.4.2 Public Comments and Recommendations

5.4.3 South Atlantic Council Choice for Preferred Alternative

Chapter 6. Cumulative Effects

This Cumulative Effects Analysis (CEA) for the biophysical environment will follow a modified version of the 11 steps. Cumulative effects for the socio-economic environment will be analyzed separately.

6.1 Biological

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

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 **(Chapter 4.0)**;
II. Which resources, ecosystems, and human communities are affected **(Chapter 3.0)**; and
III. Which effects are important from a cumulative effects perspective **(information revealed 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, which is also the South Atlantic Fishery Management Council's (South Atlantic Council) area of jurisdiction. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. Therefore, the proper geographical boundary to consider effects on the biophysical environment is larger than the entire South Atlantic exclusive economic zone (EEZ) and includes the Gulf of Mexico since some mackerel species move to and from Gulf of Mexico waters throughout the year. The ranges of affected species are described in **Section 3.2**. The most measurable and substantial effects would be limited to the South Atlantic region.

3. Establish the timeframe for the analysis.

Establishing a timeframe for the CEA is important when the past, present, and reasonably foreseeable future actions are discussed. 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 analyses should be initiated when data collection began for the various fisheries. In determining how far into the future to analyze cumulative effects, the length of the effects will depend on the species and the alternatives chosen. Long-term evaluation is needed to determine if management measures have the intended effect of improving stock status.

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).

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

I. Fishery-related actions affecting the snapper grouper species addressed in this amendment

A. Past

The reader is referred to **Appendix C** for past regulatory activity for all species in the Snapper Grouper FMP. Past regulatory activity for the relevant snapper grouper species in this amendment is listed below. In the recent past several amendments to the CMP FMP have implemented or modified various management measures affecting king and Spanish mackerel stocks.

Amendment 15 to the CMP FMP (GMFMC/SAFMC 2004) established an indefinite limited access program for king mackerel in the EEZ under the jurisdiction of the Gulf of Mexico, South Atlantic, and Mid-Atlantic Fishery Management Councils and changed the fishing year to March 1 through February 28/29 for Atlantic group king and Spanish mackerels.

Amendment 18 to the CMP FMP (GMFMC/SAFMC 2011) established annual catch limits (ACL), annual catch targets (ACT) and accountability measures (AM) for king mackerel, Spanish mackerel, and cobia. The amendment also established both Atlantic and Gulf migratory groups for cobia; modified the framework procedures; and removed the following species from the Fishery Management Unit: cero, little tunny, dolphin and bluefish.

B. Present

In addition to king and Spanish mackerel management issues being addressed in this amendment, other CMP FMP amendments have been developed concurrently and are in the process of approval and implementation.

The Joint Dealer Reporting Amendment has been approved for Secretarial Review by the Gulf of Mexico Fishery Management Council (Gulf of Mexico Council) and the South Atlantic Council. This amendment is intended to improve the timeliness and accuracy of fisheries data reported by permitted dealers. The amendment would also create one dealer permit for all federally-permitted dealers in the southeast region. Requiring dealers to report landings data weekly will help to improve in-season quota monitoring efforts, which will increase the likelihood that AMs could be implemented prior to ACLs being exceeded.

The Generic For-Hire Reporting Amendment, which has been approved for Secretarial Review by the Gulf of Mexico Council and the South Atlantic Council, would increase the frequency

with which headboats must report landings information, and would also require that all headboats report landings data electronically. This amendment would improve the timeliness and accuracy of landings data that are used to monitor recreational harvest sector in-season for the purpose of maintain catches below the recreational ACLs.

Amendment 19 to the CMP FMP considers stopping or limiting the sale of cobia, king mackerel, and Spanish mackerel that are caught under a bag limit, and making changes to permit requirements and future participation in these fisheries.

The Gulf of Mexico and South Atlantic Fishery Management Councils created zones and subzones for king mackerel to allow for fair distribution of allowable harvest as fish migrate. In Amendment 20 to the CMP FMP the Councils are considering whether the current zone boundaries, allocations, seasons, and trip limits provide the greatest benefit to the commercial industry. To further ensure fair distribution of the resource, the Councils are also considering requiring vessels to declare which zones they will fish. Finally, the Councils are considering measures to allow vessels to transit through closed areas with legally caught fish.

C. Reasonably Foreseeable Future

The Joint Commercial Logbook Reporting Amendment would be similar to the Generic For-Hire Reporting Amendments for the Gulf of Mexico and South Atlantic regions. This amendment would require electronic reporting of landings information by federally-permitted commercial vessels, which would increase the timeliness and accuracy of landings data.

The Joint Charter Boat Reporting Amendment would be similar to the Generic For-Hire Reporting Amendment by requiring charter vessels to regularly report their landings information electronically. Including charter boats in the recreational harvest reporting system would further improve the agency's ability to monitor recreational catch rates in-season.

II. Non-Council and other non-fishery related actions, including natural events affecting snapper grouper species in this amendment.

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 mackerel species. Annual variability in natural conditions such as water temperature, currents, food availability, predator abundance, etc. can affect the abundance of young fish that survive the egg and larval stages each year to become juveniles (i.e., recruitment). Furthermore, natural factors such as storms, red tide, cold water upwelling, etc. can affect the survival of juvenile and adult fishes; however, it is very difficult to quantify the magnitude of mortality these factors may have on a stock. Alteration of preferred habitats for snapper grouper species could affect survival of fish at any stage in their life cycles. However,

estimates of the abundance of fish, which utilize any number of preferred habitats, as well as, determining the impact habitat alteration may have on mackerel species, is problematic.

How global climate changes will affect the king and Spanish mackerel fisheries is unclear. Climate change can impact marine ecosystems through ocean warming by increased thermal stratification, reduced upwelling, sea level rise, increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota. Decreases in surface ocean pH due to absorption of anthropogenic CO_2 emissions may impact a wide range of organisms and ecosystems, particularly organism that absorb calcium from surface waters, such as corals and crustaceans (IPCC 2007, and references therein).

On April 20, 2010, an explosion occurred on the Deepwater Horizon MC252 oil rig, resulting in the release of an estimated 4.9 million barrels of oil into the Gulf. In addition, 1.84 million gallons of Corexit 9500A dispersant were applied as part of the effort to constrain the spill. The cumulative effects from the oil spill and response may not be known for several years.

The oil spill affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the Deepwater Horizon MC252 oil spill on the physical environment are expected to be significant and may be long-term. Oil is dispersed on the surface, and because of the heavy use of dispersants, oil is also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed onto shore in several areas of the Gulf as well as non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are more persistent in the environment and can be transported hundreds of miles. Oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. Zooplankton that feed on algae could also be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow.

The highest concern is that the oil spill may have impacted spawning success of species that spawn in the summer months, either by reducing spawning activity or by reducing survival of the eggs and larvae. The oil spill occurred during spawning months for every species in the CMP FMP; however, most species have a protracted spawning period that extends beyond the months of the oil spill. Effects on the physical environment, such as low oxygen, could lead to impacts on the ability of larvae and post-larvae to survive, even if they never encounter oil. In addition, effects of oil exposure may create sub-lethal effects on the eggs, larva, and early life stages. The stressors could potentially be additive, and each stressor may increase the susceptibility to the\ harmful effects of the other. If eggs and larvae were affected, impacts on harvestable-size coastal migratory pelagic fish would begin to be seen when the 2010 year class becomes large enough to enter the fishery and be retained. King mackerel and cobia mature at 2-3 years and Spanish mackerel mature at 1-2 years; therefore a year class failure in 2010 may be felt by the fishery as early as 2011. The impacts would be felt as reduced fishing success and reduced spawning potential, and would need to be taken into consideration in the next SEDAR assessment.

Species in the CMP FMP are migratory and move into specific areas to spawn. King mackerel, for example, move from the southern portion of their range to more northern areas for the spawning season. In the Gulf of Mexico, that movement is from Mexico and south Florida to the northern Gulf (Godcharles and Murphy 1986). However, environmental factors, such as temperature can change the timing and extent of their migratory patterns (Williams and Taylor 1980). The possibility exists that CMP species would be able to detect environmental cues when moving toward the area of the oil spill that would prevent them from entering the area. These fish might then remain outside the area where oil was in high concentrations, but still spawn.

Indirect and inter-related effects on the biological and ecological environment of the CMP fishery in concert with the Deepwater Horizon MC252 oil spill are not well understood. Changes in the population size structure could result from shifting fishing effort to specific geographic segments of populations, combined with any anthropogenically induced natural mortality that may occur from the impacts of the oil spill. The impacts on the food web from phytoplankton, to zooplankton, to mollusks, to top predators may be significant in the future. Impacts to mackerels and cobia from the oil spill may similarly impact other species that may be preyed upon by CMP species, or that might benefit from a reduced stock.

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

Information on species most affected by this amendment are provided in **Section 3.2** of this document.

Although this amendment contains many actions, the effects of all the actions would not be expected to be cumulative. Unlike many other fisheries, one single universe of fishermen should not be assumed. For example, in the snapper grouper fishery, all species are landed under one permit and in the same area, and each fisherman might be expected to be affected to some extent by all ACLs imposed on snapper grouper species. However, under the CMP FMP, separate commercial permits are issued to king mackerel and Spanish mackerel fishermen, and no permits are required for cobia fishermen. Some overlap of these migratory groups most certainly occurs; however, different gear types are primarily used to fish for king mackerel and Spanish mackerel, and many fishermen do not switch between gear types. Further, each species would be managed under two different sets of regulations, one for each migratory group. A large portion of commercial king mackerel fishermen fish in both the Gulf of Mexico and South Atlantic, but it would not be expected that fishermen fish for all three species in both the Gulf of Mexico and South Atlantic. Recreational fishermen are also unlikely to move between the Gulf and South Atlantic, except perhaps in the Florida Keys.

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

Fish populations

Section 3.1 in Amendment 18 (GMFMC/SAFMC 2011) discusses the unique characteristics of the Gulf of Mexico and South Atlantic Regions that are important to migration, spawning, and overall wellbeing of king and Spanish mackerel populations throughout the southeast region. Therefore, **Section 3.1** of Amendment 18 is incorporated by reference. Additionally, Amendment 18 to the CMP FMP describes in detail biological characteristics of king mackerel and Spanish mackerel in the Gulf of Mexico and South Atlantic. This discussion is contained in **Section 3.2** of that document and is hereby incorporated by reference.

Section 3.3 of this document contains a full description of the human communities that directly and indirectly depend on the CMP resource and would be affected by any management measures implemented by past, current, and future amendments to the CMP FMP.

Climate change

Global climate changes could have significant effects on South Atlantic and Gulf of Mexico fisheries. However, the extent of these effects is not known at this time. Possible impacts include temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; changes in precipitation patterns and a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influencing the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs (IPCC 2007; Kennedy et al. 2002).

It is unclear how climate change would affect mackerel species in the South Atlantic and Gulf of Mexico. Climate change can affect factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. In addition, the distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Climate change may significantly impact snapper grouper species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. In the near term, it is unlikely that the management measures contained in this amendment would compound or exacerbate the ongoing effects of climate change on king mackerel and Spanish mackerel species.

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

Southeast Data, Assessment, and Review (SEDAR) assessments show trends in biomass, fishing mortality, fish weight, and fish length going back to the earliest periods of data collection. A stock assessment (SEDAR 28) for Spanish mackerel was recently completed and stock is not overfished nor undergoing overfishing. The most recent stock assessment for Atlantic migratory group king mackerel was completed 2008 (SEDAR 16), and that assessment indicates king mackerel are also not overfished nor are they undergoing overfishing. For a detailed discussion of the baseline conditions of king mackerel and Spanish mackerel, the reader is referred to **Section 3.2** of the document. The reader is also referred to the information on ecosystems (**Section 3.1**) and human communities (**Section 3.3**).

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.

The proposed management actions are summarized in **Section 2** of this document. Detailed discussions of the magnitude and significance of the impacts of the preferred alternatives on the human environment appear in **Section 4** of this document. None of the impacts have been determined to be significant.

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. Avoidance, minimization, and mitigation are not necessary for the successful implementation of the proposed actions in this amendment.

11. Monitor the cumulative effects of the selected alternatives and adopt management.

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

6.2 Socioeconomic

Participation in and the economic performance of the fisheries addressed in this document have been affected by a combination of regulatory, biological, social, and external economic factors. Regulatory measures have obviously affected the quantity and composition of harvests of species addressed in this document, through the various size limits, seasonal restrictions, trip or bag limits, and quotas. Gear restrictions, such as the prohibition on drift gillnets, have also affected harvests and economic performance. The limited access program implemented in 1998 capped the number of participants in the king mackerel commercial sector and created an additional barrier to entry for new participants. Establishment of a king mackerel gillnet endorsement and the limited entry charter CMP permits in the Gulf of Mexico further reduced access to participation in the fishery. However, at this time, the Spanish mackerel commercial permit and South Atlantic charter CMP permit are both open access.

Biological forces that either motivate certain regulations or simply influence the natural variability in fish stocks have likely played a role in determining the changing composition of the fisheries addressed by this document. Additional factors, such as changing career or lifestyle preferences, stagnant to declining prices due to imports, increased operating costs (gas, ice, insurance, dockage fees, etc.), and increased waterfront/coastal value leading to development pressure for other than fishery uses have impacted both the commercial and recreational fishing sectors.

In general, it can be stated, however, 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 through management to eliminate or minimize the risk of overfishing in addition to improved reporting and quota monitoring while rebuilding plans and the recovery of stocks would allow harvest increases. 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.

The proposed and potential management measures and regulatory changes in theory allow status quo total harvests for the respective species to continue, these restrictions may result in the redistribution of harvests among traditional users, resulting in some participants who are able to increase their harvests, and associated social and economic benefits, and some participants who suffer reduced harvests, with associated losses in benefits. For those who would be expected to experience a possible reduction in harvests, these reductions may occur on top of declining benefits as a result of other recent or developing management action.

The cumulative social and economic effects of past, present, and future amendments may be described as limiting fishing opportunities in the short-term. However, these amendments are expected to improve prospects for sustained participation in the respective fisheries over time.

Chapter 7. List of Interdisciplinary Plan Team (IPT) Members

Name	Agency/Division	Title
Kari MacLauchlin	SAFMC	Interdisciplinary plan team (IPT) Lead/Fishery Social Scientist
Kate Michie	SERO /SF	IPT Lead/Fishery Biologist
Adam Brame	SERO/PR	Fishery Biologist
Shannon Calay	SEFSC	Research Fish Biologist
Brian Cheuvront	SAFMC	Fishery Economist
Nancie Cummings	SEFSC	Research Fish Biologist
David Dale	SERO /HC	EFH Specialist
Anne Marie Eich	SERO	Technical Writer and Editor
Nick Farmer	SERO	Biologist
Stephen Holiman	SERO /SF	Economist
Denise Johnson	SERO/SF	Economist
David Keys	NMFS	Regional NEPA Coordinator
Mara Levy	NOAA GC	General Counsel
Christopher Liese	SEFSC	Economist
Jack McGovern	SERO/SF	Fishery Scientist
Andy Strelcheck	SERO/SF	Fishery Biologist
Gregg Waugh	SAFMC	Deputy Director

NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, HC = Habitat Conservation Division, GC = General Counsel

Chapter 8. Agencies and Persons Consulted

Responsible Agency

South Atlantic
Coastal Migratory Pelagics
Framework Action 2013
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, South Carolina 29405
(843) 571-4366 (TEL)
Toll Free: 866-SAFMC-10
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Environmental Assessment:
NMFS, Southeast Region
263 13th Avenue South
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List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
SAFMC Information and Education Advisory Panel
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

Chapter 9. References

Atkinson L. P., D. W. Menzel, and K. A. E. Bush. 1985. Oceanography of the southeastern U.S. continental shelf. American Geophysical Union, Washington, DC.

Blanton, J. O., L. P. Atkinson, L. J. Pietrafesa, and T. N. Lee. 1981. The intrusion of Gulf Stream water across the continental shelf due to topographically-induced upwelling. Deep-Sea Research 28:393-405.

Brooks, D. A., and J. M. Bane. 1978. Gulf Stream deflection by a bottom feature off Charleston, South Carolina. Science 201:1225-1226.

CEQ (Council on Environmental Quality). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. U.S. Council on Environmental Quality, Washington, DC. 64 pp.

Collette, B.B. and J.L. Russo. 1979. An introduction to the Spanish mackerels, genus *Scomberomorus*. p. 3-16. In E.L. Nakumua and H.R. Bullis (eds.) Proceedings of the Mackerel Colloqium. Gulf States Marine Fisheries Commission no. 4.

Dumas, C.F., J.C. Whitehead, J.E. Landry, and J.H. Herstine. 2009. Economic Impacts and Recreational Value of the North Carolina For-hire Fishing Fleet. North Carolina Sea Grant FRG Grant Report 07-FEG-05.

GMFMC (Gulf of Mexico Fishery Management Council)/SAFMC (South Atlantic Fishery Management Council). 1983. Joint fishery management plan for coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic including environmental impact statement and regulatory impact review. Gulf of Mexico Fishery Management Council. Tampa, Florida. and South Atlantic Fishery Management Council. Charleston, South Carolina. http://www.safmc.net/Portals/6/Library/FMP/Mackerel/MackerelFMP.pdf

GMFMC (Gulf of Mexico Fishery Management Council)/SAFMC (South Atlantic Fishery Management Council). 1996. Amendment 8 to the fishery management plan for coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic including environmental assessment, regulatory impact review, and initial regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. and South Atlantic Fishery Management Council. Charleston, South Carolina. http://www.safmc.net/Portals/6/Library/FMP/Mackerel/MackAmend6.pdf

GMFMC (Gulf of Mexico Fishery Management Council)/SAFMC (South Atlantic Fishery Management Council). 1998. Amendment 9 to the fishery management plan for coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic including environmental impact statement, regulatory impact review, and initial regulatory flexibility analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. and South Atlantic

Fishery Management Council. Charleston, South Carolina.
http://www.safmc.net/Portals/6/Library/FMP/Mackerel/MackAmend9.pdf

GMFMC (Gulf of Mexico Fishery Management Council)/SAFMC (South Atlantic Fishery Management Council). 2004. Amendment 15 to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic regions including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida, and South Atlantic Fishery Management Council. Charleston, South Carolina.
http://www.safmc.net/Portals/6/Library/FMP/Mackerel/MackAmend15.pdf

GMFMC (Gulf of Mexico Fishery Management Council)/SAFMC (South Atlantic Fishery Management Council). 2011. Amendment 18 to the fishery management plan for coastal migratory pelagic resources in the Gulf of Mexico and Atlantic regions including environmental assessment, regulatory impact review, and regulatory flexibility act analysis. Gulf of Mexico Fishery Management Council. Tampa, Florida. and South Atlantic Fishery Management Council. Charleston, South Carolina.
http://www.gulfcouncil.org/docs/amendments/Final%20CMP%20Amendment%2018%20092311%20w-o%20appendices.pdf

Godcharles, M. F., and M. D. Murphy. 1986. Species profiles: life history and environmental requirements of coastal fishes and invertebrates (south Florida) -- king mackerel and Spanish mackerel. U. S. Fish and Wildlife Service Biological Report 82(11.58). U.S. Army Corps of Engineers TR EL-82-4. Vicksburg, Mississippi.

