COMPREHENSIVE ANNUAL CATCH LIMIT (ACL) AMENDMENT FOR THE SOUTH ATLANTIC REGION

AMENDMENT 2 TO THE FISHERY MANAGEMENT PLAN FOR THE DOLPHIN WAHOO FISHERY OF THE ATLANTIC
AMENDMENT 2 TO THE FISHERY MANAGEMENT PLAN FOR PELAGIC SARGASSUM HABITAT OF THE SOUTH ATLANTIC REGION
AMENDMENT 5 TO THE FISHERY MANAGEMENT PLAN FOR THE GOLDEN CRAB FISHERY OF THE SOUTH ATLANTIC REGION
AMENDMENT 25 TO THE FISHERY MANAGEMENT PLAN FOR THE SNAPPER GROUPER FISHERY OF THE SOUTH ATLANTIC REGION

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

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ABBREVIATIONS AND ACRONYMS

ABC	Acceptable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limit
AM	Accountability Measure
ACT	Annual Catch Target
ALS	Accumulative Landings System
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B	A measure of stock biomass in either weight or other appropriate unit
B_{MSY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	The current stock biomass
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CPUE	Catch per unit effort
CRP	Cooperative Research Program
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFH-HAPC	Essential Fish Habitat - Habitat Area of Particular Concern
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
F	A measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	Fishing mortality that will produce a static SPR = 30%.
$F_{45\%SPR}$	Fishing mortality that will produce a static SPR = 45%.
F_{CURR}	The current instantaneous rate of fishing mortality
F_{MSY}	The rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	The rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FMU	Fishery management unit
FONSI	Finding of No Significant Impact
GMFMC	Gulf of Mexico Fishery Management Council
ITQ	Individual transfer quota
IPT	Interdisciplinary Plan Team
M	Natural mortality rate
MARFIN	Marine Fisheries Initiative

MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MBTA	Migratory Bird Treaty Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act of 1972
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSRA	Magnuson-Stevens Reauthorization Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuary Act
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing Limit
OY	Optimum Yield
PQBM	Post Quota Bycatch Mortality
PSE	Percent Standard Error
R	Recruitment
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE Report	Stock Assessment and Fishery Evaluation Report
SAMFC	South Atlantic Fishery Management Council
SDDP	Supplementary Discard Data Program
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SPR	Spawning Potential Ratio
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
TL	Total length
T_{MIN}	The length of time in which a stock could rebuild to B_{MSY} in the absence of fishing mortality
USCG	U.S. Coast Guard

COMPREHENSIVE ANNUAL CATCH LIMIT (ACL) AMENDMENT FOR THE SOUTH ATLANTIC REGION

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

Proposed actions:	Remove some species from South Atlantic Snapper Grouper FMU and designate others as Ecosystem Components. Consider multi-species groupings for specifying ACLs, ACTs, and AMs. Establish ABC control rules, ABCs, ACLs, ACTs, and AMs for species not undergoing overfishing. Specify jurisdictional allocations and sector allocations for species not undergoing overfishing. Modify management measures to limit total mortality to the ACL.
Lead agency:	FMP Amendment – South Atlantic Fishery Management Council EIS - NOAA Fisheries Service
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ABSTRACT

The Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield (OY) from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans. Revisions to the Magnuson-Stevens Act in 2006 required that by 2010, Fishery Management Plans (FMPs) for fisheries determined by the Secretary of Commerce to be subject to overfishing, establish a mechanism for specifying annual catch limits (ACLs) at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes, as well as establish measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) to the FMP for the Snapper Grouper Fishery of the South Atlantic Region specified ACLs for species subject to overfishing. The South Atlantic Fishery Management Council (South Atlantic Council) is addressing all of the remaining species in this amendment except corals, which are being addressed in the Comprehensive Ecosystem-Based Amendment 2 (currently under review), and Coastal Migratory Pelagics and Spiny Lobster, which are being addressed jointly with the Gulf of Mexico Fishery Management Council.

The purpose of this Comprehensive ACL Amendment for the South Atlantic Region (Comprehensive ACL Amendment) is to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. Long-term measures include implementation of the following items: 1) changes to the snapper grouper fishery management unit, including the removal of some species, designation of ecosystem component species, and the development of species groups; 2) establish acceptable biological catch (ABC) control rules; 3) ACLs and annual catch targets (ACTs); 4) jurisdictional and sector allocations; 5) accountability measures (AMs); and 6) management measures necessary to ensure mortality is at or below the annual limits and targets. Optimum yield, the ultimate goal of any fishery management plan, is the portion of the fish stock that provides the greatest economic, social, and ecological benefit to the nation.

The need for action is to specify overfishing limits (OFLs), ACLs, and AMs, where needed to comply with Magnuson-Stevens Act requirements.

The South Atlantic Council is utilizing several tools to achieve OY for stocks addressed in this comprehensive amendment. These tools include a determination from the Council's SSC for an ABC based on an ABC control rule. Another tool is the OFL, which is an estimate of the catch level above which overfishing is occurring. This value may stem from the outcome of a stock assessment and is equivalent to the yield at the maximum fishing mortality threshold (MFMT). An SSC may use other methods to estimate OFL in the absence of a stock assessment. The ABC is defined as the level of a

stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and should be specified based on the ABC control rule. The South Atlantic Council is using ABC and proposing an ACL for the stocks in the South Atlantic. The ACL is an annual limit expressed in pounds or numbers of fish that serves as the basis for invoking AMs. Accountability measures are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur (50 CFR 600.310 (g) (1)). The South Atlantic Council is proposing AMs in this amendment. While AMs act to prevent overfishing in a fishery, the South Atlantic Council must specify actions in order to ensure that overfishing does not occur.

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SUMMARY
of the
COMPREHENSIVE ANNUAL CATCH LIMIT AMENDMENT

The South Atlantic Fishery Management Council (South Atlantic Council) is developing actions for many species. The proposed actions are specified in the Comprehensive Annual Catch Limit (ACL) Amendment. The amendment is referred to as "comprehensive" because this one document amends two or more fishery management plans; actions are taken in one document as the actions are similar in nature.

This document is intended to serve as a SUMMARY for all the actions and alternatives in the Comprehensive ACL Amendment. It outlines the alternatives with a focus on the preferred alternatives. It also provides background information and includes a summary of the expected biological and socio-economic effects from the management measures.

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BACKGROUND

What Actions Are Being Proposed?

The South Atlantic Fishery Management Council (South Atlantic Council) is proposing, where applicable, the following actions for many managed species:

- changes to fishery management unit;
- control rules for acceptable biological catch;
- annual catch limits;
- annual catch targets;
- allocations; and
- accountability measures.

Who is Proposing Action?