Holland, S. M., A. J. Fedler, and J. W. Milon. 1999. The Operation and Economics of the Charter and Headboat Fleets of the Eastern Gulf of Mexico and South Atlantic Coasts. University of Florida Office of research, Technology, and Graduate Education. Report prepared for the National Marine Fisheries Service. Grant Number NA77FF0553.

IPCC. 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

Janowitz, G. S., and L. J. Pietrafesa. 1982. The effects of alongshore variation in bottom topography on a boundary current - topographically-induced upwelling. Continental Shelf Research 1:123-141.

Kennedy, V. S., R. R. Twilley, J. A. Kleypas, J. H. Cowan, Jr., and S. R. Hare. 2002. Coastal and Marine Ecosystems & Global Climate Change: Potential Effects on U.S. Resources. Pew Center on Global Climate Change. 52 p.

Lee, T. N., M. E. Clarke, E. Williams, A. F. Szmant, and T. Berger. 1994. Evolution of the Tortugas Gyre. Bulletin of Marine Science 54(3):621-646.

Leis, J. M. 1991. The pelagic stage of reef fishes: the larval biology of coral reef fishes. Pages 183-230 *in* P. F. Sale editor. The ecology of fishes on coral reefs. Academic Press, New York, NY.

Liese, C. D.,W. Carter, and R. Curtis. 2009. Surveying the For-Hire Sector: Economic Heterogeneity in the Southeast Charter Boat Industry. Submitted to the Proceedings of the 5th World Recreational Fishing Conference.

MAFMC (Mid-Atlantic Fishery Management Council). 2003. Framework Adjustment 4 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan including enviromental assessment, regulatory impact review, and initial regulatory flexibility analysis. Mid-Atlantic Fishery Management Council, Dover, DE.

Mayo C. A. 1973. Rearing, growth, and development of the eggs and larvae of seven scombrid fishes from the Straits of Florida. Doctoral dissertation. University of Miami, Miami, Florida.

McEachran, J. D., and J. H. Finucane. 1979. Distribution, seasonality and abundance of larval king and Spanish mackerel in the northwestern Gulf of Mexico. (Abstract). Gulf States Marine Fisheries Commission. Publication Number 4. Ocean Springs, Mississippi.

Menzel D. W., editor. 1993. Ocean processes: U.S. southeast continental shelf. DOE/OSTI -- 11674. U.S. Department of Energy.

SAFMC (South Atlantic Fishery Management Council). 2000. Framework Seasonal Adjustment of Harvest Levels and Related Measures under the Fishery Management Plan for Coastal Migratory Pelagics (Mackerels) in the Gulf of Mexico and South Atlantic Region including environmental assessment, regulatory impact review and social impact assessment/fishery impact statement. South Atlantic Fishery Management Council, Charleston, SC.

SAFMC (South Atlantic Fishery Management Council). 2011. Comprehensive Annual Catch Limit (ACL) Amendment of the South Atlantic Region including Snapper Grouper Amendment 25. South Atlantic Fishery Management Council, North Charleston, SC.

SAFMC (South Atlantic Fishery Management Council). 2012. RegulatoryAmendment 13 to the South Atlantic Snapper Grouper Fishery Management Plan. South Atlantic Fishery Management Council, North Charleston, SC.

Schekter, R.C. 1971. Food habits of some larval and juvenile fishes from the Florida current near Miami, Florida. MS Thesis, University of Miami, Coral Gables.

Schwartz, F. J. 1989. Zoogeography and ecology of fishes inhabiting North Carolina's marine waters to depths of 600 meters. Pages 335-374 *In* R. Y.George, and A. W. Hulbert, editors. North Carolina coastal oceanography symposium. U.S. Dep. Commerce, NOAA-NURP Rep. 89-2.

SEDAR (Southeast Data, Assessment, and Review) 2009. SEDAR 16, Stock Assessment of South Atlantic and Gulf of Mexico King Mackerel. http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=16

SEDAR (Southeast Data, Assessment, and Review) 2012. SEDAR 28, Stock Assessment of South Atlantic and Gulf of Mexico Spanish Mackerel and Cobia. http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=28

Smith, N. P. 1994. Long-term Gulf-to-Atlantic transport through tidal channels in the Florida Keys. Bulletin of Marine Science 54:602-609.

Sutton, S.G., R.B. Ditton, J.R. Stoll, and J.W. Milon. 1999. A cross-sectional study and longitudinal perspective on the social and economic characteristics of the charter and party boat fishing industry of Alabama, Mississippi, Louisiana, and Texas. Texas A&M Univ., College Station, TX. Memo. Rpt. 198 pp.

Vondruska, J. 2010. Fishery analysis of the commercial fisheries for eleven coastal migratory pelagic species. SERO-FSSB-2010-01. National Marine Fisheries Service, Southeast Regional Office. St. Petersburg, Florida.

Wang, J. D., J. van de Kreeke, N. Krishnan, and D. Smith. 1994. Wind and tide response in Florida Bay. Bulletin of Marine Science 54:579-601.

Williams, R. O., and R. G. Taylor. 1980. The effect of water temperature and winter air temperature on springtime migrations of king mackerel in the vicinity of Tampa Bay, Florida. Florida Science 43(supplemental):26 (abstract).

Wollam, M. B. 1970. Description and distribution of larvae and early juveniles of king mackerel, *Scomberomorus cavalla* (Cuvier), and Spanish mackerel, *S. maculatus* (Mitchill); (Pisces:Scombridae); in the Western North Atlantic. Florida Department of Natural Resources Laboratory Technical Service 61.

Yeung, C., and M. F. McGowan. 1991. Differences in inshore-offshore and vertical distribution of phyllosoma larvae of *Panulirus,Scyllarus, and Scyllarides* in the Florida Keys in May-June, 1989. Bulletin of Marine Science 49:699-714.

Appendix A. Glossary

Allowable 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 B. Alternatives Considered but Rejected

Action: Modify regulations for the Atlantic migratory group Spanish mackerel minimum commercial size limit.

Alternative 1 (No Action). Continue to prohibit harvest of undersized Atlantic migratory group Spanish mackerel except for vessels fishing under a quota for Spanish mackerel specified in Section 622.42(c)(2), which may possess undersized Spanish mackerel in quantities not exceeding five percent, by weight, of the Spanish mackerel on board. The current commercial and recreational minimum size limit is 12 inches fork length (FL).

Alternative 2. Allow commercial harvest of undersized Atlantic migratory group Spanish mackerel in waters off North Carolina with pound nets between August 1 and September 30 each year.

Sub-Alternative 2a. Decrease the minimum size limit to 11 inches FL.
Sub-Alternative 2b. Eliminate the minimum size limit.

Alternative 3. Allow commercial harvest of undersized Spanish mackerel with pound nets in waters within the Atlantic northern zone (GA-NY) between August 1 and September 30 each year.

Sub-Alternative 3a. Decrease the minimum size limit to 11 inches FL.
Sub-Alternative 3b. Eliminate the minimum size limit.

This action was removed from the amendment because the Council felt it would be more suitable to be address through the Atlantic State Marine Fisheries Commisssion. The majority of Spanish mackerel landings with pound nets are from state waters.

Appendix C. History of Management

The CMP FMP, with Environmental Impact Statement (EIS), was approved in 1982 and implemented by regulations effective in February of 1983. Managed species included king mackerel, Spanish mackerel, and cobia. The FMP treated king and Spanish mackerel as unit stocks in the Atlantic and Gulf of Mexico. The FMP established allocations for the recreational and commercial sectors harvesting these stocks, and the commercial allocations were divided between net and hook-and-line fishermen.

FMP Amendments

Amendment 1, with EIS, implemented in September of 1985, provided a framework procedure for pre-season adjustment of total allowable catch (TAC), revised the estimate of king mackerel maximum sustainable yield (MSY) downward, recognized separate Atlantic and Gulf migratory groups of king mackerel, and established fishing permits and bag limits for king mackerel. Commercial allocations among gear users, except purse seines, which were allowed 6% of the commercial allocation of TAC, were eliminated. The Gulf commercial allocation for king mackerel was divided into Eastern and Western Zones for the purpose of regional allocation, with 69% of the remaining allocation provided to the Eastern Zone and 31% to the Western Zone. Amendment 1 also established minimum size limits for Spanish mackerel at 12 in fork length (FL) or 14 in total length (TL), and for cobia at 33 in FL or 37 in TL.

Amendment 2, with environmental assessment (EA), implemented in July of 1987, revised MSY for Spanish mackerel downward, recognized two migratory groups, established allocations of TAC for the commercial and recreational sectors, and set commercial quotas and bag limits. Charterboat permits were established, and it was clarified that TAC must be set below the upper range of ABC. The use of purse seines on overfished stocks was prohibited, and their allocation of TAC was redistributed under the 69%/31% split.

Amendment 3, with EA, was partially approved in August 1989, revised, resubmitted, and approved in April 1990. It prohibited drift gillnets for coastal pelagic species and purse seines for the overfished migratory groups of mackerels.

Amendment 4, with EA, implemented in October 1989, reallocated Atlantic migratory group Spanish mackerel equally between recreational and commercial fishermen.

Amendment 5, with EA, implemented in August 1990, made the following changes in the management regime:

- Extended the management area for Atlantic migratory groups of mackerels through the Mid-Atlantic Council's area of jurisdiction;
- Revised problems in the fishery and plan objectives;
- Revised the fishing year for Gulf Spanish mackerel from July-June to April-March;
- Revised the definition of "overfishing";
- Added cobia to the annual stock assessment procedure;
- Provided that the South Atlantic Council will be responsible for pre-season adjustments of TACs and bag limits for the Atlantic migratory groups of mackerels while the Gulf

Council will be responsible for Gulf migratory groups;

- Continued to manage the two recognized Gulf migratory groups of king mackerel as one until management measures appropriate to the eastern and western migratory groups can be determined;
- Re-defined recreational bag limits as daily limits;
- Deleted a provision specifying that bag limit catch of mackerel may be sold;
- Provided guidelines for corporate commercial vessel permits;
- Specified that Gulf migratory group king mackerel may be taken only by hook-and-line and run-around gillnets;
- Imposed a bag and possession limit of two cobia per person per day;
- Established a minimum size of 12 in FL or 14 in TL for king mackerel and included a definition of "conflict" to provide guidance to the Secretary.

Amendment 6, with EA, implemented in November of 1992, made the following changes:

- Identified additional problems and an objective in the fishery;
- Provided for rebuilding overfished stocks of mackerels within specific periods;
- Provided for biennial assessments and adjustments;
- Provided for more seasonal adjustment actions;
- Allowed for Gulf migratory group king mackerel stock identification and allocation when appropriate;
- Provided for commercial Atlantic migratory group Spanish mackerel possession limits;
- Changed commercial permit requirements to allow qualification in one of three preceding years;
- Discontinued the reversion of the bag limit to zero when the recreational quota is filled;
- Modified the recreational fishing year to the calendar year; and
- Changed the minimum size limit for king mackerel to 20 in FL, and changed all size limit measures to fork length only.

Amendment 7, with EA, implemented in November 1994, equally divided the Gulf commercial allocation in the Eastern Zone at the Dade-Monroe County line in Florida. The sub-allocation for the area from Monroe County through Western Florida is equally divided between commercial hook-and-line and net gear users.

Amendment 8, with EA, implemented March 1998, made the following changes to the management regime:

- Clarified ambiguity about allowable gear specifications for the Gulf migratory group king mackerel fishery by allowing only hook-and-line and run-around gillnets. However, catch by permitted, multi-species vessels and bycatch allowances for purse seines were maintained;
- Established allowable gear in the South Atlantic and Mid-Atlantic areas as well as providing for the RA (RA) to authorize the use of experimental gear;
- Established the Councils' intent to evaluate the impacts of permanent jurisdictional boundaries between the Gulf and South Atlantic Councils and development of separate FMPs for coastal pelagic species in these areas;
- Established a moratorium on commercial king mackerel permits until no later than

October 15, 2000, with a qualification date for initial participation of October 16, 1995;

- Increased the income requirement for a king or Spanish mackerel permit to 25% of earned income or $10,000 from commercial sale of catch or charter or head boat fishing in one of the three previous calendar years, but allowed for a one-year grace period to qualify under permits that are transferred;
- Legalized retention of up to five cut-off (damaged) king mackerel on vessels with commercial trip limits;
- Set an optimum yield (OY) target at 30% static spawning potential ratio (SPR) for the Gulf and 40% static SPR for the Atlantic;
- Provided the South Atlantic Council with authority to set vessel trip limits, closed seasons or areas, and gear restrictions for Gulf migratory group king mackerel in the North Area of the Eastern Zone (Dade/Monroe to Volusia/Flagler County lines);
- Established various data consideration and reporting requirements under the framework procedure;
- Modified the seasonal framework adjustment measures and specifications (see Appendix A);
- Expanded the management area for cobia through the Mid-Atlantic Council's area of jurisdiction (to New York).

Amendment 9, with EA, implemented in April 2000, made the following changes to the management regime:

- Reallocated the percentage of the commercial allocation of TAC for the North Area (Florida east coast) and South/West Area (Florida west coast) of the Eastern Zone to 46.15% North and 53.85% South/West and retained the recreational and commercial allocations of TAC at 68% recreational and 32% commercial;
- Subdivided the commercial hook-and-line king mackerel allocation for the Gulf migratory group, Eastern Zone, South/West Area (Florida west coast) by establishing two subzones with a dividing line between the two subzones at the Collier/Lee County line;
- Established regional allocations for the west coast of Florida based on the two subzones with 7.5% of the Eastern Zone allocation of TAC being allowed from Subzone 2 and the remaining 92.5% being allocated as follows:
- 50% - Florida east coast
- 50% - Florida west coast that is further subdivided:
    - 50% - Net Fishery
    - 50% - Hook-and-Line Fishery
- Established a trip limit of 3,000 lb per vessel per trip for the Western Zone;
- Established a moratorium on the issuance of commercial king mackerel gillnet endorsements and allow re-issuance of gillnet endorsements to only those vessels that: 1) had a commercial mackerel permit with a gillnet endorsement on or before the moratorium control date of October 16, 1995 (Amendment 8), and 2) had landings of king mackerel using a gillnet in one of the two fishing years, 1995-1996 or 1996-1997, as verified by the National Marine Fisheries Service (NMFS) or trip tickets from Florida; allowed transfer of gillnet endorsements to immediate family members (son, daughter, father, mother, or spouse) only; and prohibited the use of gillnets or any other net gear for the harvest of Gulf migratory group king mackerel north of an east/west line at the Collier/Lee County line;

- Increased the minimum size limit for Gulf migratory group king mackerel from 20 in to 24 in FL
- Allowed the retention and sale of cut-off (damaged), legal-sized king and Spanish mackerel within established trip limits.

Amendment 10, with Supplemental Environmental Impact Statement (SEIS), approved June 1999, incorporated essential fish habitat provisions for the South Atlantic.

Amendment 11, with SEIS, partially approved in December 1999, included proposals for mackerel in the South Atlantic Council's Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and other Provisions in FMPs of the South Atlantic Region.

Amendment 12, with EA, implemented October 2000, extended the commercial king mackerel permit moratorium from its current expiration date of October 15, 2000, to October 15, 2005, or until replaced with a license limitation, limited access, and/or individual fishing quota or individual transferable quota system, whichever occurs earlier.

Amendment 13, with SEIS, implemented August 19, 2002, established two marine reserves in the exclusive economic zone (EEZ) of the Gulf in the vicinity of the Dry Tortugas, Florida known as Tortugas North and Tortugas South in which fishing for coastal migratory pelagic species is prohibited. This action complements previous actions taken under the National Marine Sanctuaries Act.

Amendment 14, with EA, implemented July 29, 2002, established a three-year moratorium on the issuance of charter vessel and head boat Gulf migratory group king mackerel permits in the Gulf unless sooner replaced by a comprehensive effort limitation system. The control date for eligibility was established as March 29, 2001. Also includes provisions for eligibility, application, appeals, and transferability.

Amendment 15, with EA, implemented August 8, 2005, established an indefinite limited access program for the commercial king mackerel fishery in the EEZ under the jurisdiction of the Gulf, South Atlantic, and Mid-Atlantic Councils. It also changed the fishing season to March 1 through February 28/29 for the Atlantic migratory groups of king and Spanish mackerel.

Amendment 16, was not developed.

Amendment 17, with SEIS, implemented June 15, 2006, established a limited access system on for-hire reef fish and CMP permits. Permits are renewable and transferable in the same manner as currently prescribed for such permits. There will be a periodic review at least every 10 years on the effectiveness of the limited access system.

Amendment 18, with EA, established annual catch limits (ACL), annual catch targets (ACT) and accountability measures (AM) for king mackerel, Spanish mackerel and cobia. The amendment also established both Atlantic and Gulf migratory groups for cobia; modified the framework procedures; and removed the following species from the Fishery Management Unit: cero, little tunny, dolphin and bluefish. The South Atlantic and the Gulf councils approved the

amendment for formal review in August, 2011. The amendment was approved by the Secretary of Commerce in December, 2011

Appendix D. Bycatch Practicability Analysis

Appendix E. Regulatory Impact Review

Appendix F. Regulatory Flexibility Analysis

Appendix G. Other Applicable Law

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the Exclusive Economic Zone. However, fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making are summarized below.

Administrative Procedures 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, National Marine 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 waiting period from the time a final rule is published until it takes effect.

Coastal Zone Management Act
Section 307(c)(1) of the federal Coastal Zone Management Act of 1972 (CZMA), as amended, requires federal activities that affect any land or water use or natural resource of a state's coastal zone be conducted in a manner consistent, to the maximum extent practicable, with approved state coastal management programs. The requirements for such a consistency determination are set forth in NOAA regulations at 15 C.F.R. part 930, subpart C. According to these regulations and CZMA Section 307(c)(1), when taking an action that affects any land or water use or natural resource of a state's coastal zone, National Marine Fisheries Service is required to provide a consistency determination to the relevant state agency at least 90 days before taking final action.

Upon submission to the Secretary, National Marine Fisheries Service will determine if this plan amendment is consistent with the Coastal Zone Management programs of the states of Alabama, Florida, Louisiana, Mississippi, and Texas to the maximum extent possible. Their determination will then be submitted to the responsible state agencies under Section 307 of the CZMA administering approved Coastal Zone Management programs for these states.

Data Quality Act
The Data Quality Act (DQA) (Public Law 106-443) effective October 1, 2002, requires the government to set standards for the quality of scientific information and statistics used and disseminated by federal agencies. Information includes any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical, cartographic, narrative, or audiovisual forms (includes web dissemination, but not hyperlinks to information that others disseminate; does not include clearly stated opinions).