The South Atlantic Council is proposing the actions. The South Atlantic Council develops the actions and submits them to the National Marine Fisheries Service (NOAA Fisheries Service) who ultimately approves, disapproves, or partially approves the actions in the amendment on behalf of the Secretary of Commerce. NOAA Fisheries Service 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 miles off the coasts of North Carolina, South Carolina, Georgia, and Florida through the Atlantic side of Key West
- Develops fishery management plans and recommends actions to NMFS and NOAA for implementation

Where is the Project Located?

Management of the federal snapper grouper and golden crab fisheries is located off the South Atlantic in the 3-200 nautical mile (nm) U.S. Exclusive Economic Zone (EEZ) and is conducted under the Fishery Management Plans (FMPs) for Snapper Grouper and Golden Crab of the South Atlantic Region (SAFMC 1983 and 1995, respectively) (**Figure 1-1**). The dolphin wahoo fishery extends from Maine through the east coast of Florida, and is managed under the FMP for Dolphin Wahoo of the Atlantic (SAFMC 2003a). The FMP for pelagic *Sargassum* habitat in the South Atlantic Region (SAFMC 2002) prohibits harvest south of the North Carolina/South Carolina state boundary.

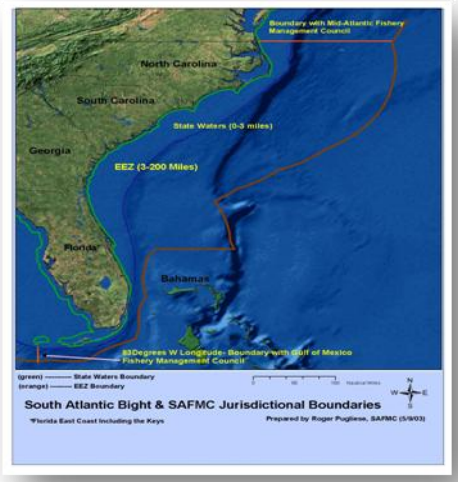


Figure 1-1. Jurisdictional boundaries of the South Atlantic Council.

Which Species Will Be Affected?

These actions would apply to species in the following fishery management plans:

- Snapper Grouper
- Dolphin Wahoo
- Golden Crab
- Sargassum

Why is the South Atlantic Council Considering Action?

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield (OY) from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans. Revisions to the Magnuson-Stevens Act in 2006 required that by 2010, FMPs for fisheries determined by the Secretary of Commerce to be subject to overfishing establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A and 17B to the Snapper Grouper FMP specified ACLs for species subject to overfishing. The South Atlantic Council is addressing the remaining species in this amendment, in addition to dolphin, wahoo, golden crab, and *Sargassum*.

CATERGORIES OF ACTIONS

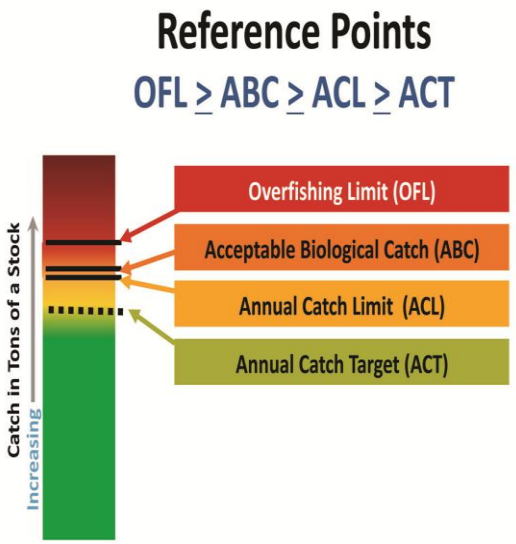
There are six categories of actions in the Comprehensive ACL Amendment.

- **Changes to Fishery Management Unit**

The South Atlantic Council is considering removing species from the Snapper Grouper Fishery Management Unit in addition to designating ecosystem component species, and organizing species into complexes.

- **Control Rules for Acceptable Biological Catch**

Acceptable Biological Catch (ABC) is the range of estimated allowable catch for a species or species group. The *ABC Control Rule* is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fisheries scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management uncertainty increases.



- **Allocations**

Allocation is a distribution of the opportunity to fish among user groups or individuals. The share a user group gets is usually based on historic harvest amounts.

- **Annual Catch Limits**

Annual catch limit (ACL) is the level of catch that triggers accountability measures. It is expressed either in pounds or numbers of fish. The level may not exceed the Acceptable Biological Catch.

- **Annual Catch Targets**

Annual catch target (ACT) is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The ACTs are recommended in the system of accountability measures so that ACL is not exceeded, and may be considered "soft targets" (do not trigger action).

- **Accountability Measures**

Accountability measure (AM) is an action taken in order to avoid exceeding an identified catch level (usually the ACL). The following are four AMs: specification of an ACT, in-season regulations changes, post-season regulation changes, and specification of other management measures (e.g., bag limits).

Snapper Grouper

I. Reorganization of Snapper Grouper Fishery Management Unit (FMU)

(1. Removing Species from Unit)

The South Atlantic Council manages 73 species in the Snapper Grouper FMU. Most of these fish represent a small portion of the overall catch, or are mostly caught in state waters. Therefore, the Council is proposing a re-organization of the snapper grouper complex using the following three methods: (1) removing species from the complex, (2) designation of ecosystem component species, and (3) grouping species together for management purposes. The species highlighted below would be removed from the complex under the current preferred alternatives.

The preferred alternative would remove species based on the following criteria:

(1) 95% (or greater) of landings in state waters*
(2) If managed under the Florida Marine Life Rule
(3) Zero reported landings from 2005-2009

*Except mutton snapper and hogfish

Removal

Snappers	Groupers	Grunts	Jacks
Blackfin	Black	Black margate	Almaco
Black	Coney	Blue-striped	B. rudderfish
Cubera	Gag	Cottonwick	Bar jack
Dog	Goliath	French	Blue runner
Gray	Graysby	Margate	Crevalle
Lane	Misty	Porkfish	G. amberjack
Mahogany	Nassau	Sailors choice	L. amberjack
Queen	Red	Smallmouth	Yellow
Red	Red hind	Spanish	**Porgys**
Schoolmaster	Rock hind	Tomtate	Grass
Silk	Scamp	White	Jolthead
Vermilion	Snowy	**Triggerfish**	Knobbed
Yellowtail	Speckled hind	Gray	Longspine
Mutton	Tiger	Ocean	Red
Tilefishes	Warsaw	Queen	Saucereye
Blueline	Yellowedge	**Sea basses**	Scup
Sand	Yellowfin	Bank	Sheepshead
Tilefish	Yellowmouth	Black	Whitebone
Spadefishes	**Wreckfish**	Rock	**Wrasses**
A. spadefish	Wreckfish		Hogfish
			Puddingwife

= Species to be Removed

Will those species removed have less biological protection?

If species are removed from the FMU, federal regulations would no longer apply when caught in federal waters. Most of these species have little management in federal waters. State regulations would continue to apply when caught in state waters. Depending on the species removed, there would be no effects to the stocks or little potential for negative effects. Many of these fish to be removed are primarily caught in state waters so removing federal regulations would be expected to cause little to no effect.

A comparison of the effects for all the alternatives for actions considered can be found in Section 2 of the amendment.

I. Reorganization of Snapper Grouper Fishery Management Unit (FMU)

(2. Ecosystem Component Species)

In addition to removing species (those highlighted) in the previous action, the South Atlantic Council is proposing designation of some species as Ecosystem Component (EC) species. The EC species would be retained in the Snapper Grouper FMU, but would not have a specification for ACLs, AMs, or management measures such as bag limits and size limits. The Council is also proposing grouping many of the remaining species into six complexes (see next action).

Ecosystem

Snappers	Groupers	Grunts	Jacks
Blackfin	Black	Black margate	Almaco
Black	Coney	Blue-striped	B. rudderfish
Cubera	Gag	Cottonwick	Bar jack
Dog	Goliath	French	Blue runner
Gray	Graysby	Margate	Crevalle
Lane	Misty	Porkfish	G. amberjack
Mahogany	Nassau	Sailors choice	L. amberjack
Queen	Red	Smallmouth	Yellow
Red	Red hind	Spanish	**Porgys**
Schoolmaster	Rock hind	Tomtate	Grass
Silk	Scamp	White	Jolthead
Vermilion	Snowy	**Triggerfish**	Knobbed
Yellowtail	Speckled hind	Gray	Longspine
Mutton	Tiger	Ocean	Red
Tilefishes	Warsaw	Queen	Saucereye
Blueline	Yellowedge	**Sea basses**	Scup
Sand	Yellowfin	Bank	Sheepshead
Tilefish	Yellowmouth	Black	Whitebone
Spadefishes	**Wreckfish**	Rock	**Wrasses**
A. spadefish	Wreckfish		Hogfish
			Puddingwife

= Species to be Removed

= Species to be designated as Ecosystem Component Species

The National Standard 1 (NS 1) guidelines pertaining to ecosystem component species (74 FR 3178; Section 50 CFR 600.310 (d) (5) (i)) indicate a species should meet four criteria to be considered for possible classification as an EC species:

(1) Be a non-target species or non-target stock;
(2) not be determined to be subject to overfishing, approaching overfished, or overfished;
(3) not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and
(4) not generally be retained for sale or personal use.

The preferred alternative would designate species that meet three out of four criteria outlined in the NS 1 guidelines as ecosystem component species.

I. Reorganization of Snapper Grouper Fishery Management Unit (FMU)

(3. Grouping Species)

The South Atlantic Council is proposing grouping the species into six complexes. The species to be removed and those to be designated as ecosystem component species are highlighted brown and green, respectively. Ecosystem component species would be retained in the Snapper Grouper FMU, but would not have a specification for ACL, AM, or management measures such as bag limits and size limits.

The preferred alternative would group species based on species associations using one or more of the following criteria:

1. life history;
2. catch statistics from commercial logbook and observer data; and
3. recreational headboat logbook, private/charter survey, and fishery-independent MARMAP data.

Snappers	Groupers	Grunts	Jacks
Blackfin	Black	Black margate	Almaco
Black	Coney	Blue-striped	B. rudderfish
Cubera	Gag	Cottonwick	Bar jack
Dog	Goliath	French	Blue runner
Gray	Graysby	Margate	Crevalle
Lane	Misty	Porkfish	G. amberjack
Mahogany	Nassau	Sailors choice	L. amberjack
Queen	Red	Smallmouth	Yellow
Red	Red hind	Spanish	**Porgys**
Schoolmaster	Rock hind	Tomtate	Grass
Silk	Scamp	White	Jolthead
Vermilion	Snowy	**Triggerfish**	Knobbed
Yellowtail	Speckled hind	Gray	Longspine
Mutton	Tiger	Ocean	Red
Tilefishes	Warsaw	Queen	Saucereye
Blueline	Yellowedge	**Sea basses**	Scup
Sand	Yellowfin	Bank	Sheepshead
Tilefish	Yellowmouth	Black	Whitebone
Spadefishes	**Wreckfish**	Rock	**Wrasses**
A. spadefish	Wreckfish		Hogfish
			Puddingwife

The Remaining Species Would Not Be Grouped

Atlantic spadefish
Bar jack
Black grouper
Black sea bass
Blue runner
Gag
Golden tilefish
Goliath grouper
Gray triggerfish
Greater amberjack
Hogfish
Mutton snapper
Nassau grouper
Red grouper
Scamp
Snowy grouper
Speckled hind
Red porgy
Red snapper
Vermilion snapper
Warsaw grouper
Wreckfish
Yellowtail snapper

Groupings

Complex 1
Deepwater
Black snapper
Blackfin snapper
Blueline tilefish
Misty grouper
Queen snapper
Sand tilefish
Silk snapper
Yellowedge grouper

Complex 2
Jacks
Almaco jack
Banded rudderfish
Lesser amberjack

Complex 3
Snappers
Cubera snapper
Dog snapper
Gray snapper
Lane snapper
Mahogany snapper

Complex 4
Grunts
Margate
Tomtate
Sailors choice
White grunt

Complex 5
Shallow-water Groupers
Coney
Graysby
Red hind
Rock hind
Yellowfin grouper
Yellowmouth grouper

Complex 6
Porgies
Jolthead porgy
Knobbed porgy
Saucereye porgy
Scup
Whitebone porgy

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		bt: Highest pre-2006 landings x 2	bt: 592,602
		bf, bs, mg, qs, st: 3rd highest landings 1999-2008	bs: 382 bf: 4,154 mg: 2,863 qs: 9,344 st: 8,823
		ss, yg: Median landings 1999-2008	ss: 27,519 yg: 30,221
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	bs: 91.52% comm.; 8.48%rec. bf:31.68% comm.; 68.32%rec. bt:47.39% comm.; 52.61%rec. mg:70.91%comm.; 29.09%rec. qs:93.12% comm.; 6.88%rec. st:16.22% comm.; 83.78%rec. ss:73.14% comm.; 26.86%rec. yg:96.19% comm.; 3.81%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	343,869 comm. 332,039 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	205,516
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 1
Deepwater

Black snapper (bs)
Blackfin snapper (bf)
Blueline tilefish (bt)
Misty grouper (mg)
Queen snapper (qs)
Sand tilefish (st)
Silk snapper (ss)
Yellowedge grouper (yg)

How would the groupings work?