Specifically, the DQA directs the Office of Management and Budget (OMB) to issue government wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by

federal agencies." Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: 1) ensure information quality and develop a pre-dissemination review process; 2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and 3) report periodically to OMB on the number and nature of complaints received.

Scientific information and data are key components of fishery management plans (FMPs) and amendments and the use of best available information is the second national standard under the Magnuson-Stevens Act. To be consistent with the DQA, FMPs and amendments must be based on the best information available. They should also properly reference all supporting materials and data, and be reviewed by technically competent individuals. With respect to original data generated for FMPs and amendments, it is important to ensure that the data are collected according to documented procedures or in a manner that reflects standard practices accepted by the relevant scientific and technical communities. Data will also undergo quality control prior to being used by the agency and a pre-dissemination review.

Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. Section 1531 et seq.) requires federal agencies use their authorities to conserve endangered and threatened species. The ESA requires National Marine Fisheries Service, when proposing a fishery action that "may affect" critical habitat or endangered or threatened species, to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service for all remaining species) to determine the potential impacts of the proposed action. Consultations are concluded informally when proposed actions may affect but are "not likely to adversely affect" endangered or threatened species or designated critical habitat. Formal consultations, including a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" endangered or threatened species or adversely modify designated critical habitat. If jeopardy or adverse modification is found, the consulting agency is required to suggest reasonable and prudent alternatives. National Marine Fisheries Service, as part of the Secretarial review process, will make a determination regarding the potential impacts of the proposed actions.

Executive Orders

E.O. 12630: Takings

The Executive Order on Government Actions and Interference with Constitutionally Protected Property Rights that became effective March 18, 1988, requires each federal agency prepare a Takings Implication Assessment for any of its administrative, regulatory, and legislative policies and actions that affect, or may affect, the use of any real or personal property. Clearance of a regulatory action must include a takings statement and, if appropriate, a Takings Implication Assessment. The NOAA Office of General Counsel will determine whether a Taking Implication Assessment is necessary for this amendment.

E.O. 12866: Regulatory Planning and Review

Executive Order 12866: Regulatory Planning and Review, 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, National Marine Fisheries Service prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society of 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 would have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act. A regulation is significant if it a) has an annual effect on the economy of $100 million or more or adversely affects 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 and communities; b) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency; c) materially alters the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or d) raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order. National Marine Fisheries Service has preliminarily determined that this action will not meet the economic significance threshold of any criteria.

E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

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. Environmental justice considerations are discussed in detail in Section 2.5.

E.O. 12962: Recreational Fisheries

This Executive Order requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, it establishes a seven-member National Recreational Fisheries Coordination

Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for developing, in cooperation with federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires National Marine Fisheries Service and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

E.O. 13132: Federalism

The Executive Order on Federalism requires agencies in formulating and implementing policies, to be guided by the fundamental Federalism principles. The Order serves to guarantee the division of governmental responsibilities between the national government and the states that was intended by the framers of the Constitution. Federalism is rooted in the belief that issues not national in scope or significance are most appropriately addressed by the level of government closest to the people. This Order is relevant to FMPs and amendments given the overlapping authorities of National Marine Fisheries Service, the states, and local authorities in managing coastal resources, including fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate state, tribes and local entities (international too).

No Federalism issues have been identified relative to the action proposed in this amendment. Therefore, consultation with state officials under Executive Order 12612 is not necessary.

Essential Fish Habitat

The amended Magnuson-Stevens Act included a new habitat conservation provision known as Essential Fish Habitat (EFH) that requires each existing and any new FMPs to describe and identify EFH for each federally managed species, minimize to the extent practicable impacts from fishing activities on EFH that are more than minimal and not temporary in nature, and identify other actions to encourage the conservation and enhancement of that EFH. To address these requirements the Council has, under separate action, approved an environmental impact statement (GMFMC 2004) to address the new EFH requirements contained within the Magnuson-Stevens Act. Section 305(b)(2) requires federal agencies to obtain a consultation for any action that may adversely affect EFH. An EFH consultation will be conducted for this action.

Appendix H. Spanish Mackerel Quota and Trip Limit Analysis

Table 1. FORECAST FOR 2013-2014 SEASON IF IMPLEMENTATION OF CMP REGULATORY FRAMEWORK PRIOR TO DECEMBER 1, 2013

	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3
PROJECTED CLOSURE DATE-->	02/12/14	01/25/14	02/01/14	n/a	02/11/14
PROJECTED DAYS OPEN-->	348	330	337	365	347

Table 2. FORECAST FOR 2014-2015 SEASON

	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3
PROJECTED CLOSURE DATE-->	02/15/15	01/28/15	02/05/15	n/a	02/15/15
PROJECTED DAYS OPEN-->	351	333	341	365	351

NOTE:
Table 1 and Table 2 show projected South Atlantic spanish mackerel season lengths and quota closure dates under the various trip limit alternatives under Action 4. Table 1 forecasts the 2013-2014 season assuming this CMP Regulatory Amendment is implemented by December 1, 2013. Table 2 forecasts the 2014-2015 season. These projections are based on a forecast of harvest from SEFSC ACL data, incorporating monthly catch rates (Figure X-1). The best fitting projection model was a Seasonal Auto-Regressive Integrated Moving Average (SARIMA) model, with a 3-year time lag on the moving average term and a 1-month time lag on the autoregressive term. Twenty four SARIMA model permutations were considered, and this was the best fitting model, per the AIC, with significant parameter estimates. It explained 67% of the variability in spanish mackerel monthly commercial harvest. Spanish mackerel harvest in the South Atlantic appears to have a 3-year cycle with the pattern of high harvest, mid-level harvest, and low harvest. Projected catch rates were partitioned out to Northern and Southern Zones, with trip limit impacts applying only to Southern Zone. Seasonal dynamics in zone of fishing were accounted for using mean percent harvest by zone, 2000-2012 (Figure X-2). The impacts of trip limits were simulated using catch per trip data reported to the SEFSC Coastal Fisheries Logbook Program (Figure X-3). The season length projections in Tables 1 and 2 assume that trip limit impacts to vessels reporting to SEFSC Coastal Fisheries Logbook Program are a reasonable proxy for impacts to vessels harvesting spanish mackerel that do not report to this program. This includes commercial vessels without federal permits that harvest predominantly in state waters. If the concentrations of spanish mackerel encountered on a trip or the gears used to harvest them are substantially different between federally-licensed and state-licensed vessels, this assumption may be violated. If state-licensed vessels are less likely to encounter large concentrations of spanish mackerel, the trip limit impacts projected here would be reduced. If state-licensed vessels are more likely to encounter large concentrations of spanish mackerel, the trip limit impacts projected here might be amplified. An examination of Figure X-4 suggests that Southern Zone harvest is predominantly in Federal waters, although state harvest does increase during the time period where the trip limit impacts would factor under Action 4 (Dec-Feb mean harvest 2006-2012 = 26% ± 13% from state waters).

	100%	75%
ACL =	3,870,000	2,902,500
Adj. ACL =	3,620,000	2,715,000

EXPLICITLY HANDLED WEEKEND TRIP LIMIT

	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3
PROJECTED CLOSURE DATE-->	02/28/15	02/09/15	02/17/15	n/a	02/27/15
PROJECTED DAYS OPEN-->	364	345	353	365	363

				Southern					CUMULATIVE TOTAL					OVERAGE DATE				
Fishing Month	Date	Weekday	Northern	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3
1	3/1/2014	7	3	14,517	14,517	14,517	14,517	14,517	14,519	14,519	14,519	14,519	14,519					
1	3/2/2014	1	3	14,517	14,517	14,517	14,517	14,517	29,039	29,039	29,039	29,039	29,039					
1	3/3/2014	2	3	14,517	14,517	14,517	14,517	14,517	43,558	43,558	43,558	43,558	43,558					
1	3/4/2014	3	3	14,517	14,517	14,517	14,517	14,517	58,078	58,078	58,078	58,078	58,078					
1	3/5/2014	4	3	14,517	14,517	14,517	14,517	14,517	72,597	72,597	72,597	72,597	72,597					
1	3/6/2014	5	3	14,517	14,517	14,517	14,517	14,517	87,117	87,117	87,117	87,117	87,117					
1	3/7/2014	6	3	14,517	14,517	14,517	14,517	14,517	101,636	101,636	101,636	101,636	101,636					
1	3/8/2014	7	3	14,517	14,517	14,517	14,517	14,517	116,156	116,156	116,156	116,156	116,156					
1	3/9/2014	1	3	14,517	14,517	14,517	14,517	14,517	130,675	130,675	130,675	130,675	130,675					
1	3/10/2014	2	3	14,517	14,517	14,517	14,517	14,517	145,195	145,195	145,195	145,195	145,195					
1	3/11/2014	3	3	14,517	14,517	14,517	14,517	14,517	159,714	159,714	159,714	159,714	159,714					
1	3/12/2014	4	3	14,517	14,517	14,517	14,517	14,517	174,234	174,234	174,234	174,234	174,234					
1	3/13/2014	5	3	14,517	14,517	14,517	14,517	14,517	188,753	188,753	188,753	188,753	188,753					
1	3/14/2014	6	3	14,517	14,517	14,517	14,517	14,517	203,273	203,273	203,273	203,273	203,273					
1	3/15/2014	7	3	14,517	14,517	14,517	14,517	14,517	217,792	217,792	217,792	217,792	217,792					
1	3/16/2014	1	3	14,517	14,517	14,517	14,517	14,517	232,312	232,312	232,312	232,312	232,312					
1	3/17/2014	2	3	14,517	14,517	14,517	14,517	14,517	246,831	246,831	246,831	246,831	246,831					
1	3/18/2014	3	3	14,517	14,517	14,517	14,517	14,517	261,351	261,351	261,351	261,351	261,351					
1	3/19/2014	4	3	14,517	14,517	14,517	14,517	14,517	275,870	275,870	275,870	275,870	275,870					
1	3/20/2014	5	3	14,517	14,517	14,517	14,517	14,517	290,390	290,390	290,390	290,390	290,390					
1	3/21/2014	6	3	14,517	14,517	14,517	14,517	14,517	304,909	304,909	304,909	304,909	304,909					
1	3/22/2014	7	3	14,517	14,517	14,517	14,517	14,517	319,429	319,429	319,429	319,429	319,429					
1	3/23/2014	1	3	14,517	14,517	14,517	14,517	14,517	333,948	333,948	333,948	333,948	333,948					
1	3/24/2014	2	3	14,517	14,517	14,517	14,517	14,517	348,467	348,467	348,467	348,467	348,467					
1	3/25/2014	3	3	14,517	14,517	14,517	14,517	14,517	362,987	362,987	362,987	362,987	362,987					
1	3/26/2014	4	3	14,517	14,517	14,517	14,517	14,517	377,506	377,506	377,506	377,506	377,506					
1	3/27/2014	5	3	14,517	14,517	14,517	14,517	14,517	392,026	392,026	392,026	392,026	392,026					
1	3/28/2014	6	3	14,517	14,517	14,517	14,517	14,517	406,545	406,545	406,545	406,545	406,545					
1	3/29/2014	7	3	14,517	14,517	14,517	14,517	14,517	421,065	421,065	421,065	421,065	421,065					
1	3/30/2014	1	3	14,517	14,517	14,517	14,517	14,517	435,584	435,584	435,584	435,584	435,584					
1	3/31/2014	2	3	14,517	14,517	14,517	14,517	14,517	450,104	450,104	450,104	450,104	450,104					
2	4/1/2014	3	57	3,635	3,635	3,635	3,635	3,635	453,795	453,795	453,795	453,795	453,795					
2	4/2/2014	4	57	3,635	3,635	3,635	3,635	3,635	457,487	457,487	457,487	457,487	457,487					
2	4/3/2014	5	57	3,635	3,635	3,635	3,635	3,635	461,178	461,178	461,178	461,178	461,178					
2	4/4/2014	6	57	3,635	3,635	3,635	3,635	3,635	464,869	464,869	464,869	464,869	464,869					
2	4/5/2014	7	57	3,635	3,635	3,635	3,635	3,635	468,561	468,561	468,561	468,561	468,561					
2	4/6/2014	1	57	3,635	3,635	3,635	3,635	3,635	472,252	472,252	472,252	472,252	472,252					
2	4/7/2014	2	57	3,635	3,635	3,635	3,635	3,635	475,943	475,943	475,943	475,943	475,943					
2	4/8/2014	3	57	3,635	3,635	3,635	3,635	3,635	479,635	479,635	479,635	479,635	479,635					
2	4/9/2014	4	57	3,635	3,635	3,635	3,635	3,635	483,326	483,326	483,326	483,326	483,326					
2	4/10/2014	5	57	3,635	3,635	3,635	3,635	3,635	487,018	487,018	487,018	487,018	487,018					
2	4/11/2014	6	57	3,635	3,635	3,635	3,635	3,635	490,709	490,709	490,709	490,709	490,709					
2	4/12/2014	7	57	3,635	3,635	3,635	3,635	3,635	494,400	494,400	494,400	494,400	494,400					
2	4/13/2014	1	57	3,635	3,635	3,635	3,635	3,635	498,092	498,092	498,092	498,092	498,092					
2	4/14/2014	2	57	3,635	3,635	3,635	3,635	3,635	501,783	501,783	501,783	501,783	501,783					
2	4/15/2014	3	57	3,635	3,635	3,635	3,635	3,635	505,474	505,474	505,474	505,474	505,474					
2	4/16/2014	4	57	3,635	3,635	3,635	3,635	3,635	509,166	509,166	509,166	509,166	509,166					
2	4/17/2014	5	57	3,635	3,635	3,635	3,635	3,635	512,857	512,857	512,857	512,857	512,857					
2	4/18/2014	6	57	3,635	3,635	3,635	3,635	3,635	516,549	516,549	516,549	516,549	516,549					
2	4/19/2014	7	57	3,635	3,635	3,635	3,635	3,635	520,240	520,240	520,240	520,240	520,240					
2	4/20/2014	1	57	3,635	3,635	3,635	3,635	3,635	523,931	523,931	523,931	523,931	523,931					
2	4/21/2014	2	57	3,635	3,635	3,635	3,635	3,635	527,623	527,623	527,623	527,623	527,623					
2	4/22/2014	3	57	3,635	3,635	3,635	3,635	3,635	531,314	531,314	531,314	531,314	531,314					
2	4/23/2014	4	57	3,635	3,635	3,635	3,635	3,635	535,005	535,005	535,005	535,005	535,005					
2	4/24/2014	5	57	3,635	3,635	3,635	3,635	3,635	538,697	538,697	538,697	538,697	538,697					
2	4/25/2014	6	57	3,635	3,635	3,635	3,635	3,635	542,388	542,388	542,388	542,388	542,388					
2	4/26/2014	7	57	3,635	3,635	3,635	3,635	3,635	546,080	546,080	546,080	546,080	546,080					
2	4/27/2014	1	57	3,635	3,635	3,635	3,635	3,635	549,771	549,771	549,771	549,771	549,771					
2	4/28/2014	2	57	3,635	3,635	3,635	3,635	3,635	553,462	553,462	553,462	553,462	553,462					
2	4/29/2014	3	57	3,635	3,635	3,635	3,635	3,635	557,154	557,154	557,154	557,154	557,154					
2	4/30/2014	4	57	3,635	3,635	3,635	3,635	3,635	560,845	560,845	560,845	560,845	560,845					
3	5/1/2014	5	5,608	968	968	968	968	968	567,421	567,421	567,421	567,421	567,421					
3	5/2/2014	6	5,608	968	968	968	968	968	573,996	573,996	573,996	573,996	573,996					

NOTE:
Based on forecast of harvest from SEFSC ACL data, incorporating monthly catch rates. The best fitting projection model was a Seasonal Auto-Regressive Integrated Moving Average (SARIMA) model, with a 3-year time lag on the moving average term and a 1-month time lag on the autoregressive term. Twenty four SARIMA model permutations were considered, and this was the best fitting model, per the AIC, with significant parameter estimates. It explained 65% of the variability in spanish mackerel monthly commercial harvest. Spanish mackerel harvest in the South Atlantic appears to have a 3-year cycle with the pattern of high harvest, mid-level harvest, and low harvest. Projected catch rates were partitioned out to Northern and Southern Zones, with trip limit impacts applying only to Southern Zone. Assumes that trip limit impacts to vessels reporting to SEFSC Coastal Fisheries Logbook Program are reasonable proxy for impacts to vessels harvesting spanish mackerel that do not report to this program. This includes commercial vessels without federal permits that harvest predominantly in state waters. If the concentrations of spanish mackerel encountered on a trip or the gears used to harvest them are substantially different between federally-licensed and state-licensed vessels, this assumption may be violated. If state-licensed vessels are less likely to encounter large concentrations of spanish mackerel, the trip limit impacts projected here would be reduced. If state-licensed vessels are more likely to encounter large concentrations of spanish mackerel, the trip limit impacts projected here might be amplified.