The ACL for each species in a complex is totaled for one complex ACL. The total ACL will be the trigger for the AM. In other words, when reported landings are expected to exceed the complex ACL in a given fishing season, action will be taken.

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		3RD highest landings 1999-2008	aj: 291,922 br: 152,999 la: 10,568
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	aj: 51.53% comm.; 48.47%rec. br: 25.25% comm.; 74.75%rec. la: 46.62% comm.; 53.38%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	193,999 comm. 261,490 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	186,972
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 2
Jacks

Almaco jack
(aj)
Banded rudderfish
(br)
Lesser amberjack
(la)

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		3RD highest landings 1999-2008	cs: 31,772 ds:7,523 gs: 894,019 ls: 153,466 ms: 160
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	cs:19.75% comm.; 80.25%rec. ds:9.41% comm.; 90.59%rec. gs: 20.00% comm.; 80.00%rec. ls: 12.21% comm.; 87.79%rec. ms: 5.05% comm.; 94.95%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	204,552 comm. 882,388 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	775,001
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 3
Snappers

Cubera snapper (cs)
Dog snapper (ds)
Gray snapper (gs)
Lane snapper (ls)
Mahogany snapper (ms)

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		mg, tt, sc: 3RD highest landings 1999-2008	mg: 34,662
			tt: 70,948
			sc: 35,266
		Wg: Median landings 1999-2008	wg: 635,899
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	mg:19.83% comm.; 80.17%rec. tt:0.00% comm.; 100.00%rec. sc: 0.00% comm.; 100.00%rec. wg: 32.67% comm.; 67.33%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	214,624 comm. 562,151 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	466,864
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 4
Grunts

Margate (mg)
Tomtate (tt)
Sailors choice (sc)
White grunt (wg)

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		3RD highest landings 1999-2008	cg: 2,589 gg: 17,856 rh: 25,885 ro: 37,569 yg: 9,258 ym: 4,661
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	cg:23.26%comm.; 76.74%rec. gg: 14.48% comm.; 85.52%rec. rh:73.28% comm.; 26.72%rec. ro:62.54%comm.; 37.46%rec. yg: 40.78% comm.; 59.22%rec. ym:1.35% comm.; 98.65%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	49,488 comm. 48,329 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	33,082
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 5
Shallow-water Groupers

Coney (cg)
Graysby (gg)
Red hind (rh)
Rock hind (ro)
Yellowfin grouper (yg)
Yellowmouth grouper (ym)

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		unknown	
Acceptable Biological Catch **(ABC)**		3RD highest landings 1999-2008	jp: 42,533 kp: 61,194 sp: 4,205 cp: 8,999 wp: 30,684
Allocations		(50% X average of 1986-2008) + (50% X average of 2006-2008)	jp:4.05%comm.; 95.95%rec. kp: 54.12% comm.; 45.88%rec. sp:0.01% comm.; 99.99%rec. cp:0.00%comm.; 100.00%rec. wp: 0.96% comm.; 99.04%rec.
Complex Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	35,129 comm. 112,485 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	74,933
	In-season	**Comm.:** If the commercial complex ACL is met or projected to be met, all purchase and sale of species in the complex is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Comm.:** If the commercial sector complex ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector complex ACL in the following season by the amount of the overage only if at least one of the species is overfished. **Rec.:** If the rec. sector complex ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	

Complex 6
Porgies

Jolthead porgy (jp)
Knobbed porgy (kp)
Saucereye porgy (sp)
Scup (cp)
Whitebone porgy (wp)

Individual Species
(Those Not Grouped)

The Remaining Species <u>Would Not Be Grouped</u>

Atlantic spadefish
Bar jack
Black grouper
Black sea bass
Blue runner
Gag
Golden tilefish
Goliath grouper
Gray triggerfish
Greater amberjack
Hogfish
Mutton snapper
Nassau grouper
Red grouper
Red porgy
Red snapper
Scamp
Snowy grouper
Speckled hind
Vermilion snapper
Warsaw grouper
Wreckfish
Yellowtail snapper

NOT specifying ACLs/AM in this amendment (done in Amendments 17A & 17B, will be done in Amendment 24)

Black sea bass
Gag
Golden tilefish
Red grouper
Red snapper
Snowy grouper
Speckled hind
Vermilion snapper
Warsaw grouper

Specifying ACLs/AMs in this amendment for ungrouped species

Atlantic spadefish
Bar jack
Black grouper
Blue runner
Goliath
Gray triggerfish
Greater amberjack
Hogfish
Mutton snapper
Nassau
Red porgy
Scamp
Wreckfish
Yellowtail snapper

Note: Black grouper ABC values are included in Action 13 (36.88% comm. & 63.12% rec.). Yellowtail and mutton snapper ABCs are based on jurisdictional allocations shown in Actions 18 & 19, respectively.
Warsaw = 17.79% comm. & 82.21% rec.; Speckled hind = 65.59% comm. & 34.41% rec.; Goliath = 43.77% comm. & 56.23% rec.; Nassau = 9.52% comm. & 90.48% rec.; and Red snapper = 28.07% com. & 71.93% rec.

For red grouper, AMs will not be specified in this amendment; they will be specified in Amendment 24. Also, non-ABC black grouper actions and wreckfish actions are outlined in the next section. Red porgy's recreational ACL is included in this amendment; the commercial ACL has already

	Atlantic Spadefish	Bar Jack	Blue Runner	Gray Triggerfish	Greater Amberjack *(assessed)*	Hogfish	Goliath & Nassau	Scamp	Red Porgy[2] *(assessed)*	Yellowtail Snapper *(assessed)*	Mutton Snapper *(assessed)*
Overfishing Level **(OFL)**	Unknown										
Acceptable Biological Catch **(ABC)**	282,841	20,520	1,289,941	672,565	1,968,000	147,638	0	492,572	395,304	2,173,875	926,600
Allocations[1]	12.90% comm. 87.10% rec.	32.58% comm. 67.42% rec.	14.60% comm. 85.40% rec.	45.39% comm. 54.61% rec.	40.66% comm. 59.34% rec.	33.03% comm. 66.97% rec.	See note above	69.36% comm. 30.64% rec.	50.00% comm. 50.00% rec.	52.56% comm. 47.44% rec.	17.02% comm. 82.98% rec.
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**	ACL=OY=ABC										
	36,476 comm. 246,365 rec.	6,686 comm. 13,834 rec.	188,329 comm. 1,101,612 rec.	305,262 comm. 367,303 rec.	800,163 comm. 1,167,837 rec.	48,772 comm. 98,866 rec.	0	341,636 comm. 150,936 rec.	197,652 comm. 197,652 rec.	1,142,589 comm. 1,031,286 rec.	157,707 comm. 768,893 rec.
Accountability Measures: Rec. Annual Catch Target **(ACT)**	177,382	9,936	892,305	312,208	992,662	71,184	n/a	96,599	160,098	897,219	668,937
Accountability Measures: In-season and post-season	**Comm.:** If the commercial sector ACL is met or projected to be met, all purchase and sale is prohibited and harvest and/or possession is limited to the bag limit. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished. **Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.										