3	5/3/2014	7	5,608	968	968	968	968	968	580,572	580,572	580,572	580,572	580,572
3	5/4/2014	1	5,608	968	968	968	968	968	587,148	587,148	587,148	587,148	587,148
3	5/5/2014	2	5,608	968	968	968	968	968	593,723	593,723	593,723	593,723	593,723
3	5/6/2014	3	5,608	968	968	968	968	968	600,299	600,299	600,299	600,299	600,299
3	5/7/2014	4	5,608	968	968	968	968	968	606,875	606,875	606,875	606,875	606,875
3	5/8/2014	5	5,608	968	968	968	968	968	613,450	613,450	613,450	613,450	613,450
3	5/9/2014	6	5,608	968	968	968	968	968	620,026	620,026	620,026	620,026	620,026
3	5/10/2014	7	5,608	968	968	968	968	968	626,602	626,602	626,602	626,602	626,602
3	5/11/2014	1	5,608	968	968	968	968	968	633,177	633,177	633,177	633,177	633,177
3	5/12/2014	2	5,608	968	968	968	968	968	639,753	639,753	639,753	639,753	639,753
3	5/13/2014	3	5,608	968	968	968	968	968	646,329	646,329	646,329	646,329	646,329
3	5/14/2014	4	5,608	968	968	968	968	968	652,904	652,904	652,904	652,904	652,904
3	5/15/2014	5	5,608	968	968	968	968	968	659,480	659,480	659,480	659,480	659,480
3	5/16/2014	6	5,608	968	968	968	968	968	666,056	666,056	666,056	666,056	666,056
3	5/17/2014	7	5,608	968	968	968	968	968	672,631	672,631	672,631	672,631	672,631
3	5/18/2014	1	5,608	968	968	968	968	968	679,207	679,207	679,207	679,207	679,207
3	5/19/2014	2	5,608	968	968	968	968	968	685,782	685,782	685,782	685,782	685,782
3	5/20/2014	3	5,608	968	968	968	968	968	692,358	692,358	692,358	692,358	692,358
3	5/21/2014	4	5,608	968	968	968	968	968	698,934	698,934	698,934	698,934	698,934
3	5/22/2014	5	5,608	968	968	968	968	968	705,509	705,509	705,509	705,509	705,509
3	5/23/2014	6	5,608	968	968	968	968	968	712,085	712,085	712,085	712,085	712,085
3	5/24/2014	7	5,608	968	968	968	968	968	718,661	718,661	718,661	718,661	718,661
3	5/25/2014	1	5,608	968	968	968	968	968	725,236	725,236	725,236	725,236	725,236
3	5/26/2014	2	5,608	968	968	968	968	968	731,812	731,812	731,812	731,812	731,812
3	5/27/2014	3	5,608	968	968	968	968	968	738,388	738,388	738,388	738,388	738,388
3	5/28/2014	4	5,608	968	968	968	968	968	744,963	744,963	744,963	744,963	744,963
3	5/29/2014	5	5,608	968	968	968	968	968	751,539	751,539	751,539	751,539	751,539
3	5/30/2014	6	5,608	968	968	968	968	968	758,115	758,115	758,115	758,115	758,115
3	5/31/2014	7	5,608	968	968	968	968	968	764,690	764,690	764,690	764,690	764,690
4	6/1/2014	1	5,374	344	344	344	344	344	770,408	770,408	770,408	770,408	770,408
4	6/2/2014	2	5,374	344	344	344	344	344	776,127	776,127	776,127	776,127	776,127
4	6/3/2014	3	5,374	344	344	344	344	344	781,845	781,845	781,845	781,845	781,845
4	6/4/2014	4	5,374	344	344	344	344	344	787,563	787,563	787,563	787,563	787,563
4	6/5/2014	5	5,374	344	344	344	344	344	793,281	793,281	793,281	793,281	793,281
4	6/6/2014	6	5,374	344	344	344	344	344	798,999	798,999	798,999	798,999	798,999
4	6/7/2014	7	5,374	344	344	344	344	344	804,717	804,717	804,717	804,717	804,717
4	6/8/2014	1	5,374	344	344	344	344	344	810,435	810,435	810,435	810,435	810,435
4	6/9/2014	2	5,374	344	344	344	344	344	816,153	816,153	816,153	816,153	816,153
4	6/10/2014	3	5,374	344	344	344	344	344	821,871	821,871	821,871	821,871	821,871
4	6/11/2014	4	5,374	344	344	344	344	344	827,589	827,589	827,589	827,589	827,589
4	6/12/2014	5	5,374	344	344	344	344	344	833,308	833,308	833,308	833,308	833,308
4	6/13/2014	6	5,374	344	344	344	344	344	839,026	839,026	839,026	839,026	839,026
4	6/14/2014	7	5,374	344	344	344	344	344	844,744	844,744	844,744	844,744	844,744
4	6/15/2014	1	5,374	344	344	344	344	344	850,462	850,462	850,462	850,462	850,462
4	6/16/2014	2	5,374	344	344	344	344	344	856,180	856,180	856,180	856,180	856,180
4	6/17/2014	3	5,374	344	344	344	344	344	861,898	861,898	861,898	861,898	861,898
4	6/18/2014	4	5,374	344	344	344	344	344	867,616	867,616	867,616	867,616	867,616
4	6/19/2014	5	5,374	344	344	344	344	344	873,334	873,334	873,334	873,334	873,334
4	6/20/2014	6	5,374	344	344	344	344	344	879,052	879,052	879,052	879,052	879,052
4	6/21/2014	7	5,374	344	344	344	344	344	884,771	884,771	884,771	884,771	884,771
4	6/22/2014	1	5,374	344	344	344	344	344	890,489	890,489	890,489	890,489	890,489
4	6/23/2014	2	5,374	344	344	344	344	344	896,207	896,207	896,207	896,207	896,207
4	6/24/2014	3	5,374	344	344	344	344	344	901,925	901,925	901,925	901,925	901,925
4	6/25/2014	4	5,374	344	344	344	344	344	907,643	907,643	907,643	907,643	907,643
4	6/26/2014	5	5,374	344	344	344	344	344	913,361	913,361	913,361	913,361	913,361
4	6/27/2014	6	5,374	344	344	344	344	344	919,079	919,079	919,079	919,079	919,079
4	6/28/2014	7	5,374	344	344	344	344	344	924,797	924,797	924,797	924,797	924,797
4	6/29/2014	1	5,374	344	344	344	344	344	930,515	930,515	930,515	930,515	930,515
4	6/30/2014	2	5,374	344	344	344	344	344	936,234	936,234	936,234	936,234	936,234
5	7/1/2014	3	4,889	203	203	203	203	203	941,326	941,326	941,326	941,326	941,326
5	7/2/2014	4	4,889	203	203	203	203	203	946,418	946,418	946,418	946,418	946,418
5	7/3/2014	5	4,889	203	203	203	203	203	951,510	951,510	951,510	951,510	951,510
5	7/4/2014	6	4,889	203	203	203	203	203	956,602	956,602	956,602	956,602	956,602
5	7/5/2014	7	4,889	203	203	203	203	203	961,694	961,694	961,694	961,694	961,694
5	7/6/2014	1	4,889	203	203	203	203	203	966,786	966,786	966,786	966,786	966,786
5	7/7/2014	2	4,889	203	203	203	203	203	971,878	971,878	971,878	971,878	971,878
5	7/8/2014	3	4,889	203	203	203	203	203	976,970	976,970	976,970	976,970	976,970
5	7/9/2014	4	4,889	203	203	203	203	203	982,062	982,062	982,062	982,062	982,062
5	7/10/2014	5	4,889	203	203	203	203	203	987,154	987,154	987,154	987,154	987,154
5	7/11/2014	6	4,889	203	203	203	203	203	992,246	992,246	992,246	992,246	992,246
5	7/12/2014	7	4,889	203	203	203	203	203	997,338	997,338	997,338	997,338	997,338

5	7/13/2014	1	4,889	203	203	203	203	203	1,002,431	1,002,431	1,002,431	1,002,431	1,002,431
5	7/14/2014	2	4,889	203	203	203	203	203	1,007,523	1,007,523	1,007,523	1,007,523	1,007,523
5	7/15/2014	3	4,889	203	203	203	203	203	1,012,615	1,012,615	1,012,615	1,012,615	1,012,615
5	7/16/2014	4	4,889	203	203	203	203	203	1,017,707	1,017,707	1,017,707	1,017,707	1,017,707
5	7/17/2014	5	4,889	203	203	203	203	203	1,022,799	1,022,799	1,022,799	1,022,799	1,022,799
5	7/18/2014	6	4,889	203	203	203	203	203	1,027,891	1,027,891	1,027,891	1,027,891	1,027,891
5	7/19/2014	7	4,889	203	203	203	203	203	1,032,983	1,032,983	1,032,983	1,032,983	1,032,983
5	7/20/2014	1	4,889	203	203	203	203	203	1,038,075	1,038,075	1,038,075	1,038,075	1,038,075
5	7/21/2014	2	4,889	203	203	203	203	203	1,043,167	1,043,167	1,043,167	1,043,167	1,043,167
5	7/22/2014	3	4,889	203	203	203	203	203	1,048,259	1,048,259	1,048,259	1,048,259	1,048,259
5	7/23/2014	4	4,889	203	203	203	203	203	1,053,351	1,053,351	1,053,351	1,053,351	1,053,351
5	7/24/2014	5	4,889	203	203	203	203	203	1,058,443	1,058,443	1,058,443	1,058,443	1,058,443
5	7/25/2014	6	4,889	203	203	203	203	203	1,063,535	1,063,535	1,063,535	1,063,535	1,063,535
5	7/26/2014	7	4,889	203	203	203	203	203	1,068,628	1,068,628	1,068,628	1,068,628	1,068,628
5	7/27/2014	1	4,889	203	203	203	203	203	1,073,720	1,073,720	1,073,720	1,073,720	1,073,720
5	7/28/2014	2	4,889	203	203	203	203	203	1,078,812	1,078,812	1,078,812	1,078,812	1,078,812
5	7/29/2014	3	4,889	203	203	203	203	203	1,083,904	1,083,904	1,083,904	1,083,904	1,083,904
5	7/30/2014	4	4,889	203	203	203	203	203	1,088,996	1,088,996	1,088,996	1,088,996	1,088,996
5	7/31/2014	5	4,889	203	203	203	203	203	1,094,088	1,094,088	1,094,088	1,094,088	1,094,088
6	8/1/2014	6	5,111	267	267	267	267	267	1,099,465	1,099,465	1,099,465	1,099,465	1,099,465
6	8/2/2014	7	5,111	267	267	267	267	267	1,104,843	1,104,843	1,104,843	1,104,843	1,104,843
6	8/3/2014	1	5,111	267	267	267	267	267	1,110,221	1,110,221	1,110,221	1,110,221	1,110,221
6	8/4/2014	2	5,111	267	267	267	267	267	1,115,598	1,115,598	1,115,598	1,115,598	1,115,598
6	8/5/2014	3	5,111	267	267	267	267	267	1,120,976	1,120,976	1,120,976	1,120,976	1,120,976
6	8/6/2014	4	5,111	267	267	267	267	267	1,126,353	1,126,353	1,126,353	1,126,353	1,126,353
6	8/7/2014	5	5,111	267	267	267	267	267	1,131,731	1,131,731	1,131,731	1,131,731	1,131,731
6	8/8/2014	6	5,111	267	267	267	267	267	1,137,108	1,137,108	1,137,108	1,137,108	1,137,108
6	8/9/2014	7	5,111	267	267	267	267	267	1,142,486	1,142,486	1,142,486	1,142,486	1,142,486
6	8/10/2014	1	5,111	267	267	267	267	267	1,147,863	1,147,863	1,147,863	1,147,863	1,147,863
6	8/11/2014	2	5,111	267	267	267	267	267	1,153,241	1,153,241	1,153,241	1,153,241	1,153,241
6	8/12/2014	3	5,111	267	267	267	267	267	1,158,619	1,158,619	1,158,619	1,158,619	1,158,619
6	8/13/2014	4	5,111	267	267	267	267	267	1,163,996	1,163,996	1,163,996	1,163,996	1,163,996
6	8/14/2014	5	5,111	267	267	267	267	267	1,169,374	1,169,374	1,169,374	1,169,374	1,169,374
6	8/15/2014	6	5,111	267	267	267	267	267	1,174,751	1,174,751	1,174,751	1,174,751	1,174,751
6	8/16/2014	7	5,111	267	267	267	267	267	1,180,129	1,180,129	1,180,129	1,180,129	1,180,129
6	8/17/2014	1	5,111	267	267	267	267	267	1,185,506	1,185,506	1,185,506	1,185,506	1,185,506
6	8/18/2014	2	5,111	267	267	267	267	267	1,190,884	1,190,884	1,190,884	1,190,884	1,190,884
6	8/19/2014	3	5,111	267	267	267	267	267	1,196,261	1,196,261	1,196,261	1,196,261	1,196,261
6	8/20/2014	4	5,111	267	267	267	267	267	1,201,639	1,201,639	1,201,639	1,201,639	1,201,639
6	8/21/2014	5	5,111	267	267	267	267	267	1,207,017	1,207,017	1,207,017	1,207,017	1,207,017
6	8/22/2014	6	5,111	267	267	267	267	267	1,212,394	1,212,394	1,212,394	1,212,394	1,212,394
6	8/23/2014	7	5,111	267	267	267	267	267	1,217,772	1,217,772	1,217,772	1,217,772	1,217,772
6	8/24/2014	1	5,111	267	267	267	267	267	1,223,149	1,223,149	1,223,149	1,223,149	1,223,149
6	8/25/2014	2	5,111	267	267	267	267	267	1,228,527	1,228,527	1,228,527	1,228,527	1,228,527
6	8/26/2014	3	5,111	267	267	267	267	267	1,233,904	1,233,904	1,233,904	1,233,904	1,233,904
6	8/27/2014	4	5,111	267	267	267	267	267	1,239,282	1,239,282	1,239,282	1,239,282	1,239,282
6	8/28/2014	5	5,111	267	267	267	267	267	1,244,660	1,244,660	1,244,660	1,244,660	1,244,660
6	8/29/2014	6	5,111	267	267	267	267	267	1,250,037	1,250,037	1,250,037	1,250,037	1,250,037
6	8/30/2014	7	5,111	267	267	267	267	267	1,255,415	1,255,415	1,255,415	1,255,415	1,255,415
6	8/31/2014	1	5,111	267	267	267	267	267	1,260,792	1,260,792	1,260,792	1,260,792	1,260,792
7	9/1/2014	2	3,580	2,056	2,056	2,056	2,056	2,056	1,266,428	1,266,428	1,266,428	1,266,428	1,266,428
7	9/2/2014	3	3,580	2,056	2,056	2,056	2,056	2,056	1,272,064	1,272,064	1,272,064	1,272,064	1,272,064
7	9/3/2014	4	3,580	2,056	2,056	2,056	2,056	2,056	1,277,699	1,277,699	1,277,699	1,277,699	1,277,699
7	9/4/2014	5	3,580	2,056	2,056	2,056	2,056	2,056	1,283,335	1,283,335	1,283,335	1,283,335	1,283,335
7	9/5/2014	6	3,580	2,056	2,056	2,056	2,056	2,056	1,288,970	1,288,970	1,288,970	1,288,970	1,288,970
7	9/6/2014	7	3,580	2,056	2,056	2,056	2,056	2,056	1,294,606	1,294,606	1,294,606	1,294,606	1,294,606
7	9/7/2014	1	3,580	2,056	2,056	2,056	2,056	2,056	1,300,242	1,300,242	1,300,242	1,300,242	1,300,242
7	9/8/2014	2	3,580	2,056	2,056	2,056	2,056	2,056	1,305,877	1,305,877	1,305,877	1,305,877	1,305,877
7	9/9/2014	3	3,580	2,056	2,056	2,056	2,056	2,056	1,311,513	1,311,513	1,311,513	1,311,513	1,311,513
7	9/10/2014	4	3,580	2,056	2,056	2,056	2,056	2,056	1,317,149	1,317,149	1,317,149	1,317,149	1,317,149
7	9/11/2014	5	3,580	2,056	2,056	2,056	2,056	2,056	1,322,784	1,322,784	1,322,784	1,322,784	1,322,784
7	9/12/2014	6	3,580	2,056	2,056	2,056	2,056	2,056	1,328,420	1,328,420	1,328,420	1,328,420	1,328,420
7	9/13/2014	7	3,580	2,056	2,056	2,056	2,056	2,056	1,334,056	1,334,056	1,334,056	1,334,056	1,334,056
7	9/14/2014	1	3,580	2,056	2,056	2,056	2,056	2,056	1,339,691	1,339,691	1,339,691	1,339,691	1,339,691
7	9/15/2014	2	3,580	2,056	2,056	2,056	2,056	2,056	1,345,327	1,345,327	1,345,327	1,345,327	1,345,327
7	9/16/2014	3	3,580	2,056	2,056	2,056	2,056	2,056	1,350,963	1,350,963	1,350,963	1,350,963	1,350,963
7	9/17/2014	4	3,580	2,056	2,056	2,056	2,056	2,056	1,356,598	1,356,598	1,356,598	1,356,598	1,356,598
7	9/18/2014	5	3,580	2,056	2,056	2,056	2,056	2,056	1,362,234	1,362,234	1,362,234	1,362,234	1,362,234
7	9/19/2014	6	3,580	2,056	2,056	2,056	2,056	2,056	1,367,870	1,367,870	1,367,870	1,367,870	1,367,870
7	9/20/2014	7	3,580	2,056	2,056	2,056	2,056	2,056	1,373,505	1,373,505	1,373,505	1,373,505	1,373,505
7	9/21/2014	1	3,580	2,056	2,056	2,056	2,056	2,056	1,379,141	1,379,141	1,379,141	1,379,141	1,379,141

7	9/22/2014	2	3,580	2,056	2,056	2,056	2,056	2,056	1,384,777	1,384,777	1,384,777	1,384,777	1,384,777
7	9/23/2014	3	3,580	2,056	2,056	2,056	2,056	2,056	1,390,412	1,390,412	1,390,412	1,390,412	1,390,412
7	9/24/2014	4	3,580	2,056	2,056	2,056	2,056	2,056	1,396,048	1,396,048	1,396,048	1,396,048	1,396,048
7	9/25/2014	5	3,580	2,056	2,056	2,056	2,056	2,056	1,401,684	1,401,684	1,401,684	1,401,684	1,401,684
7	9/26/2014	6	3,580	2,056	2,056	2,056	2,056	2,056	1,407,319	1,407,319	1,407,319	1,407,319	1,407,319
7	9/27/2014	7	3,580	2,056	2,056	2,056	2,056	2,056	1,412,955	1,412,955	1,412,955	1,412,955	1,412,955
7	9/28/2014	1	3,580	2,056	2,056	2,056	2,056	2,056	1,418,591	1,418,591	1,418,591	1,418,591	1,418,591
7	9/29/2014	2	3,580	2,056	2,056	2,056	2,056	2,056	1,424,226	1,424,226	1,424,226	1,424,226	1,424,226
7	9/30/2014	3	3,580	2,056	2,056	2,056	2,056	2,056	1,429,862	1,429,862	1,429,862	1,429,862	1,429,862
8	10/1/2014	4	3,908	6,929	6,929	6,929	6,929	6,929	1,440,699	1,440,699	1,440,699	1,440,699	1,440,699
8	10/2/2014	5	3,908	6,929	6,929	6,929	6,929	6,929	1,451,536	1,451,536	1,451,536	1,451,536	1,451,536
8	10/3/2014	6	3,908	6,929	6,929	6,929	6,929	6,929	1,462,372	1,462,372	1,462,372	1,462,372	1,462,372
8	10/4/2014	7	3,908	6,929	6,929	6,929	6,929	6,929	1,473,209	1,473,209	1,473,209	1,473,209	1,473,209
8	10/5/2014	1	3,908	6,929	6,929	6,929	6,929	6,929	1,484,046	1,484,046	1,484,046	1,484,046	1,484,046
8	10/6/2014	2	3,908	6,929	6,929	6,929	6,929	6,929	1,494,883	1,494,883	1,494,883	1,494,883	1,494,883
8	10/7/2014	3	3,908	6,929	6,929	6,929	6,929	6,929	1,505,720	1,505,720	1,505,720	1,505,720	1,505,720
8	10/8/2014	4	3,908	6,929	6,929	6,929	6,929	6,929	1,516,556	1,516,556	1,516,556	1,516,556	1,516,556
8	10/9/2014	5	3,908	6,929	6,929	6,929	6,929	6,929	1,527,393	1,527,393	1,527,393	1,527,393	1,527,393
8	10/10/2014	6	3,908	6,929	6,929	6,929	6,929	6,929	1,538,230	1,538,230	1,538,230	1,538,230	1,538,230
8	10/11/2014	7	3,908	6,929	6,929	6,929	6,929	6,929	1,549,067	1,549,067	1,549,067	1,549,067	1,549,067
8	10/12/2014	1	3,908	6,929	6,929	6,929	6,929	6,929	1,559,904	1,559,904	1,559,904	1,559,904	1,559,904
8	10/13/2014	2	3,908	6,929	6,929	6,929	6,929	6,929	1,570,740	1,570,740	1,570,740	1,570,740	1,570,740
8	10/14/2014	3	3,908	6,929	6,929	6,929	6,929	6,929	1,581,577	1,581,577	1,581,577	1,581,577	1,581,577
8	10/15/2014	4	3,908	6,929	6,929	6,929	6,929	6,929	1,592,414	1,592,414	1,592,414	1,592,414	1,592,414
8	10/16/2014	5	3,908	6,929	6,929	6,929	6,929	6,929	1,603,251	1,603,251	1,603,251	1,603,251	1,603,251
8	10/17/2014	6	3,908	6,929	6,929	6,929	6,929	6,929	1,614,087	1,614,087	1,614,087	1,614,087	1,614,087
8	10/18/2014	7	3,908	6,929	6,929	6,929	6,929	6,929	1,624,924	1,624,924	1,624,924	1,624,924	1,624,924
8	10/19/2014	1	3,908	6,929	6,929	6,929	6,929	6,929	1,635,761	1,635,761	1,635,761	1,635,761	1,635,761
8	10/20/2014	2	3,908	6,929	6,929	6,929	6,929	6,929	1,646,598	1,646,598	1,646,598	1,646,598	1,646,598
8	10/21/2014	3	3,908	6,929	6,929	6,929	6,929	6,929	1,657,435	1,657,435	1,657,435	1,657,435	1,657,435
8	10/22/2014	4	3,908	6,929	6,929	6,929	6,929	6,929	1,668,271	1,668,271	1,668,271	1,668,271	1,668,271
8	10/23/2014	5	3,908	6,929	6,929	6,929	6,929	6,929	1,679,108	1,679,108	1,679,108	1,679,108	1,679,108
8	10/24/2014	6	3,908	6,929	6,929	6,929	6,929	6,929	1,689,945	1,689,945	1,689,945	1,689,945	1,689,945
8	10/25/2014	7	3,908	6,929	6,929	6,929	6,929	6,929	1,700,782	1,700,782	1,700,782	1,700,782	1,700,782
8	10/26/2014	1	3,908	6,929	6,929	6,929	6,929	6,929	1,711,619	1,711,619	1,711,619	1,711,619	1,711,619
8	10/27/2014	2	3,908	6,929	6,929	6,929	6,929	6,929	1,722,455	1,722,455	1,722,455	1,722,455	1,722,455
8	10/28/2014	3	3,908	6,929	6,929	6,929	6,929	6,929	1,733,292	1,733,292	1,733,292	1,733,292	1,733,292
8	10/29/2014	4	3,908	6,929	6,929	6,929	6,929	6,929	1,744,129	1,744,129	1,744,129	1,744,129	1,744,129
8	10/30/2014	5	3,908	6,929	6,929	6,929	6,929	6,929	1,754,966	1,754,966	1,754,966	1,754,966	1,754,966
8	10/31/2014	6	3,908	6,929	6,929	6,929	6,929	6,929	1,765,803	1,765,803	1,765,803	1,765,803	1,765,803
9	11/1/2014	7	21	15,877	15,877	15,877	15,877	15,877	1,781,701	1,781,701	1,781,701	1,781,701	1,781,701
9	11/2/2014	1	21	15,877	15,877	15,877	15,877	15,877	1,797,599	1,797,599	1,797,599	1,797,599	1,797,599
9	11/3/2014	2	21	15,877	15,877	15,877	15,877	15,877	1,813,498	1,813,498	1,813,498	1,813,498	1,813,498
9	11/4/2014	3	21	15,877	15,877	15,877	15,877	15,877	1,829,396	1,829,396	1,829,396	1,829,396	1,829,396
9	11/5/2014	4	21	15,877	15,877	15,877	15,877	15,877	1,845,294	1,845,294	1,845,294	1,845,294	1,845,294
9	11/6/2014	5	21	15,877	15,877	15,877	15,877	15,877	1,861,193	1,861,193	1,861,193	1,861,193	1,861,193
9	11/7/2014	6	21	15,877	15,877	15,877	15,877	15,877	1,877,091	1,877,091	1,877,091	1,877,091	1,877,091
9	11/8/2014	7	21	15,877	15,877	15,877	15,877	15,877	1,892,989	1,892,989	1,892,989	1,892,989	1,892,989
9	11/9/2014	1	21	15,877	15,877	15,877	15,877	15,877	1,908,888	1,908,888	1,908,888	1,908,888	1,908,888
9	11/10/2014	2	21	15,877	15,877	15,877	15,877	15,877	1,924,786	1,924,786	1,924,786	1,924,786	1,924,786
9	11/11/2014	3	21	15,877	15,877	15,877	15,877	15,877	1,940,685	1,940,685	1,940,685	1,940,685	1,940,685
9	11/12/2014	4	21	15,877	15,877	15,877	15,877	15,877	1,956,583	1,956,583	1,956,583	1,956,583	1,956,583
9	11/13/2014	5	21	15,877	15,877	15,877	15,877	15,877	1,972,481	1,972,481	1,972,481	1,972,481	1,972,481
9	11/14/2014	6	21	15,877	15,877	15,877	15,877	15,877	1,988,380	1,988,380	1,988,380	1,988,380	1,988,380
9	11/15/2014	7	21	15,877	15,877	15,877	15,877	15,877	2,004,278	2,004,278	2,004,278	2,004,278	2,004,278
9	11/16/2014	1	21	15,877	15,877	15,877	15,877	15,877	2,020,176	2,020,176	2,020,176	2,020,176	2,020,176
9	11/17/2014	2	21	15,877	15,877	15,877	15,877	15,877	2,036,075	2,036,075	2,036,075	2,036,075	2,036,075
9	11/18/2014	3	21	15,877	15,877	15,877	15,877	15,877	2,051,973	2,051,973	2,051,973	2,051,973	2,051,973
9	11/19/2014	4	21	15,877	15,877	15,877	15,877	15,877	2,067,872	2,067,872	2,067,872	2,067,872	2,067,872
9	11/20/2014	5	21	15,877	15,877	15,877	15,877	15,877	2,083,770	2,083,770	2,083,770	2,083,770	2,083,770
9	11/21/2014	6	21	15,877	15,877	15,877	15,877	15,877	2,099,668	2,099,668	2,099,668	2,099,668	2,099,668
9	11/22/2014	7	21	15,877	15,877	15,877	15,877	15,877	2,115,567	2,115,567	2,115,567	2,115,567	2,115,567
9	11/23/2014	1	21	15,877	15,877	15,877	15,877	15,877	2,131,465	2,131,465	2,131,465	2,131,465	2,131,465
9	11/24/2014	2	21	15,877	15,877	15,877	15,877	15,877	2,147,363	2,147,363	2,147,363	2,147,363	2,147,363
9	11/25/2014	3	21	15,877	15,877	15,877	15,877	15,877	2,163,262	2,163,262	2,163,262	2,163,262	2,163,262
9	11/26/2014	4	21	15,877	15,877	15,877	15,877	15,877	2,179,160	2,179,160	2,179,160	2,179,160	2,179,160
9	11/27/2014	5	21	15,877	15,877	15,877	15,877	15,877	2,195,059	2,195,059	2,195,059	2,195,059	2,195,059
9	11/28/2014	6	21	15,877	15,877	15,877	15,877	15,877	2,210,957	2,210,957	2,210,957	2,210,957	2,210,957
9	11/29/2014	7	21	15,877	15,877	15,877	15,877	15,877	2,226,855	2,226,855	2,226,855	2,226,855	2,226,855
9	11/30/2014	1	21	15,877	15,877	15,877	15,877	15,877	2,242,754	2,242,754	2,242,754	2,242,754	2,242,754
10	12/1/2014	2	7	21,948	22,497	21,948	21,948	22,497	2,264,708	2,265,257	2,264,708	2,264,708	2,265,257

10	12/2/2014	3	7	21,948	22,497	21,948	21,948	22,497	2,286,662	2,287,761	2,286,662	2,286,662	2,287,761	
10	12/3/2014	4	7	21,948	22,497	21,948	21,948	22,497	2,308,617	2,310,264	2,308,617	2,308,617	2,310,264	
10	12/4/2014	5	7	21,948	22,497	21,948	21,948	22,497	2,330,571	2,332,768	2,330,571	2,330,571	2,332,768	
10	12/5/2014	6	7	21,948	22,497	21,948	21,948	22,497	2,352,526	2,355,271	2,352,526	2,352,526	2,355,271	
10	12/6/2014	7	7	19,094	22,497	21,948	21,948	22,497	2,371,627	2,377,775	2,374,480	2,374,480	2,377,775	
10	12/7/2014	1	7	19,094	22,497	21,948	21,948	22,497	2,390,728	2,400,278	2,396,434	2,396,434	2,400,278	
10	12/8/2014	2	7	21,948	22,497	21,948	21,948	22,497	2,412,682	2,422,782	2,418,389	2,418,389	2,422,782	
10	12/9/2014	3	7	21,948	22,497	21,948	21,948	22,497	2,434,637	2,445,286	2,440,343	2,440,343	2,445,286	
10	12/10/2014	4	7	21,948	22,497	21,948	21,948	22,497	2,456,591	2,467,789	2,462,297	2,462,297	2,467,789	
10	12/11/2014	5	7	21,948	22,497	21,948	21,948	22,497	2,478,545	2,490,293	2,484,252	2,484,252	2,490,293	
10	12/12/2014	6	7	21,948	22,497	21,948	21,948	22,497	2,500,500	2,512,796	2,506,206	2,506,206	2,512,796	
10	12/13/2014	7	7	19,094	22,497	21,948	21,948	22,497	2,519,601	2,535,300	2,528,160	2,528,160	2,535,300	
10	12/14/2014	1	7	19,094	22,497	21,948	21,948	22,497	2,538,702	2,557,803	2,550,115	2,550,115	2,557,803	
10	12/15/2014	2	7	21,948	22,497	21,948	21,948	22,497	2,560,656	2,580,307	2,572,069	2,572,069	2,580,307	
10	12/16/2014	3	7	21,948	22,497	21,948	21,948	22,497	2,582,611	2,602,810	2,594,024	2,594,024	2,602,810	
10	12/17/2014	4	7	21,948	22,497	21,948	21,948	22,497	2,604,565	2,625,314	2,615,978	2,615,978	2,625,314	
10	12/18/2014	5	7	21,948	22,497	21,948	21,948	22,497	2,626,520	2,647,817	2,637,932	2,637,932	2,647,817	
10	12/19/2014	6	7	21,948	22,497	21,948	21,948	22,497	2,648,474	2,670,321	2,659,887	2,659,887	2,670,321	
10	12/20/2014	7	7	19,094	22,497	21,948	21,948	22,497	2,667,575	2,692,825	2,681,841	2,681,841	2,692,825	
10	12/21/2014	1	7	19,094	22,497	21,948	21,948	22,497	2,686,676	2,715,328	2,703,795	2,703,795	2,715,328	
10	12/22/2014	2	7	21,948	22,497	21,948	21,948	19,094	2,708,631	2,737,832	2,725,750	2,725,750	2,734,429	
10	12/23/2014	3	7	21,948	22,497	21,948	21,948	19,094	2,730,585	2,760,335	2,747,704	2,747,704	2,753,530	
10	12/24/2014	4	7	19,094	22,497	21,948	21,948	19,094	2,749,686	2,782,839	2,769,659	2,769,659	2,772,632	
10	12/25/2014	5	7	19,094	22,497	21,948	21,948	19,094	2,768,787	2,805,342	2,791,613	2,791,613	2,791,733	
10	12/26/2014	6	7	19,094	22,497	21,948	21,948	19,094	2,787,889	2,827,846	2,813,567	2,813,567	2,810,834	
10	12/27/2014	7	7	19,094	22,497	21,948	21,948	19,094	2,806,990	2,850,349	2,835,522	2,835,522	2,829,935	
10	12/28/2014	1	7	19,094	22,497	21,948	21,948	19,094	2,826,091	2,872,853	2,857,476	2,857,476	2,849,036	
10	12/29/2014	2	7	19,094	22,497	21,948	21,948	19,094	2,845,192	2,895,356	2,879,430	2,879,430	2,868,137	
10	12/30/2014	3	7	19,094	22,497	21,948	21,948	19,094	2,864,293	2,917,860	2,901,385	2,901,385	2,887,239	
10	12/31/2014	4	7	19,094	22,497	21,948	21,948	19,094	2,883,394	2,940,364	2,923,339	2,923,339	2,906,340	
11	1/1/2015	5	5	21,924	25,054	21,924	12,631	21,924	2,905,323	2,965,422	2,945,267	2,935,975	2,928,268	
11	1/2/2015	6	5	21,924	25,054	21,924	12,631	21,924	2,927,251	2,990,480	2,967,195	2,948,611	2,950,196	
11	1/3/2015	7	5	21,924	25,054	21,924	12,631	21,924	2,949,179	3,015,539	2,989,124	2,961,247	2,972,124	
11	1/4/2015	1	5	21,924	25,054	21,924	12,631	21,924	2,971,107	3,040,597	3,011,052	2,973,883	2,994,052	
11	1/5/2015	2	5	21,924	25,054	21,924	12,631	21,924	2,993,035	3,065,656	3,032,980	2,986,519	3,015,980	
11	1/6/2015	3	5	21,924	25,054	21,924	12,631	21,924	3,014,963	3,090,714	3,054,908	2,999,155	3,037,908	
11	1/7/2015	4	5	21,924	25,054	21,924	12,631	21,924	3,036,891	3,115,773	3,076,836	3,011,791	3,059,837	
11	1/8/2015	5	5	21,924	25,054	21,924	12,631	21,924	3,058,819	3,140,831	3,098,764	3,024,427	3,081,765	
11	1/9/2015	6	5	21,924	25,054	21,924	12,631	21,924	3,080,747	3,165,890	3,120,692	3,037,063	3,103,693	
11	1/10/2015	7	5	21,924	25,054	21,924	12,631	21,924	3,102,675	3,190,948	3,142,620	3,049,699	3,125,621	
11	1/11/2015	1	5	21,924	25,054	21,924	12,631	21,924	3,124,604	3,216,007	3,164,548	3,062,335	3,147,549	
11	1/12/2015	2	5	21,924	25,054	21,924	12,631	21,924	3,146,532	3,241,065	3,186,476	3,074,971	3,169,477	
11	1/13/2015	3	5	21,924	25,054	21,924	12,631	21,924	3,168,460	3,266,124	3,208,405	3,087,607	3,191,405	
11	1/14/2015	4	5	21,924	25,054	21,924	12,631	21,924	3,190,388	3,291,182	3,230,333	3,100,243	3,213,333	
11	1/15/2015	5	5	21,924	25,054	21,924	12,631	21,924	3,212,316	3,316,241	3,252,261	3,112,879	3,235,261	
11	1/16/2015	6	5	21,924	25,054	21,924	12,631	21,924	3,234,244	3,341,299	3,274,189	3,125,515	3,257,189	
11	1/17/2015	7	5	21,924	25,054	21,924	12,631	21,924	3,256,172	3,366,358	3,296,117	3,138,151	3,279,118	
11	1/18/2015	1	5	21,924	25,054	21,924	12,631	21,924	3,278,100	3,391,416	3,318,045	3,150,787	3,301,046	
11	1/19/2015	2	5	21,924	25,054	21,924	12,631	21,924	3,300,028	3,416,474	3,339,973	3,163,423	3,322,974	
11	1/20/2015	3	5	21,924	25,054	21,924	12,631	21,924	3,321,957	3,441,533	3,361,901	3,176,059	3,344,902	
11	1/21/2015	4	5	21,924	25,054	21,924	12,631	21,924	3,343,885	3,466,591	3,383,829	3,188,695	3,366,830	
11	1/22/2015	5	5	21,924	25,054	21,924	12,631	21,924	3,365,813	3,491,650	3,405,758	3,201,331	3,388,758	
11	1/23/2015	6	5	21,924	25,054	21,924	12,631	21,924	3,387,741	3,516,708	3,427,686	3,213,967	3,410,686	
11	1/24/2015	7	5	21,924	25,054	21,924	12,631	21,924	3,409,669	3,541,767	3,449,614	3,226,603	3,432,614	
11	1/25/2015	1	5	21,924	25,054	21,924	12,631	21,924	3,431,597	3,566,825	3,471,542	3,239,239	3,454,542	
11	1/26/2015	2	5	21,924	25,054	21,924	12,631	21,924	3,453,525	3,591,884	3,493,470	3,251,875	3,476,471	
11	1/27/2015	3	5	21,924	25,054	21,924	12,631	21,924	3,475,453	3,616,942	3,515,398	3,264,511	3,498,399	
11	1/28/2015	4	5	21,924	25,054	21,924	12,631	21,924	3,497,381	3,642,001	3,537,326	3,277,147	3,520,327	
11	1/29/2015	5	5	21,924	25,054	21,924	12,631	21,924	3,519,309	3,667,059	3,559,254	3,289,783	3,542,255	
11	1/30/2015	6	5	21,924	25,054	21,924	12,631	21,924	3,541,238	3,692,118	3,581,182	3,302,420	3,564,183	
11	1/31/2015	7	5	21,924	25,054	21,924	12,631	21,924	3,563,166	3,717,176	3,603,110	3,315,056	3,586,111	
12	2/1/2015	1	3	16,278	17,911	16,278	10,178	16,278	3,579,447	3,735,090	3,619,392	3,325,237	3,602,392	
12	2/2/2015	2	3	16,278	17,911	16,278	10,178	16,278	3,595,728	3,753,005	3,635,673	3,335,418	3,618,673	
12	2/3/2015	3	3	16,278	17,911	16,278	10,178	16,278	3,612,009	3,770,919	3,651,954	3,345,599	3,634,955	
12	2/4/2015	4	3	16,278	17,911	16,278	10,178	10,178	3,628,290	3,788,834	3,668,235	3,355,781	3,645,136	
12	2/5/2015	5	3	10,178	17,911	16,278	10,178	10,178	3,638,472	3,806,748	3,684,516	3,365,962	3,655,317	
12	2/6/2015	6	3	10,178	17,911	16,278	10,178	10,178	3,648,653	3,824,662	3,700,797	3,376,143	3,665,498	
12	2/7/2015	7	3	10,178	17,911	16,278	10,178	10,178	3,658,834	3,842,577	3,717,079	3,386,324	3,675,680	
12	2/8/2015	1	3	10,178	17,911	16,278	10,178	10,178	3,669,015	3,860,491	3,733,360	3,396,506	3,685,861	
12	2/9/2015	2	3	10,178	17,911	16,278	10,178	10,178	3,679,197	3,878,405	3,749,641	3,406,687	3,696,042	02/09/15
12	2/10/2015	3	3	10,178	0	16,278	10,178	10,178	3,689,378	3,878,409	3,765,922	3,416,868	3,706,223	02/10/15