[1]Allocations are determined through the following equation: (50% X average of 1986-2008) + (50% X average of 2006-2008).
[2]Commercial quota (ACL) in place for red porgy of 190,050 lbs gutted weight (197,652 lbs whole weight).

Snapper Grouper Species
All Alternatives

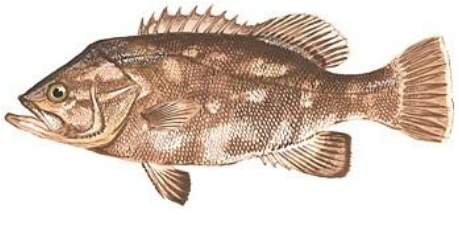
	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC)	1	No Action
	2	ABC=OFL
	3	Unassessed sp. (% OFL or median landings 99-08)
	3a	ABC=65%OFL
	3b	ABC=75%OFL
	3c	ABC=85%OFL
	3d	ABC=95%OFL
	4	Assessed sp.
	4a	ABC=65%MFMT
	4b	ABC=75%MFMT
	4c	ABC=85%MFMT
	5	Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - ABC=median landings 99-08
	6	Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - GMFMC SSC Control Rule
	7	Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. -SAFMC SSC Control Rule
Allocations	1	No Action
	2	2 sectors:50%(86-08)+50%(06-08)
	3	3 sectors:50%(86-08)+50%(06-08)
	4	2 sectors: 86-08
	5	2 sectors: 86-98
	6	2 sectors: 99-08
	7	2 sectors: 06-08
		All calculations based on averages
Annual Catch Limit (ACL) & Optimum Yield (OY)	1	No Action
	2	ACL=OY=ABC
	3	ACL=OY=90%ABC
	4	ACL=OY=80%ABC

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a	No ACT
		2b	90%ACL
		2c	80%ACL
	In-season	3	Close fishery if ACL met or projected to be met
	Post-season	4	Reduce ACL by overage only if species is overfished

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a	No ACT
		2b	85%ACL
		2c	75%ACL
		2d	ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a	No AM trigger.
		3b	If annual landings > ACL
		3c	If mean landings > ACL
		3d	If modified mean > ACL
		3e	If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a	No in-season AM
		4b	Close fishery if ACL met
	Post-season	5a	No post-season AM
		5b	Use 3-year mean
		5c	Monitor following year
		5d	Monitor following year/shorten season as necessary
		5e	Monitor following year/reduce bag limit as necessary
		5f	Shorten following season
		5g	Reduce ACL by overage

Wreckfish



Wreckfish *Polyprion americanus*

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level (OFL)		Unknown	n/a
Acceptable Biological Catch (ABC)		Average landings 97-08	250,000
Allocations		n/a	95% comm. 5% rec.
Annual Catch Limit (ACL) & Optimum Yield (OY)		ACL=OY=ABC	237,500 comm. 12,500 rec.
Accountability Measures	Post-season	**Comm.:** No changes proposed. Currently, the commercial sector is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year. **Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	
	Management Measures	For the recreational sector, implement a one wreckfish per vessel per day bag limit. The recreational fishery would be open July 1 through August 31 each year.	

Wreckfish Life History
An Overview

- Occur in the Eastern and Western Atlantic Ocean, on the Mid-Atlantic Ridge, on Atlantic islands and seamounts, and in the Mediterranean Sea, southern Indian Ocean, and southwestern Pacific Ocean.
- The commercial fishery off the southeastern United States occurs primarily at the Charleston Bump, located 81-99 miles southeast of Charleston, South Carolina.
- Fishing occurs at water depths of 1,476-1,968 feet.
- Spawn from December through May, with a peak during February and March.
- Juvenile wreckfish are pelagic, and often associate with floating debris, which accounts for their common name.

ALL ALTERNATIVES
Wreckfish

	No.	Definition
Overfishing Level (OFL)	Unknown	
Acceptable Biological Catch (ABC)	SAFMC SSC recomm. – 250,000	
Allocations	1 2 3 4	No action 90% comm./10% rec. 95% comm./5% rec. 100% comm.
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4	No Action ACL=OY=ABC ACL=OY=90%ABC ACL=OY=80%ABC

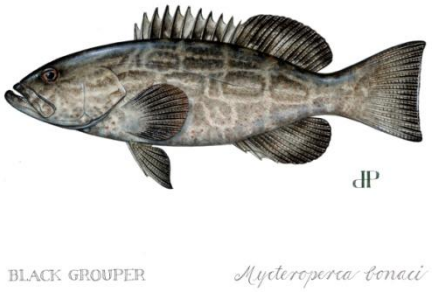
Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	n/a	n/a
	AM Trigger	2a 2b 2c 2d 2e	No AM trigger If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	n/a	n/a
	Post-season	3a 3b 3c 3d 3e 3f 3g	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce ACL by overage

Proposed Management Measures:

1. Recreational bag limit of 1/vessel/day.
2. Recreational fishing season of July & August.

Black grouper

PREFERRED ALTERNATIVES



	Definition	Value (lbs whole weight)		
Overfishing Level **(OFL)** Note: For both Gulf of Mexico and South Atlantic	2011 - landings only 2012 – landings only 2013 – landings only 2014 – landings only 2015 – landings only	695,007 652,810 627,552 619,665 615,801		
Acceptable Biological Catch **(ABC)** Note: For South Atlantic based on jurisdictional allocation	2011 – landings only 2012 – landings only 2013 – landings only 2014 – landings only 2015 – landings only	245,810 245,595 256,430 262,594 265,426		
Jurisdictional Allocations	(50% X average of 1986-2008) + (50% X average of 2006-2008)	47% South Atlantic 53% Gulf of Mexico of Mexico		
Sector Allocations for South Atlantic	(50% X average of 1991-2008) + (50% X average of 2006-2008)	36.88% comm. 63.12% rec.		
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**	ACL=OY=ABC (landings only)	Year	Comm	rec
		2012 2013 2014 and onwards	90,575 94,571 96,845	155,020 161,859 165,749
Accountability Measures: Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	Year	ACT	
		2012 2013 2014 and onwards	94,562 98,734 101,107	
Accountability Measures: In-season	**Comm.:** After the commercial sector ACL is projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit. If the commercial sector ACL is exceeded, the Regional Administrator of NOAA Fisheries Service in the Southeast Region shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished.			
Accountability Measures: Post-season	**Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.			