12	2/11/2015	4	3	10,178	0	16,278	10,178	10,178	3,699,559	3,878,412	3,782,203	3,427,049	3,716,405		02/11/15		
12	2/12/2015	5	3	10,178	0	16,278	10,178	10,178	3,709,740	3,878,415	3,798,484	3,437,231	3,726,586		02/12/15		
12	2/13/2015	6	3	10,178	0	16,278	10,178	10,178	3,719,922	3,878,418	3,814,766	3,447,412	3,736,767		02/13/15		
12	2/14/2015	7	3	10,178	0	16,278	10,178	10,178	3,730,103	3,878,421	3,831,047	3,457,593	3,746,948		02/14/15		
12	2/15/2015	1	3	10,178	0	16,278	10,178	10,178	3,740,284	3,878,424	3,847,328	3,467,774	3,757,130		02/15/15		
12	2/16/2015	2	3	10,178	0	16,278	10,178	10,178	3,750,465	3,878,427	3,863,609	3,477,956	3,767,311		02/16/15		
12	2/17/2015	3	3	10,178	0	16,278	10,178	10,178	3,760,647	3,878,430	3,879,890	3,488,137	3,777,492		02/17/15	02/17/15	
12	2/18/2015	4	3	10,178	0	0	10,178	10,178	3,770,828	3,878,434	3,879,893	3,498,318	3,787,673		02/18/15	02/18/15	
12	2/19/2015	5	3	10,178	0	0	10,178	10,178	3,781,009	3,878,437	3,879,896	3,508,499	3,797,855		02/19/15	02/19/15	
12	2/20/2015	6	3	10,178	0	0	10,178	10,178	3,791,190	3,878,440	3,879,900	3,518,681	3,808,036		02/20/15	02/20/15	
12	2/21/2015	7	3	10,178	0	0	10,178	10,178	3,801,372	3,878,443	3,879,903	3,528,862	3,818,217		02/21/15	02/21/15	
12	2/22/2015	1	3	10,178	0	0	10,178	10,178	3,811,553	3,878,446	3,879,906	3,539,043	3,828,398		02/22/15	02/22/15	
12	2/23/2015	2	3	10,178	0	0	10,178	10,178	3,821,734	3,878,449	3,879,909	3,549,224	3,838,580		02/23/15	02/23/15	
12	2/24/2015	3	3	10,178	0	0	10,178	10,178	3,831,915	3,878,452	3,879,912	3,559,406	3,848,761		02/24/15	02/24/15	
12	2/25/2015	4	3	10,178	0	0	10,178	10,178	3,842,097	3,878,455	3,879,915	3,569,587	3,858,942		02/25/15	02/25/15	
12	2/26/2015	5	3	10,178	0	0	10,178	10,178	3,852,278	3,878,458	3,879,918	3,579,768	3,869,123		02/26/15	02/26/15	
12	2/27/2015	6	3	10,178	0	0	10,178	10,178	3,862,459	3,878,462	3,879,921	3,589,949	3,879,305		02/27/15	02/27/15	02/27/15
12	2/28/2015	7	3	10,178	0	0	10,178	0	3,872,640	3,878,465	3,879,924	3,600,131	3,879,308	02/28/15	02/28/15	02/28/15	02/28/15

	100%	75%
ACL =	3,870,000	2,902,500
Adj. ACL =	3,620,000	2,715,000

PROJECTING 2013-2014 SEASON
EXPLICITLY HANDLED WEEKEND TRIP LIMIT
USED DROP 2012 FORECAST

	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3
PROJECTED CLOSURE DATE-->	02/12/14	01/25/14	02/01/14	n/a	02/11/14
PROJECTED DAYS OPEN-->	348	330	337	365	347

				Southern					CUMULATIVE TOTAL					OVERAGE DATE				
Fishing Month	Date	Weekday	Northern	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3	Alt 1	Alt 2a	Alt 2b	Alt 2c	Alt 3
1	3/1/2013	6	3	12,624	12,624	12,624	12,624	12,624	12,627	12,627	12,627	12,627	12,627					
1	3/2/2013	7	3	12,624	12,624	12,624	12,624	12,624	25,254	25,254	25,254	25,254	25,254					
1	3/3/2013	1	3	12,624	12,624	12,624	12,624	12,624	37,881	37,881	37,881	37,881	37,881					
1	3/4/2013	2	3	12,624	12,624	12,624	12,624	12,624	50,508	50,508	50,508	50,508	50,508					
1	3/5/2013	3	3	12,624	12,624	12,624	12,624	12,624	63,135	63,135	63,135	63,135	63,135					
1	3/6/2013	4	3	12,624	12,624	12,624	12,624	12,624	75,762	75,762	75,762	75,762	75,762					
1	3/7/2013	5	3	12,624	12,624	12,624	12,624	12,624	88,389	88,389	88,389	88,389	88,389					
1	3/8/2013	6	3	12,624	12,624	12,624	12,624	12,624	101,016	101,016	101,016	101,016	101,016					
1	3/9/2013	7	3	12,624	12,624	12,624	12,624	12,624	113,643	113,643	113,643	113,643	113,643					
1	3/10/2013	1	3	12,624	12,624	12,624	12,624	12,624	126,269	126,269	126,269	126,269	126,269					
1	3/11/2013	2	3	12,624	12,624	12,624	12,624	12,624	138,896	138,896	138,896	138,896	138,896					
1	3/12/2013	3	3	12,624	12,624	12,624	12,624	12,624	151,523	151,523	151,523	151,523	151,523					
1	3/13/2013	4	3	12,624	12,624	12,624	12,624	12,624	164,150	164,150	164,150	164,150	164,150					
1	3/14/2013	5	3	12,624	12,624	12,624	12,624	12,624	176,777	176,777	176,777	176,777	176,777					
1	3/15/2013	6	3	12,624	12,624	12,624	12,624	12,624	189,404	189,404	189,404	189,404	189,404					
1	3/16/2013	7	3	12,624	12,624	12,624	12,624	12,624	202,031	202,031	202,031	202,031	202,031					
1	3/17/2013	1	3	12,624	12,624	12,624	12,624	12,624	214,658	214,658	214,658	214,658	214,658					
1	3/18/2013	2	3	12,624	12,624	12,624	12,624	12,624	227,285	227,285	227,285	227,285	227,285					
1	3/19/2013	3	3	12,624	12,624	12,624	12,624	12,624	239,912	239,912	239,912	239,912	239,912					
1	3/20/2013	4	3	12,624	12,624	12,624	12,624	12,624	252,539	252,539	252,539	252,539	252,539					
1	3/21/2013	5	3	12,624	12,624	12,624	12,624	12,624	265,166	265,166	265,166	265,166	265,166					
1	3/22/2013	6	3	12,624	12,624	12,624	12,624	12,624	277,793	277,793	277,793	277,793	277,793					
1	3/23/2013	7	3	12,624	12,624	12,624	12,624	12,624	290,420	290,420	290,420	290,420	290,420					
1	3/24/2013	1	3	12,624	12,624	12,624	12,624	12,624	303,047	303,047	303,047	303,047	303,047					
1	3/25/2013	2	3	12,624	12,624	12,624	12,624	12,624	315,674	315,674	315,674	315,674	315,674					
1	3/26/2013	3	3	12,624	12,624	12,624	12,624	12,624	328,301	328,301	328,301	328,301	328,301					
1	3/27/2013	4	3	12,624	12,624	12,624	12,624	12,624	340,928	340,928	340,928	340,928	340,928					
1	3/28/2013	5	3	12,624	12,624	12,624	12,624	12,624	353,555	353,555	353,555	353,555	353,555					
1	3/29/2013	6	3	12,624	12,624	12,624	12,624	12,624	366,181	366,181	366,181	366,181	366,181					
1	3/30/2013	7	3	12,624	12,624	12,624	12,624	12,624	378,808	378,808	378,808	378,808	378,808					
1	3/31/2013	1	3	12,624	12,624	12,624	12,624	12,624	391,435	391,435	391,435	391,435	391,435					
2	4/1/2013	2	76	4,834	4,834	4,834	4,834	4,834	396,345	396,345	396,345	396,345	396,345					
2	4/2/2013	3	76	4,834	4,834	4,834	4,834	4,834	401,255	401,255	401,255	401,255	401,255					
2	4/3/2013	4	76	4,834	4,834	4,834	4,834	4,834	406,165	406,165	406,165	406,165	406,165					
2	4/4/2013	5	76	4,834	4,834	4,834	4,834	4,834	411,075	411,075	411,075	411,075	411,075					
2	4/5/2013	6	76	4,834	4,834	4,834	4,834	4,834	415,986	415,986	415,986	415,986	415,986					
2	4/6/2013	7	76	4,834	4,834	4,834	4,834	4,834	420,896	420,896	420,896	420,896	420,896					
2	4/7/2013	1	76	4,834	4,834	4,834	4,834	4,834	425,806	425,806	425,806	425,806	425,806					
2	4/8/2013	2	76	4,834	4,834	4,834	4,834	4,834	430,716	430,716	430,716	430,716	430,716					
2	4/9/2013	3	76	4,834	4,834	4,834	4,834	4,834	435,626	435,626	435,626	435,626	435,626					
2	4/10/2013	4	76	4,834	4,834	4,834	4,834	4,834	440,536	440,536	440,536	440,536	440,536					
2	4/11/2013	5	76	4,834	4,834	4,834	4,834	4,834	445,446	445,446	445,446	445,446	445,446					
2	4/12/2013	6	76	4,834	4,834	4,834	4,834	4,834	450,356	450,356	450,356	450,356	450,356					
2	4/13/2013	7	76	4,834	4,834	4,834	4,834	4,834	455,266	455,266	455,266	455,266	455,266					
2	4/14/2013	1	76	4,834	4,834	4,834	4,834	4,834	460,176	460,176	460,176	460,176	460,176					
2	4/15/2013	2	76	4,834	4,834	4,834	4,834	4,834	465,086	465,086	465,086	465,086	465,086					
2	4/16/2013	3	76	4,834	4,834	4,834	4,834	4,834	469,996	469,996	469,996	469,996	469,996					
2	4/17/2013	4	76	4,834	4,834	4,834	4,834	4,834	474,906	474,906	474,906	474,906	474,906					
2	4/18/2013	5	76	4,834	4,834	4,834	4,834	4,834	479,816	479,816	479,816	479,816	479,816					
2	4/19/2013	6	76	4,834	4,834	4,834	4,834	4,834	484,726	484,726	484,726	484,726	484,726					
2	4/20/2013	7	76	4,834	4,834	4,834	4,834	4,834	489,636	489,636	489,636	489,636	489,636					
2	4/21/2013	1	76	4,834	4,834	4,834	4,834	4,834	494,546	494,546	494,546	494,546	494,546					
2	4/22/2013	2	76	4,834	4,834	4,834	4,834	4,834	499,456	499,456	499,456	499,456	499,456					
2	4/23/2013	3	76	4,834	4,834	4,834	4,834	4,834	504,366	504,366	504,366	504,366	504,366					
2	4/24/2013	4	76	4,834	4,834	4,834	4,834	4,834	509,276	509,276	509,276	509,276	509,276					
2	4/25/2013	5	76	4,834	4,834	4,834	4,834	4,834	514,186	514,186	514,186	514,186	514,186					
2	4/26/2013	6	76	4,834	4,834	4,834	4,834	4,834	519,096	519,096	519,096	519,096	519,096					
2	4/27/2013	7	76	4,834	4,834	4,834	4,834	4,834	524,006	524,006	524,006	524,006	524,006					
2	4/28/2013	1	76	4,834	4,834	4,834	4,834	4,834	528,916	528,916	528,916	528,916	528,916					
2	4/29/2013	2	76	4,834	4,834	4,834	4,834	4,834	533,826	533,826	533,826	533,826	533,826					
2	4/30/2013	3	76	4,834	4,834	4,834	4,834	4,834	538,737	538,737	538,737	538,737	538,737					
3	5/1/2013	4	4,736	817	817	817	817	817	544,290	544,290	544,290	544,290	544,290					
3	5/2/2013	5	4,736	817	817	817	817	817	549,843	549,843	549,843	549,843	549,843					
3	5/3/2013	6	4,736	817	817	817	817	817	555,396	555,396	555,396	555,396	555,396					
3	5/4/2013	7	4,736	817	817	817	817	817	560,949	560,949	560,949	560,949	560,949					

NOTE:
Based on forecast of harvest from SEFSC ACL data, incorporating monthly catch rates. The best fitting projection model was a Seasonal Auto-Regressive Integrated Moving Average (SARIMA) model, with a 3-year time lag on the moving average term and a 1-month time lag on the autoregressive term. Twenty four SARIMA model permutations were considered, and this was the best fitting model, per the AIC, with significant parameter estimates. It explained 67% of the variability in spanish mackerel monthly commercial harvest. Spanish mackerel harvest in the South Atlantic appears to have a 3-year cycle with the pattern of high harvest, mid-level harvest, and low harvest. Projected catch rates were partitioned out to Northern and Southern Zones, with trip limit impacts applying only to Southern Zone. Assumes that trip limit impacts to vessels reporting to SEFSC Coastal Fisheries Logbook Program are reasonable proxy for impacts to vessels harvesting spanish mackerel that do not report to this program. This includes commercial vessels without federal permits that harvest predominantly in state waters. If the concentrations of spanish mackerel encountered on a trip or the gears used to harvest them are substantially different between federally-licensed and state-licensed vessels, this assumption may be violated. If state-licensed vessels are less likely to encounter large concentrations of spanish mackerel, the trip limit impacts projected here would be reduced. If state-licensed vessels are more likely to encounter large concentrations of spanish mackerel, the trip limit impacts projected here might be amplified.

3	5/5/2013	1	4,736	817	817	817	817	817	566,502	566,502	566,502	566,502	566,502
3	5/6/2013	2	4,736	817	817	817	817	817	572,056	572,056	572,056	572,056	572,056
3	5/7/2013	3	4,736	817	817	817	817	817	577,609	577,609	577,609	577,609	577,609
3	5/8/2013	4	4,736	817	817	817	817	817	583,162	583,162	583,162	583,162	583,162
3	5/9/2013	5	4,736	817	817	817	817	817	588,715	588,715	588,715	588,715	588,715
3	5/10/2013	6	4,736	817	817	817	817	817	594,268	594,268	594,268	594,268	594,268
3	5/11/2013	7	4,736	817	817	817	817	817	599,822	599,822	599,822	599,822	599,822
3	5/12/2013	1	4,736	817	817	817	817	817	605,375	605,375	605,375	605,375	605,375
3	5/13/2013	2	4,736	817	817	817	817	817	610,928	610,928	610,928	610,928	610,928
3	5/14/2013	3	4,736	817	817	817	817	817	616,481	616,481	616,481	616,481	616,481
3	5/15/2013	4	4,736	817	817	817	817	817	622,034	622,034	622,034	622,034	622,034
3	5/16/2013	5	4,736	817	817	817	817	817	627,588	627,588	627,588	627,588	627,588
3	5/17/2013	6	4,736	817	817	817	817	817	633,141	633,141	633,141	633,141	633,141
3	5/18/2013	7	4,736	817	817	817	817	817	638,694	638,694	638,694	638,694	638,694
3	5/19/2013	1	4,736	817	817	817	817	817	644,247	644,247	644,247	644,247	644,247
3	5/20/2013	2	4,736	817	817	817	817	817	649,800	649,800	649,800	649,800	649,800
3	5/21/2013	3	4,736	817	817	817	817	817	655,354	655,354	655,354	655,354	655,354
3	5/22/2013	4	4,736	817	817	817	817	817	660,907	660,907	660,907	660,907	660,907
3	5/23/2013	5	4,736	817	817	817	817	817	666,460	666,460	666,460	666,460	666,460
3	5/24/2013	6	4,736	817	817	817	817	817	672,013	672,013	672,013	672,013	672,013
3	5/25/2013	7	4,736	817	817	817	817	817	677,566	677,566	677,566	677,566	677,566
3	5/26/2013	1	4,736	817	817	817	817	817	683,120	683,120	683,120	683,120	683,120
3	5/27/2013	2	4,736	817	817	817	817	817	688,673	688,673	688,673	688,673	688,673
3	5/28/2013	3	4,736	817	817	817	817	817	694,226	694,226	694,226	694,226	694,226
3	5/29/2013	4	4,736	817	817	817	817	817	699,779	699,779	699,779	699,779	699,779
3	5/30/2013	5	4,736	817	817	817	817	817	705,332	705,332	705,332	705,332	705,332
3	5/31/2013	6	4,736	817	817	817	817	817	710,885	710,885	710,885	710,885	710,885
4	6/1/2013	7	7,388	472	472	472	472	472	718,746	718,746	718,746	718,746	718,746
4	6/2/2013	1	7,388	472	472	472	472	472	726,606	726,606	726,606	726,606	726,606
4	6/3/2013	2	7,388	472	472	472	472	472	734,466	734,466	734,466	734,466	734,466
4	6/4/2013	3	7,388	472	472	472	472	472	742,327	742,327	742,327	742,327	742,327
4	6/5/2013	4	7,388	472	472	472	472	472	750,187	750,187	750,187	750,187	750,187
4	6/6/2013	5	7,388	472	472	472	472	472	758,047	758,047	758,047	758,047	758,047
4	6/7/2013	6	7,388	472	472	472	472	472	765,907	765,907	765,907	765,907	765,907
4	6/8/2013	7	7,388	472	472	472	472	472	773,768	773,768	773,768	773,768	773,768
4	6/9/2013	1	7,388	472	472	472	472	472	781,628	781,628	781,628	781,628	781,628
4	6/10/2013	2	7,388	472	472	472	472	472	789,488	789,488	789,488	789,488	789,488
4	6/11/2013	3	7,388	472	472	472	472	472	797,348	797,348	797,348	797,348	797,348
4	6/12/2013	4	7,388	472	472	472	472	472	805,209	805,209	805,209	805,209	805,209
4	6/13/2013	5	7,388	472	472	472	472	472	813,069	813,069	813,069	813,069	813,069
4	6/14/2013	6	7,388	472	472	472	472	472	820,929	820,929	820,929	820,929	820,929
4	6/15/2013	7	7,388	472	472	472	472	472	828,790	828,790	828,790	828,790	828,790
4	6/16/2013	1	7,388	472	472	472	472	472	836,650	836,650	836,650	836,650	836,650
4	6/17/2013	2	7,388	472	472	472	472	472	844,510	844,510	844,510	844,510	844,510
4	6/18/2013	3	7,388	472	472	472	472	472	852,370	852,370	852,370	852,370	852,370
4	6/19/2013	4	7,388	472	472	472	472	472	860,231	860,231	860,231	860,231	860,231
4	6/20/2013	5	7,388	472	472	472	472	472	868,091	868,091	868,091	868,091	868,091
4	6/21/2013	6	7,388	472	472	472	472	472	875,951	875,951	875,951	875,951	875,951
4	6/22/2013	7	7,388	472	472	472	472	472	883,811	883,811	883,811	883,811	883,811
4	6/23/2013	1	7,388	472	472	472	472	472	891,672	891,672	891,672	891,672	891,672
4	6/24/2013	2	7,388	472	472	472	472	472	899,532	899,532	899,532	899,532	899,532
4	6/25/2013	3	7,388	472	472	472	472	472	907,392	907,392	907,392	907,392	907,392
4	6/26/2013	4	7,388	472	472	472	472	472	915,253	915,253	915,253	915,253	915,253
4	6/27/2013	5	7,388	472	472	472	472	472	923,113	923,113	923,113	923,113	923,113
4	6/28/2013	6	7,388	472	472	472	472	472	930,973	930,973	930,973	930,973	930,973
4	6/29/2013	7	7,388	472	472	472	472	472	938,833	938,833	938,833	938,833	938,833
4	6/30/2013	1	7,388	472	472	472	472	472	946,694	946,694	946,694	946,694	946,694
5	7/1/2013	2	5,794	240	240	240	240	240	952,728	952,728	952,728	952,728	952,728
5	7/2/2013	3	5,794	240	240	240	240	240	958,762	958,762	958,762	958,762	958,762
5	7/3/2013	4	5,794	240	240	240	240	240	964,796	964,796	964,796	964,796	964,796
5	7/4/2013	5	5,794	240	240	240	240	240	970,830	970,830	970,830	970,830	970,830
5	7/5/2013	6	5,794	240	240	240	240	240	976,864	976,864	976,864	976,864	976,864
5	7/6/2013	7	5,794	240	240	240	240	240	982,898	982,898	982,898	982,898	982,898
5	7/7/2013	1	5,794	240	240	240	240	240	988,932	988,932	988,932	988,932	988,932
5	7/8/2013	2	5,794	240	240	240	240	240	994,966	994,966	994,966	994,966	994,966
5	7/9/2013	3	5,794	240	240	240	240	240	1,001,000	1,001,000	1,001,000	1,001,000	1,001,000
5	7/10/2013	4	5,794	240	240	240	240	240	1,007,034	1,007,034	1,007,034	1,007,034	1,007,034
5	7/11/2013	5	5,794	240	240	240	240	240	1,013,068	1,013,068	1,013,068	1,013,068	1,013,068
5	7/12/2013	6	5,794	240	240	240	240	240	1,019,102	1,019,102	1,019,102	1,019,102	1,019,102
5	7/13/2013	7	5,794	240	240	240	240	240	1,025,136	1,025,136	1,025,136	1,025,136	1,025,136
5	7/14/2013	1	5,794	240	240	240	240	240	1,031,170	1,031,170	1,031,170	1,031,170	1,031,170
5	7/15/2013	2	5,794	240	240	240	240	240	1,037,204	1,037,204	1,037,204	1,037,204	1,037,204

5	7/16/2013	3	5,794	240	240	240	240	240	1,043,238	1,043,238	1,043,238	1,043,238	1,043,238
5	7/17/2013	4	5,794	240	240	240	240	240	1,049,272	1,049,272	1,049,272	1,049,272	1,049,272
5	7/18/2013	5	5,794	240	240	240	240	240	1,055,306	1,055,306	1,055,306	1,055,306	1,055,306
5	7/19/2013	6	5,794	240	240	240	240	240	1,061,340	1,061,340	1,061,340	1,061,340	1,061,340
5	7/20/2013	7	5,794	240	240	240	240	240	1,067,374	1,067,374	1,067,374	1,067,374	1,067,374
5	7/21/2013	1	5,794	240	240	240	240	240	1,073,408	1,073,408	1,073,408	1,073,408	1,073,408
5	7/22/2013	2	5,794	240	240	240	240	240	1,079,442	1,079,442	1,079,442	1,079,442	1,079,442
5	7/23/2013	3	5,794	240	240	240	240	240	1,085,476	1,085,476	1,085,476	1,085,476	1,085,476
5	7/24/2013	4	5,794	240	240	240	240	240	1,091,510	1,091,510	1,091,510	1,091,510	1,091,510
5	7/25/2013	5	5,794	240	240	240	240	240	1,097,544	1,097,544	1,097,544	1,097,544	1,097,544
5	7/26/2013	6	5,794	240	240	240	240	240	1,103,578	1,103,578	1,103,578	1,103,578	1,103,578
5	7/27/2013	7	5,794	240	240	240	240	240	1,109,612	1,109,612	1,109,612	1,109,612	1,109,612
5	7/28/2013	1	5,794	240	240	240	240	240	1,115,646	1,115,646	1,115,646	1,115,646	1,115,646
5	7/29/2013	2	5,794	240	240	240	240	240	1,121,680	1,121,680	1,121,680	1,121,680	1,121,680
5	7/30/2013	3	5,794	240	240	240	240	240	1,127,714	1,127,714	1,127,714	1,127,714	1,127,714
5	7/31/2013	4	5,794	240	240	240	240	240	1,133,748	1,133,748	1,133,748	1,133,748	1,133,748
6	8/1/2013	5	6,375	333	333	333	333	333	1,140,455	1,140,455	1,140,455	1,140,455	1,140,455
6	8/2/2013	6	6,375	333	333	333	333	333	1,147,162	1,147,162	1,147,162	1,147,162	1,147,162
6	8/3/2013	7	6,375	333	333	333	333	333	1,153,869	1,153,869	1,153,869	1,153,869	1,153,869
6	8/4/2013	1	6,375	333	333	333	333	333	1,160,576	1,160,576	1,160,576	1,160,576	1,160,576
6	8/5/2013	2	6,375	333	333	333	333	333	1,167,283	1,167,283	1,167,283	1,167,283	1,167,283
6	8/6/2013	3	6,375	333	333	333	333	333	1,173,990	1,173,990	1,173,990	1,173,990	1,173,990
6	8/7/2013	4	6,375	333	333	333	333	333	1,180,697	1,180,697	1,180,697	1,180,697	1,180,697
6	8/8/2013	5	6,375	333	333	333	333	333	1,187,404	1,187,404	1,187,404	1,187,404	1,187,404
6	8/9/2013	6	6,375	333	333	333	333	333	1,194,111	1,194,111	1,194,111	1,194,111	1,194,111
6	8/10/2013	7	6,375	333	333	333	333	333	1,200,818	1,200,818	1,200,818	1,200,818	1,200,818
6	8/11/2013	1	6,375	333	333	333	333	333	1,207,525	1,207,525	1,207,525	1,207,525	1,207,525
6	8/12/2013	2	6,375	333	333	333	333	333	1,214,232	1,214,232	1,214,232	1,214,232	1,214,232
6	8/13/2013	3	6,375	333	333	333	333	333	1,220,939	1,220,939	1,220,939	1,220,939	1,220,939
6	8/14/2013	4	6,375	333	333	333	333	333	1,227,646	1,227,646	1,227,646	1,227,646	1,227,646
6	8/15/2013	5	6,375	333	333	333	333	333	1,234,353	1,234,353	1,234,353	1,234,353	1,234,353
6	8/16/2013	6	6,375	333	333	333	333	333	1,241,060	1,241,060	1,241,060	1,241,060	1,241,060
6	8/17/2013	7	6,375	333	333	333	333	333	1,247,767	1,247,767	1,247,767	1,247,767	1,247,767
6	8/18/2013	1	6,375	333	333	333	333	333	1,254,474	1,254,474	1,254,474	1,254,474	1,254,474
6	8/19/2013	2	6,375	333	333	333	333	333	1,261,181	1,261,181	1,261,181	1,261,181	1,261,181
6	8/20/2013	3	6,375	333	333	333	333	333	1,267,888	1,267,888	1,267,888	1,267,888	1,267,888
6	8/21/2013	4	6,375	333	333	333	333	333	1,274,595	1,274,595	1,274,595	1,274,595	1,274,595
6	8/22/2013	5	6,375	333	333	333	333	333	1,281,302	1,281,302	1,281,302	1,281,302	1,281,302
6	8/23/2013	6	6,375	333	333	333	333	333	1,288,009	1,288,009	1,288,009	1,288,009	1,288,009
6	8/24/2013	7	6,375	333	333	333	333	333	1,294,716	1,294,716	1,294,716	1,294,716	1,294,716
6	8/25/2013	1	6,375	333	333	333	333	333	1,301,423	1,301,423	1,301,423	1,301,423	1,301,423
6	8/26/2013	2	6,375	333	333	333	333	333	1,308,130	1,308,130	1,308,130	1,308,130	1,308,130
6	8/27/2013	3	6,375	333	333	333	333	333	1,314,837	1,314,837	1,314,837	1,314,837	1,314,837
6	8/28/2013	4	6,375	333	333	333	333	333	1,321,544	1,321,544	1,321,544	1,321,544	1,321,544
6	8/29/2013	5	6,375	333	333	333	333	333	1,328,251	1,328,251	1,328,251	1,328,251	1,328,251
6	8/30/2013	6	6,375	333	333	333	333	333	1,334,958	1,334,958	1,334,958	1,334,958	1,334,958
6	8/31/2013	7	6,375	333	333	333	333	333	1,341,665	1,341,665	1,341,665	1,341,665	1,341,665
7	9/1/2013	1	4,316	2,478	2,478	2,478	2,478	2,478	1,348,460	1,348,460	1,348,460	1,348,460	1,348,460
7	9/2/2013	2	4,316	2,478	2,478	2,478	2,478	2,478	1,355,254	1,355,254	1,355,254	1,355,254	1,355,254
7	9/3/2013	3	4,316	2,478	2,478	2,478	2,478	2,478	1,362,048	1,362,048	1,362,048	1,362,048	1,362,048
7	9/4/2013	4	4,316	2,478	2,478	2,478	2,478	2,478	1,368,843	1,368,843	1,368,843	1,368,843	1,368,843
7	9/5/2013	5	4,316	2,478	2,478	2,478	2,478	2,478	1,375,637	1,375,637	1,375,637	1,375,637	1,375,637
7	9/6/2013	6	4,316	2,478	2,478	2,478	2,478	2,478	1,382,432	1,382,432	1,382,432	1,382,432	1,382,432
7	9/7/2013	7	4,316	2,478	2,478	2,478	2,478	2,478	1,389,226	1,389,226	1,389,226	1,389,226	1,389,226
7	9/8/2013	1	4,316	2,478	2,478	2,478	2,478	2,478	1,396,020	1,396,020	1,396,020	1,396,020	1,396,020
7	9/9/2013	2	4,316	2,478	2,478	2,478	2,478	2,478	1,402,815	1,402,815	1,402,815	1,402,815	1,402,815
7	9/10/2013	3	4,316	2,478	2,478	2,478	2,478	2,478	1,409,609	1,409,609	1,409,609	1,409,609	1,409,609
7	9/11/2013	4	4,316	2,478	2,478	2,478	2,478	2,478	1,416,404	1,416,404	1,416,404	1,416,404	1,416,404
7	9/12/2013	5	4,316	2,478	2,478	2,478	2,478	2,478	1,423,198	1,423,198	1,423,198	1,423,198	1,423,198
7	9/13/2013	6	4,316	2,478	2,478	2,478	2,478	2,478	1,429,993	1,429,993	1,429,993	1,429,993	1,429,993
7	9/14/2013	7	4,316	2,478	2,478	2,478	2,478	2,478	1,436,787	1,436,787	1,436,787	1,436,787	1,436,787
7	9/15/2013	1	4,316	2,478	2,478	2,478	2,478	2,478	1,443,581	1,443,581	1,443,581	1,443,581	1,443,581
7	9/16/2013	2	4,316	2,478	2,478	2,478	2,478	2,478	1,450,376	1,450,376	1,450,376	1,450,376	1,450,376
7	9/17/2013	3	4,316	2,478	2,478	2,478	2,478	2,478	1,457,170	1,457,170	1,457,170	1,457,170	1,457,170
7	9/18/2013	4	4,316	2,478	2,478	2,478	2,478	2,478	1,463,965	1,463,965	1,463,965	1,463,965	1,463,965
7	9/19/2013	5	4,316	2,478	2,478	2,478	2,478	2,478	1,470,759	1,470,759	1,470,759	1,470,759	1,470,759
7	9/20/2013	6	4,316	2,478	2,478	2,478	2,478	2,478	1,477,554	1,477,554	1,477,554	1,477,554	1,477,554
7	9/21/2013	7	4,316	2,478	2,478	2,478	2,478	2,478	1,484,348	1,484,348	1,484,348	1,484,348	1,484,348
7	9/22/2013	1	4,316	2,478	2,478	2,478	2,478	2,478	1,491,142	1,491,142	1,491,142	1,491,142	1,491,142
7	9/23/2013	2	4,316	2,478	2,478	2,478	2,478	2,478	1,497,937	1,497,937	1,497,937	1,497,937	1,497,937
7	9/24/2013	3	4,316	2,478	2,478	2,478	2,478	2,478	1,504,731	1,504,731	1,504,731	1,504,731	1,504,731
7	9/25/2013	4	4,316	2,478	2,478	2,478	2,478	2,478	1,511,526	1,511,526	1,511,526	1,511,526	1,511,526

7	9/26/2013	5	4,316	2,478	2,478	2,478	2,478	2,478	1,518,320	1,518,320	1,518,320	1,518,320	1,518,320
7	9/27/2013	6	4,316	2,478	2,478	2,478	2,478	2,478	1,525,114	1,525,114	1,525,114	1,525,114	1,525,114
7	9/28/2013	7	4,316	2,478	2,478	2,478	2,478	2,478	1,531,909	1,531,909	1,531,909	1,531,909	1,531,909
7	9/29/2013	1	4,316	2,478	2,478	2,478	2,478	2,478	1,538,703	1,538,703	1,538,703	1,538,703	1,538,703
7	9/30/2013	2	4,316	2,478	2,478	2,478	2,478	2,478	1,545,498	1,545,498	1,545,498	1,545,498	1,545,498
8	10/1/2013	3	4,572	8,106	8,106	8,106	8,106	8,106	1,558,175	1,558,175	1,558,175	1,558,175	1,558,175
8	10/2/2013	4	4,572	8,106	8,106	8,106	8,106	8,106	1,570,853	1,570,853	1,570,853	1,570,853	1,570,853
8	10/3/2013	5	4,572	8,106	8,106	8,106	8,106	8,106	1,583,531	1,583,531	1,583,531	1,583,531	1,583,531
8	10/4/2013	6	4,572	8,106	8,106	8,106	8,106	8,106	1,596,208	1,596,208	1,596,208	1,596,208	1,596,208
8	10/5/2013	7	4,572	8,106	8,106	8,106	8,106	8,106	1,608,886	1,608,886	1,608,886	1,608,886	1,608,886
8	10/6/2013	1	4,572	8,106	8,106	8,106	8,106	8,106	1,621,563	1,621,563	1,621,563	1,621,563	1,621,563
8	10/7/2013	2	4,572	8,106	8,106	8,106	8,106	8,106	1,634,241	1,634,241	1,634,241	1,634,241	1,634,241
8	10/8/2013	3	4,572	8,106	8,106	8,106	8,106	8,106	1,646,919	1,646,919	1,646,919	1,646,919	1,646,919
8	10/9/2013	4	4,572	8,106	8,106	8,106	8,106	8,106	1,659,596	1,659,596	1,659,596	1,659,596	1,659,596
8	10/10/2013	5	4,572	8,106	8,106	8,106	8,106	8,106	1,672,274	1,672,274	1,672,274	1,672,274	1,672,274
8	10/11/2013	6	4,572	8,106	8,106	8,106	8,106	8,106	1,684,952	1,684,952	1,684,952	1,684,952	1,684,952
8	10/12/2013	7	4,572	8,106	8,106	8,106	8,106	8,106	1,697,629	1,697,629	1,697,629	1,697,629	1,697,629
8	10/13/2013	1	4,572	8,106	8,106	8,106	8,106	8,106	1,710,307	1,710,307	1,710,307	1,710,307	1,710,307
8	10/14/2013	2	4,572	8,106	8,106	8,106	8,106	8,106	1,722,984	1,722,984	1,722,984	1,722,984	1,722,984
8	10/15/2013	3	4,572	8,106	8,106	8,106	8,106	8,106	1,735,662	1,735,662	1,735,662	1,735,662	1,735,662
8	10/16/2013	4	4,572	8,106	8,106	8,106	8,106	8,106	1,748,340	1,748,340	1,748,340	1,748,340	1,748,340
8	10/17/2013	5	4,572	8,106	8,106	8,106	8,106	8,106	1,761,017	1,761,017	1,761,017	1,761,017	1,761,017
8	10/18/2013	6	4,572	8,106	8,106	8,106	8,106	8,106	1,773,695	1,773,695	1,773,695	1,773,695	1,773,695
8	10/19/2013	7	4,572	8,106	8,106	8,106	8,106	8,106	1,786,372	1,786,372	1,786,372	1,786,372	1,786,372
8	10/20/2013	1	4,572	8,106	8,106	8,106	8,106	8,106	1,799,050	1,799,050	1,799,050	1,799,050	1,799,050
8	10/21/2013	2	4,572	8,106	8,106	8,106	8,106	8,106	1,811,728	1,811,728	1,811,728	1,811,728	1,811,728
8	10/22/2013	3	4,572	8,106	8,106	8,106	8,106	8,106	1,824,405	1,824,405	1,824,405	1,824,405	1,824,405
8	10/23/2013	4	4,572	8,106	8,106	8,106	8,106	8,106	1,837,083	1,837,083	1,837,083	1,837,083	1,837,083
8	10/24/2013	5	4,572	8,106	8,106	8,106	8,106	8,106	1,849,761	1,849,761	1,849,761	1,849,761	1,849,761
8	10/25/2013	6	4,572	8,106	8,106	8,106	8,106	8,106	1,862,438	1,862,438	1,862,438	1,862,438	1,862,438
8	10/26/2013	7	4,572	8,106	8,106	8,106	8,106	8,106	1,875,116	1,875,116	1,875,116	1,875,116	1,875,116
8	10/27/2013	1	4,572	8,106	8,106	8,106	8,106	8,106	1,887,793	1,887,793	1,887,793	1,887,793	1,887,793
8	10/28/2013	2	4,572	8,106	8,106	8,106	8,106	8,106	1,900,471	1,900,471	1,900,471	1,900,471	1,900,471
8	10/29/2013	3	4,572	8,106	8,106	8,106	8,106	8,106	1,913,149	1,913,149	1,913,149	1,913,149	1,913,149
8	10/30/2013	4	4,572	8,106	8,106	8,106	8,106	8,106	1,925,826	1,925,826	1,925,826	1,925,826	1,925,826
8	10/31/2013	5	4,572	8,106	8,106	8,106	8,106	8,106	1,938,504	1,938,504	1,938,504	1,938,504	1,938,504
9	11/1/2013	6	20	15,155	15,155	15,155	15,155	15,155	1,953,679	1,953,679	1,953,679	1,953,679	1,953,679
9	11/2/2013	7	20	15,155	15,155	15,155	15,155	15,155	1,968,854	1,968,854	1,968,854	1,968,854	1,968,854
9	11/3/2013	1	20	15,155	15,155	15,155	15,155	15,155	1,984,029	1,984,029	1,984,029	1,984,029	1,984,029
9	11/4/2013	2	20	15,155	15,155	15,155	15,155	15,155	1,999,204	1,999,204	1,999,204	1,999,204	1,999,204
9	11/5/2013	3	20	15,155	15,155	15,155	15,155	15,155	2,014,379	2,014,379	2,014,379	2,014,379	2,014,379
9	11/6/2013	4	20	15,155	15,155	15,155	15,155	15,155	2,029,553	2,029,553	2,029,553	2,029,553	2,029,553
9	11/7/2013	5	20	15,155	15,155	15,155	15,155	15,155	2,044,728	2,044,728	2,044,728	2,044,728	2,044,728
9	11/8/2013	6	20	15,155	15,155	15,155	15,155	15,155	2,059,903	2,059,903	2,059,903	2,059,903	2,059,903
9	11/9/2013	7	20	15,155	15,155	15,155	15,155	15,155	2,075,078	2,075,078	2,075,078	2,075,078	2,075,078
9	11/10/2013	1	20	15,155	15,155	15,155	15,155	15,155	2,090,253	2,090,253	2,090,253	2,090,253	2,090,253
9	11/11/2013	2	20	15,155	15,155	15,155	15,155	15,155	2,105,428	2,105,428	2,105,428	2,105,428	2,105,428
9	11/12/2013	3	20	15,155	15,155	15,155	15,155	15,155	2,120,603	2,120,603	2,120,603	2,120,603	2,120,603
9	11/13/2013	4	20	15,155	15,155	15,155	15,155	15,155	2,135,778	2,135,778	2,135,778	2,135,778	2,135,778
9	11/14/2013	5	20	15,155	15,155	15,155	15,155	15,155	2,150,953	2,150,953	2,150,953	2,150,953	2,150,953
9	11/15/2013	6	20	15,155	15,155	15,155	15,155	15,155	2,166,128	2,166,128	2,166,128	2,166,128	2,166,128
9	11/16/2013	7	20	15,155	15,155	15,155	15,155	15,155	2,181,303	2,181,303	2,181,303	2,181,303	2,181,303
9	11/17/2013	1	20	15,155	15,155	15,155	15,155	15,155	2,196,478	2,196,478	2,196,478	2,196,478	2,196,478
9	11/18/2013	2	20	15,155	15,155	15,155	15,155	15,155	2,211,653	2,211,653	2,211,653	2,211,653	2,211,653
9	11/19/2013	3	20	15,155	15,155	15,155	15,155	15,155	2,226,828	2,226,828	2,226,828	2,226,828	2,226,828
9	11/20/2013	4	20	15,155	15,155	15,155	15,155	15,155	2,242,003	2,242,003	2,242,003	2,242,003	2,242,003
9	11/21/2013	5	20	15,155	15,155	15,155	15,155	15,155	2,257,177	2,257,177	2,257,177	2,257,177	2,257,177
9	11/22/2013	6	20	15,155	15,155	15,155	15,155	15,155	2,272,352	2,272,352	2,272,352	2,272,352	2,272,352
9	11/23/2013	7	20	15,155	15,155	15,155	15,155	15,155	2,287,527	2,287,527	2,287,527	2,287,527	2,287,527
9	11/24/2013	1	20	15,155	15,155	15,155	15,155	15,155	2,302,702	2,302,702	2,302,702	2,302,702	2,302,702
9	11/25/2013	2	20	15,155	15,155	15,155	15,155	15,155	2,317,877	2,317,877	2,317,877	2,317,877	2,317,877
9	11/26/2013	3	20	15,155	15,155	15,155	15,155	15,155	2,333,052	2,333,052	2,333,052	2,333,052	2,333,052
9	11/27/2013	4	20	15,155	15,155	15,155	15,155	15,155	2,348,227	2,348,227	2,348,227	2,348,227	2,348,227
9	11/28/2013	5	20	15,155	15,155	15,155	15,155	15,155	2,363,402	2,363,402	2,363,402	2,363,402	2,363,402
9	11/29/2013	6	20	15,155	15,155	15,155	15,155	15,155	2,378,577	2,378,577	2,378,577	2,378,577	2,378,577
9	11/30/2013	7	20	15,155	15,155	15,155	15,155	15,155	2,393,752	2,393,752	2,393,752	2,393,752	2,393,752
10	12/1/2013	1	9	24,837	29,262	28,548	28,548	29,262	2,418,597	2,423,023	2,422,308	2,422,308	2,423,023
10	12/2/2013	2	9	28,548	29,262	28,548	28,548	29,262	2,447,154	2,452,294	2,450,865	2,450,865	2,452,294
10	12/3/2013	3	9	28,548	29,262	28,548	28,548	29,262	2,475,710	2,481,564	2,479,421	2,479,421	2,481,564
10	12/4/2013	4	9	28,548	29,262	28,548	28,548	29,262	2,504,267	2,510,835	2,507,978	2,507,978	2,510,835
10	12/5/2013	5	9	28,548	29,262	28,548	28,548	29,262	2,532,823	2,540,106	2,536,534	2,536,534	2,540,106
10	12/6/2013	6	9	28,548	29,262	28,548	28,548	29,262	2,561,380	2,569,377	2,565,091	2,565,091	2,569,377