Black Grouper Life History
An Overview

- Occurs in the Western Atlantic, from North Carolina to Florida, Bermuda, the Gulf of Mexico of Mexico, West Indies, and from Central America to Southern Brazil
- Occur in water depths of 30-98 feet
- Live for at least 33 years
- Form spawning aggregations

ALL ALTERNATIVES

Black grouper

	No.	Definition
Overfishing Level **(OFL)**		Unknown
Acceptable Biological Catch **(ABC)** **(done as Part of Action 4)**	1	No Action
	2	ABC=OFL
	3	Unassessed sp. (% OFL or median landings 99-08)
	3a	ABC=65%OFL
	3b	ABC=75%OFL
	3c	ABC=85%OFL
	3d	ABC=95%OFL
	4	Assessed sp.
	4a	ABC=65%MFMT
	4b	ABC=75%MFMT
	4c	ABC=85%MFMT
	5	Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - ABC=median landings 99-08)
	6	Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - GMFMC SSC Control Rule
	7	Assessed sp. - SAFMC SSC Control Rule; Unassessed sp. - SAFMC SSC Control Rule
Allocations **(Sector)**	1	No Action
	2a	2 sectors: 86-08
	2b	2 sectors: 86-98
	2c	2 sectors: 99-08
	2d	2 sectors: 06-08
	2e	2 sectors:50%(91-08)+50%(06-08)
	3a	3 sectors: 86-08
	3b	3 sectors: 86-98
	3c	3 sectors: 99-08
	3d	3 sectors: 06-08
	3e	3 sectors:50%(91-08)+50%(06-08) ***All calculations based on averages***
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**	1	No Action
	2	ACL=OY=ABC
	3	ACL=OY=90%ABC
	4	ACL=OY=80%ABC

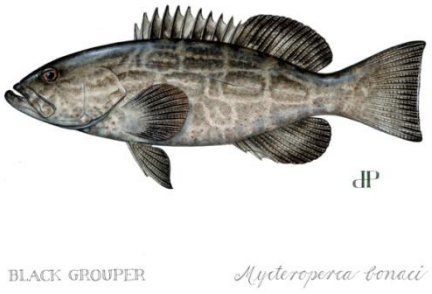
Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target **(ACT)**	2a	No ACT
		2b	90%ACL
		2c	80%ACL
	In-season	3	Close fishery if ACL met or projected to be met
	Post-season	4	Reduce ACL by overage if overfished

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target **(ACT)**	2a	No ACT
		2b	85%ACL
		2c	75%ACL
		2d	ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a	No AM trigger.
		3b	If annual landings > ACL
		3c	If mean landings > ACL
		3d	If modified mean > ACL
		3e	If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a	No in-season AM
		4b	Close fishery if ACL met or projected to be met
	Post-season	5a	No post-season AM
		5b	Use 3-year mean
		5c	Monitor following year
		5d	Monitor following year/shorten season as necessary
		5e	Monitor following year/reduce bag limit as necessary
		5f	Shorten following season
		5g	Reduce ACL by overage

Black grouper

JURISDICTIONAL ALLOCATIONS



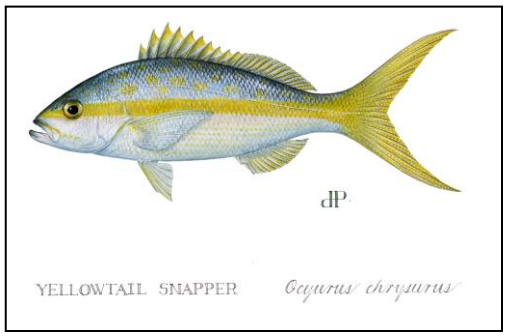
Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper ABC based on one of the following methods:

- **Subalternative 2a.** South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (Established by using average landings from 1991-2008).
- **Subalternative 2b (Preferred).** South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).
- **Subalternative 2c.** South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (Established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).
- **Subalternative 2d.** South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).

Yellowtail Snapper

JURISDICTIONAL ALLOCATIONS



Alternative 1 (No Action). Do not establish jurisdictional allocation of the yellowtail snapper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

- **Subalternative 2a.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using average landings from 1987-2001).
- **Subalternative 2b.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).
- **Subalternative 2c.** South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (Established using highest catch history from 1987-2001).
- **Subalternative 2d.** South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (Established using lowest catch history from 1987-2001)

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (Established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

Alternative 4 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008+ 50% of average landings from 2006-2008).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (Established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (Established by using average landings from 2005-2009).

Mutton Snapper

JURISDICTIONAL ALLOCATIONS

Alternative 1 (No Action). Do not establish jurisdictional allocation of the mutton snapper Acceptable Biological Catch (ABC) between the Gulf and South Atlantic Councils.

Alternative 2 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of ABC and Gulf of Mexico = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 79% of ABC and Gulf of Mexico = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish jurisdictional allocation based on the Florida Keys (Monroe County) jurisdiction boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

Dolphin

PREFERRED ALTERNATIVES

DOLPHIN (male) *Coryphaena hippurus*

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**			n/a
Acceptable Biological Catch **(ABC)**		SAFMC SSC	14,596,216
Allocations		(50% X average of 1999-2008) + (50% X average of 2006-2008)	7.3% comm. 92.7% rec.
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	1,065,524 comm. 13,530,692 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	11,595,803
	In-season	**Comm.:** After the commercial sector ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit	
	Post-season	**Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	
	Management Measures	Prohibit bag limit sales of dolphin from for-hire vessels. Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode. Establish a minimum size limit of 20 inches fork length from Florida through South Carolina.	

Dolphin Life History
An Overview

- Oceanic pelagic fish found worldwide in tropical and subtropical waters.
- Range in western Atlantic is from George's Bank, Nova Scotia to Rio de Janeiro, Brazil.
- The life span is short with a maximum of 5 years; males live longer than females.
- Growth is extremely rapid. Specific rates vary among regions and are sensitive to water temperatures.
- Reach maturity at 4 to 5 months.
- Young dolphin fish school, but older individuals are more solitary. Adults make seasonal north-south migrations.

ALL ALTERNATIVES
Dolphin

	No.	Definition
Overfishing Level **(OFL)**		Unknown
Acceptable Biological Catch **(ABC)**	1 2 3 4	No Action ABC=OFL GMFMC ABC Control Rule SAFMC SSC ABC Control Rule
Allocations	1 2 3 4	No Action 2 sectors:(99-08) 2 sectors:50%(99-08)+50%(06-08) 3 sectors:50%(99-08)+50%(06-08) ***All calculations based on averages***
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**	1 2 3 4 5	No Action ACL=OY=ABC ACL=OY=85%ABC ACL=OY=75%ABC ACL=OY=65%ABC

Proposed Management Measures:

1. Prohibit bag limit sales of dolphin from for-hire vessels.
2. Establish a minimum size limit of 20" FL from Florida through South Carolina.