10	12/7/2013	7	9	24,837	29,262	28,548	28,548	29,262	2,586,225	2,598,648	2,593,647	2,593,647	2,598,648				
10	12/8/2013	1	9	24,837	29,262	28,548	28,548	29,262	2,611,070	2,627,918	2,622,204	2,622,204	2,627,918				
10	12/9/2013	2	9	28,548	29,262	28,548	28,548	29,262	2,639,627	2,657,189	2,650,760	2,650,760	2,657,189				
10	12/10/2013	3	9	28,548	29,262	28,548	28,548	29,262	2,668,183	2,686,460	2,679,317	2,679,317	2,686,460				
10	12/11/2013	4	9	28,548	29,262	28,548	28,548	29,262	2,696,740	2,715,731	2,707,873	2,707,873	2,715,731				
10	12/12/2013	5	9	28,548	29,262	28,548	28,548	24,837	2,725,296	2,745,002	2,736,430	2,736,430	2,740,576				
10	12/13/2013	6	9	24,837	29,262	28,548	28,548	24,837	2,750,142	2,774,273	2,764,986	2,764,986	2,765,422				
10	12/14/2013	7	9	24,837	29,262	28,548	28,548	24,837	2,774,987	2,803,543	2,793,543	2,793,543	2,790,267				
10	12/15/2013	1	9	24,837	29,262	28,548	28,548	24,837	2,799,832	2,832,814	2,822,099	2,822,099	2,815,112				
10	12/16/2013	2	9	24,837	29,262	28,548	28,548	24,837	2,824,677	2,862,085	2,850,656	2,850,656	2,839,957				
10	12/17/2013	3	9	24,837	29,262	28,548	28,548	24,837	2,849,523	2,891,356	2,879,212	2,879,212	2,864,803				
10	12/18/2013	4	9	24,837	29,262	28,548	28,548	24,837	2,874,368	2,920,627	2,907,769	2,907,769	2,889,648				
10	12/19/2013	5	9	24,837	29,262	24,837	13,874	24,837	2,899,213	2,949,898	2,932,614	2,921,652	2,914,493				
10	12/20/2013	6	9	24,837	29,262	24,837	13,874	24,837	2,924,059	2,979,168	2,957,460	2,935,535	2,939,339				
10	12/21/2013	7	9	24,837	29,262	24,837	13,874	24,837	2,948,904	3,008,439	2,982,305	2,949,418	2,964,184				
10	12/22/2013	1	9	24,837	29,262	24,837	13,874	24,837	2,973,749	3,037,710	3,007,150	2,963,301	2,989,029				
10	12/23/2013	2	9	24,837	29,262	24,837	13,874	24,837	2,998,594	3,066,981	3,031,995	2,977,184	3,013,874				
10	12/24/2013	3	9	24,837	29,262	24,837	13,874	24,837	3,023,440	3,096,252	3,056,841	2,991,067	3,038,720				
10	12/25/2013	4	9	24,837	29,262	24,837	13,874	24,837	3,048,285	3,125,522	3,081,686	3,004,949	3,063,565				
10	12/26/2013	5	9	24,837	29,262	24,837	13,874	24,837	3,073,130	3,154,793	3,106,531	3,018,832	3,088,410				
10	12/27/2013	6	9	24,837	29,262	24,837	13,874	24,837	3,097,976	3,184,064	3,131,377	3,032,715	3,113,256				
10	12/28/2013	7	9	24,837	29,262	24,837	13,874	24,837	3,122,821	3,213,335	3,156,222	3,046,598	3,138,101				
10	12/29/2013	1	9	24,837	29,262	24,837	13,874	24,837	3,147,666	3,242,606	3,181,067	3,060,481	3,162,946				
10	12/30/2013	2	9	24,837	29,262	24,837	13,874	24,837	3,172,511	3,271,877	3,205,912	3,074,364	3,187,791				
10	12/31/2013	3	9	24,837	29,262	24,837	13,874	24,837	3,197,357	3,301,147	3,230,758	3,088,247	3,212,637				
11	1/1/2014	4	4	20,571	23,508	20,571	11,852	20,571	3,217,932	3,324,660	3,251,333	3,100,103	3,233,212				
11	1/2/2014	5	4	20,571	23,508	20,571	11,852	20,571	3,238,507	3,348,172	3,271,908	3,111,960	3,253,787				
11	1/3/2014	6	4	20,571	23,508	20,571	11,852	20,571	3,259,082	3,371,684	3,292,483	3,123,816	3,274,362				
11	1/4/2014	7	4	20,571	23,508	20,571	11,852	20,571	3,279,657	3,395,196	3,313,058	3,135,672	3,294,937				
11	1/5/2014	1	4	20,571	23,508	20,571	11,852	20,571	3,300,232	3,418,708	3,333,633	3,147,528	3,315,512				
11	1/6/2014	2	4	20,571	23,508	20,571	11,852	20,571	3,320,807	3,442,221	3,354,208	3,159,385	3,336,087				
11	1/7/2014	3	4	20,571	23,508	20,571	11,852	20,571	3,341,382	3,465,733	3,374,783	3,171,241	3,356,662				
11	1/8/2014	4	4	20,571	23,508	20,571	11,852	20,571	3,361,957	3,489,245	3,395,358	3,183,097	3,377,237				
11	1/9/2014	5	4	20,571	23,508	20,571	11,852	20,571	3,382,532	3,512,757	3,415,933	3,194,954	3,397,812				
11	1/10/2014	6	4	20,571	23,508	20,571	11,852	20,571	3,403,107	3,536,269	3,436,508	3,206,810	3,418,387				
11	1/11/2014	7	4	20,571	23,508	20,571	11,852	20,571	3,423,682	3,559,782	3,457,083	3,218,666	3,438,962				
11	1/12/2014	1	4	20,571	23,508	20,571	11,852	20,571	3,444,257	3,583,294	3,477,658	3,230,522	3,459,537				
11	1/13/2014	2	4	20,571	23,508	20,571	11,852	20,571	3,464,832	3,606,806	3,498,233	3,242,379	3,480,112				
11	1/14/2014	3	4	20,571	23,508	20,571	11,852	20,571	3,485,407	3,630,318	3,518,808	3,254,235	3,500,687				
11	1/15/2014	4	4	20,571	23,508	20,571	11,852	20,571	3,505,982	3,653,830	3,539,383	3,266,091	3,521,262				
11	1/16/2014	5	4	20,571	23,508	20,571	11,852	20,571	3,526,557	3,677,343	3,559,958	3,277,948	3,541,837				
11	1/17/2014	6	4	20,571	23,508	20,571	11,852	20,571	3,547,132	3,700,855	3,580,533	3,289,804	3,562,412				
11	1/18/2014	7	4	20,571	23,508	20,571	11,852	20,571	3,567,707	3,724,367	3,601,108	3,301,660	3,582,987				
11	1/19/2014	1	4	20,571	23,508	20,571	11,852	20,571	3,588,282	3,747,879	3,621,683	3,313,516	3,603,562				
11	1/20/2014	2	4	20,571	23,508	20,571	11,852	20,571	3,608,857	3,771,391	3,642,258	3,325,373	3,624,137				
11	1/21/2014	3	4	20,571	23,508	20,571	11,852	11,852	3,629,432	3,794,904	3,662,833	3,337,229	3,635,993				
11	1/22/2014	4	4	11,852	23,508	20,571	11,852	11,852	3,641,288	3,818,416	3,683,408	3,349,085	3,647,849				
11	1/23/2014	5	4	11,852	23,508	20,571	11,852	11,852	3,653,144	3,841,928	3,703,983	3,360,942	3,659,705				
11	1/24/2014	6	4	11,852	23,508	20,571	11,852	11,852	3,665,001	3,865,440	3,724,558	3,372,798	3,671,562				
11	1/25/2014	7	4	11,852	23,508	20,571	11,852	11,852	3,676,857	3,888,952	3,745,133	3,384,654	3,683,418		01/25/14		
11	1/26/2014	1	4	11,852	0	20,571	11,852	11,852	3,688,713	3,888,957	3,765,708	3,396,510	3,695,274		01/26/14		
11	1/27/2014	2	4	11,852	0	20,571	11,852	11,852	3,700,569	3,888,961	3,786,283	3,408,367	3,707,131		01/27/14		
11	1/28/2014	3	4	11,852	0	20,571	11,852	11,852	3,712,426	3,888,965	3,806,858	3,420,223	3,718,987		01/28/14		
11	1/29/2014	4	4	11,852	0	20,571	11,852	11,852	3,724,282	3,888,969	3,827,433	3,432,079	3,730,843		01/29/14		
11	1/30/2014	5	4	11,852	0	20,571	11,852	11,852	3,736,138	3,888,974	3,848,008	3,443,936	3,742,699		01/30/14		
11	1/31/2014	6	4	11,852	0	20,571	11,852	11,852	3,747,995	3,888,978	3,868,583	3,455,792	3,754,556		01/31/14		
12	2/1/2014	7	3	10,504	0	16,799	10,504	10,504	3,758,502	3,888,981	3,885,385	3,466,299	3,765,063		02/01/14	02/01/14	
12	2/2/2014	1	3	10,504	0	0	10,504	10,504	3,769,009	3,888,984	3,885,388	3,476,806	3,775,570		02/02/14	02/02/14	
12	2/3/2014	2	3	10,504	0	0	10,504	10,504	3,779,517	3,888,988	3,885,392	3,487,314	3,786,078		02/03/14	02/03/14	
12	2/4/2014	3	3	10,504	0	0	10,504	10,504	3,790,024	3,888,991	3,885,395	3,497,821	3,796,585		02/04/14	02/04/14	
12	2/5/2014	4	3	10,504	0	0	10,504	10,504	3,800,531	3,888,994	3,885,398	3,508,329	3,807,092		02/05/14	02/05/14	
12	2/6/2014	5	3	10,504	0	0	10,504	10,504	3,811,039	3,888,997	3,885,401	3,518,836	3,817,600		02/06/14	02/06/14	
12	2/7/2014	6	3	10,504	0	0	10,504	10,504	3,821,546	3,889,001	3,885,405	3,529,343	3,828,107		02/07/14	02/07/14	
12	2/8/2014	7	3	10,504	0	0	10,504	10,504	3,832,053	3,889,004	3,885,408	3,539,851	3,838,614		02/08/14	02/08/14	
12	2/9/2014	1	3	10,504	0	0	10,504	10,504	3,842,561	3,889,007	3,885,411	3,550,358	3,849,122		02/09/14	02/09/14	
12	2/10/2014	2	3	10,504	0	0	10,504	10,504	3,853,068	3,889,010	3,885,414	3,560,865	3,859,629		02/10/14	02/10/14	
12	2/11/2014	3	3	10,504	0	0	10,504	10,504	3,863,575	3,889,013	3,885,417	3,571,373	3,870,136		02/11/14	02/11/14	02/11/14
12	2/12/2014	4	3	10,504	0	0	10,504	0	3,874,083	3,889,017	3,885,421	3,581,880	3,870,140	02/12/14	02/12/14	02/12/14	02/12/14
12	2/13/2014	5	3	0	0	0	10,504	0	3,874,086	3,889,020	3,885,424	3,592,387	3,870,143	02/13/14	02/13/14	02/13/14	02/13/14
12	2/14/2014	6	3	0	0	0	10,504	0	3,874,089	3,889,023	3,885,427	3,602,895	3,870,146	02/14/14	02/14/14	02/14/14	02/14/14
12	2/15/2014	7	3	0	0	0	10,504	0	3,874,092	3,889,026	3,885,430	3,613,402	3,870,149	02/15/14	02/15/14	02/15/14	02/15/14
12	2/16/2014	1	3	0	0	0	10,504	0	3,874,095	3,889,030	3,885,433	3,623,909	3,870,153	02/16/14	02/16/14	02/16/14	02/16/14

12	2/17/2014	2	3	0	0	0	10,504	0	3,874,099	3,889,033	3,885,437	3,634,417	3,870,156	02/17/14	02/17/14	02/17/14	02/17/14
12	2/18/2014	3	3	0	0	0	10,504	0	3,874,102	3,889,036	3,885,440	3,644,924	3,870,159	02/18/14	02/18/14	02/18/14	02/18/14
12	2/19/2014	4	3	0	0	0	10,504	0	3,874,105	3,889,039	3,885,443	3,655,431	3,870,162	02/19/14	02/19/14	02/19/14	02/19/14
12	2/20/2014	5	3	0	0	0	10,504	0	3,874,108	3,889,042	3,885,446	3,665,939	3,870,165	02/20/14	02/20/14	02/20/14	02/20/14
12	2/21/2014	6	3	0	0	0	10,504	0	3,874,112	3,889,046	3,885,450	3,676,446	3,870,169	02/21/14	02/21/14	02/21/14	02/21/14
12	2/22/2014	7	3	0	0	0	10,504	0	3,874,115	3,889,049	3,885,453	3,686,953	3,870,172	02/22/14	02/22/14	02/22/14	02/22/14
12	2/23/2014	1	3	0	0	0	10,504	0	3,874,118	3,889,052	3,885,456	3,697,461	3,870,175	02/23/14	02/23/14	02/23/14	02/23/14
12	2/24/2014	2	3	0	0	0	10,504	0	3,874,121	3,889,055	3,885,459	3,707,968	3,870,178	02/24/14	02/24/14	02/24/14	02/24/14
12	2/25/2014	3	3	0	0	0	10,504	0	3,874,124	3,889,058	3,885,462	3,718,475	3,870,182	02/25/14	02/25/14	02/25/14	02/25/14
12	2/26/2014	4	3	0	0	0	10,504	0	3,874,128	3,889,062	3,885,466	3,728,983	3,870,185	02/26/14	02/26/14	02/26/14	02/26/14
12	2/27/2014	5	3	0	0	0	10,504	0	3,874,131	3,889,065	3,885,469	3,739,490	3,870,188	02/27/14	02/27/14	02/27/14	02/27/14
12	2/28/2014	6	3	0	0	0	10,504	0	3,874,134	3,889,068	3,885,472	3,749,997	3,870,191	02/28/14	02/28/14	02/28/14	02/28/14