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target **(ACT)**	2a 2b 2c	No ACT. 90%ACL 80%ACL
	In-season	3	Close fishery if ACL is met or projected to be met
	Post-season	4	Reduce ACL by overage

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target **(ACT)**	2a 2b 2c 2d	No ACT. 85%ACL 75%ACL ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a 3b 3c 3d 3e	No AM trigger. If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a 4b	No in-season AM Close fishery if ACL met or projected to be met
	Post-season	5a 5b 5c 5d 5e 5f 5g 5h	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce bag limit Reduce ACL by overage

Wahoo

PREFERRED ALTERNATIVES

		Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**		Unknown	n/a
Acceptable Biological Catch **(ABC)**			
		SAFMC SSC	1,491,785
Allocations		(50% X average of 1999-2008) + (50% X average of 2006-2008)	4.3% comm. 95.7% rec.
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**		ACL=OY=ABC	64,147 comm. 1,427,638 rec.
Accountability Measures	Recreational Annual Catch Target **(ACT)**	Recreational ACT= ACL*(1-PSE) or ACL*0.5, whichever is greater	1,164,953
	In-season	**Comm.:** After the commercial sector ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.	
	Post-season	**Rec.:** If the rec. sector ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.	
	Management Measures	No changes proposed as preferred alternative	

Wahoo Life History
An Overview

- An oceanic pelagic fish found worldwide in tropical and subtropical waters.
- Range in the western Atlantic from New York through Colombia including Bermuda, the Bahamas, the Gulf of Mexico of Mexico, and the Caribbean.
- Spawning season extends from June through August with peak spawning in June and July.
- Adult wahoo in the Atlantic are pelagic in nature and generally associated with *Sargassum.*
- Both females and males mature within the first year of life.

ALL ALTERNATIVES
Wahoo

	No.	Definition
Overfishing Level (OFL)		Unknown
Acceptable Biological Catch (ABC)	1 2 3 4	No Action ABC=OFL GMFMC ABC Control Rule SAFMC SSC ABC Control Rule
Allocations	1 2 3 4	No Action 2 sectors:(06-08) 2 sectors:50%(99-08)+50%(06-08) 3 sectors:50%(99-08)+50%(06-08) ***All calculations based on averages***
Annual Catch Limit (ACL) & Optimum Yield (OY)	1 2 3 4 5	No Action ACL=OY=ABC ACL=OY=85%ABC ACL=OY=75%ABC ACL=OY=65%ABC

No Changes
to Existing Management Measures:

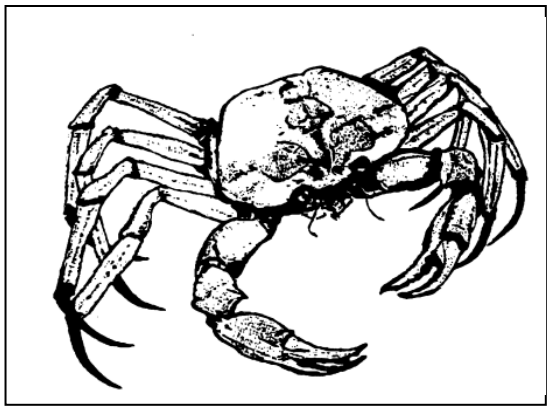
1. No sale of recreationally caught wahoo.
2. 500 pound commercial trip limit.
3. Recreational bag limit of 2/person/day.

Accountability Measures

Commercial Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c	No ACT. 90%ACL 80%ACL
	In-season	3	Close fishery if ACL is met or projected to be met
	Post-season	4	Reduce ACL by overage

Recreational Sector		No.	Definition
Accountability Measures		1	No action
	Annual Catch Target (ACT)	2a 2b 2c 2d	No ACT. 85%ACL 75%ACL ACL*(1-PSE) or ACL*0.5, whichever is greater
	AM Trigger	3a 3b 3c 3d 3e	No AM trigger. If annual landings > ACL If mean landings > ACL If modified mean > ACL If lower bound of 90% confidence interval of mean landings (MRFSS + headboat) > ACL
	In-season	4a 4b	No in-season AM Close fishery if ACL is met or projected to be met
	Post-season	5a 5b 5c 5d 5e 5f 5g 5h	No post-season AM Use 3-year mean Monitor following year Monitor following year/shorten season as necessary Monitor following year/reduce bag limit as necessary Shorten following season Reduce bag limit & shorten season Reduce ACL by overage

Golden Crab



PREFERRED ALTERNATIVES

	Definition	Value (lbs whole weight)
Overfishing Level **(OFL)**	Unknown	n/a
Acceptable Biological Catch **(ABC)**	SAFMC SSC	2 million
Annual Catch Limit **(ACL)** and Optimum Yield **(OY)**	ACL=OY=ABC	2 million
Accountability Measures **(AM)**	After the ACL is projected to be met, all harvest, purchase, and sale of golden crab are prohibited. If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage, only if overfished.	

Golden Crab Life History
An Overview

- Inhabits the continental slope of Bermuda and the southeastern United States from off Chesapeake Bay, south through the Straits of Florida and into the eastern Gulf of Mexico of Mexico.
- Reported depth distributions of range from 673 feet off the Dry Tortugas to 3,304 feet off Bermuda.
- Scavengers that feed opportunistically on dead carcasses deposited on the bottom from overlying waters.

ALL ALTERNATIVES

Golden Crab

	No.	Definition	Value (lbs)
Overfishing Level **(OFL)**	n/a	Unknown	n/a
Acceptable Biological Catch **(ABC)**	n/a	SAFMC SSC	2 million
Annual Catch Limit **(ACL)** & Optimum Yield **(OY)**	1 2 3 4 5	No Action ACL=OY=ABC ACL=OY=85%ABC ACL=OY=75%ABC ACL=OY=65%ABC	 2 million 1.7 million 1.5 million 1.3 million
Accountability Measure **(AM)**	1 2 3	No Action After the ACL is projected to be met, all harvest, purchase, and sale of golden crab is prohibited. If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage, only if overfished.	n/a

No Changes Proposed to the extensive list of management measures specified for the Golden Crab fishery.

Sargassum

PREFERRED ALTERNATIVES

	Current definitions and values	
	Definition	**Value (lbs wet weight)**
Overfishing Level **(OFL)**	Unknown	n/a
Acceptable Biological Catch **(ABC)**	Avg. catch (1976 - 2009)	12,800
Annual Catch Limit **(ACL)** and Optimum Yield **(OY)**	ACL=OY=ABC	5,000
Accountability Measures **(AM)**	Restrict all harvest of the species after the quota (ACL) (5,000 lbs) is met or projected to be met.	
Management Measures	(1) Harvest and possession of *Sargassum* is prohibited south of the latitude line representing the North Carolina/South Carolina border (34 degrees North latitude); (2) all harvest is prohibited within 100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border; (3) harvest is limited to the months of November through June; (4) official observers are required on any harvesting trip; (5) an annual quota of 5,000 pounds landed wet weight; and (6) nets used to harvest *Sargassum* must be constructed of 4" stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.	

SUMMARY OF EFFECTS

Biological effects

The Comprehensive ACL Amendment proposes the implementation of a system of management benchmarks in the form of Annual Catch Targets (ACTs), Annual Catch Limits (ACLs), and Accountability Measures (AMs). The ACLs are derived from Acceptable Biological Catches (ABCs) recommended by the South Atlantic Council's Scientific and Statistical Committee (SSC). The amendment also proposes allocation of the catch between the commercial and recreational sectors for some snapper grouper species, dolphin, and wahoo; the allocations are necessary in order to develop sector-specific ACLs and ACTs.

The system of management benchmarks, accountability measures, and allocations (Snapper Grouper and Dolphin Wahoo) are being proposed for species in the Snapper Grouper, Dolphin Wahoo, and Golden Crab Fishery Management Units (FMUs) to meet new Magnuson-Steven Act requirements. The South Atlantic Council is specifying such a system for many of these species for the first time, including those in the Snapper Grouper FMU. For other species, such as those in the Dolphin Wahoo FMU, catch levels have been established; however, the South Atlantic Council proposes to update these values based upon the most recent scientific information.

In general, establishing such a system would be expected to have a beneficial effect to the biological environment, including the managed species as long as the quota monitoring system is sufficient to ensure the sector ACLs are not exceeded. More specifically, setting ACTs, ACLs, and AMs would provide a greater assurance that overfishing is prevented and the long-term average biomass is near or above the biomass when fishing at the maximum sustainable yield. The establishment of AMs would provide beneficial effects by establishing a mechanism to maintain harvest levels at or below the ACLs. Overall, the South Atlantic Council believes the implementation of this system is necessary to manage the resources sustainably.

Socio-economic effects

The establishment of ACLs is intended to reduce the risk of overfishing for those snapper grouper species that do not currently have them. For those stocks requiring biological protection, ACLs constrain existing catch levels to increase the long-run abundance of these stocks.

By constraining current harvest levels, ACLs may lead to short-run reductions in gross revenue for the commercial sector, but may also generate higher long-run gross revenue as annual allowable harvest levels are raised due to the reduction of the risk of overfishing. As the long-run abundance of these stocks increases, the potential for economic benefits and the likelihood of achieving Optimum Yield (OY) is improved. However, the magnitude of the actual economic benefits as well as whether and when OY is achieved will depend on the regulatory framework in place (e.g., quotas with

trip limits or some form of catch shares in the commercial sector case or bag limits versus season length in the recreational sector case) and the continued compliance with the ACLs. The quota monitoring systems must be sufficient to ensure the sector ACLs are not exceeded. Also, the resulting benefits will be a function of the actual behavioral response, which is presently unknown.

Establishing AMs for the commercial and recreational sectors is an administrative action and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

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1 Introduction

1.1 Background

Management of the federal snapper grouper, dolphin wahoo, golden crab, and *Sargassum* fisheries located off the South Atlantic in the 3-200 nautical mile (nm) U.S. Exclusive Economic Zone (**Figure 1-1**) is conducted under the fisheries' respective Fishery Management Plans (FMPs). The FMPs and their amendments were developed under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), other applicable federal laws, and executive orders and affect the management of 73 species of snapper grouper, two species of *Sargassum*, and dolphin, wahoo, and golden crab (**Table 1-1**; **Appendix I.** Other Applicable Laws).

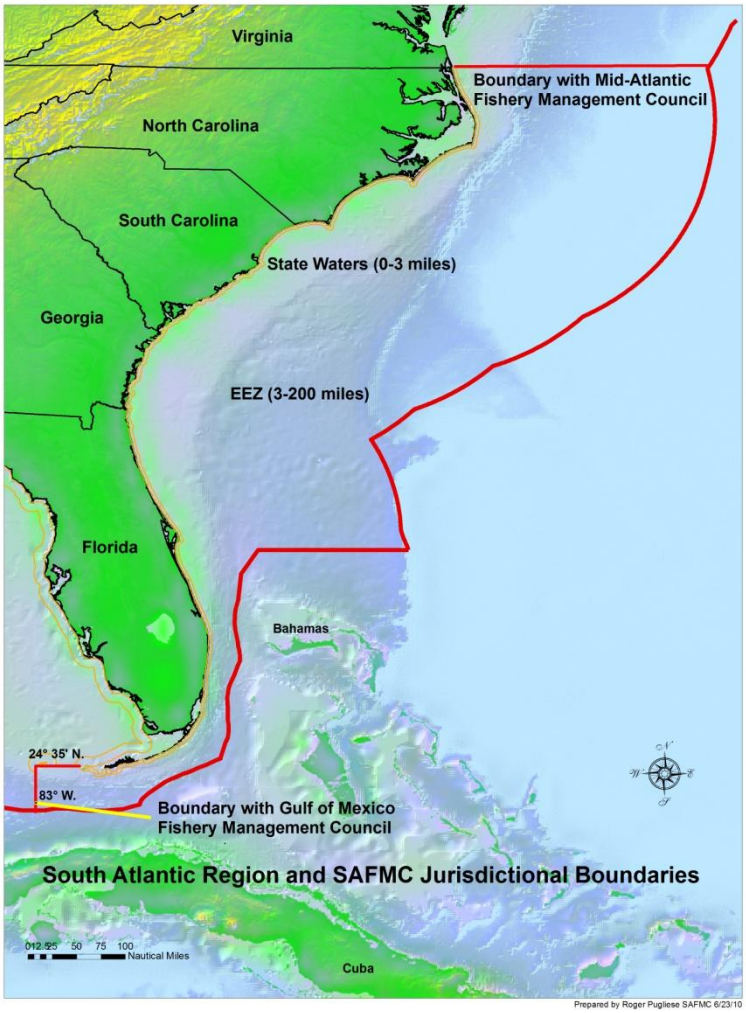

Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

Table 1-1. Species in the fishery management units for Snapper Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum.*

Snapper Grouper FMU
Almaco jack, *Seriola rivoliana*
Atlantic spadefish, *Chaetodipterus faber*
Banded rudderfish, *Seriola zonata*
Bank sea bass, *Centropristis ocyurus*
Bar jack, *Carangoides ruber*
Black grouper, *Mycteroperca bonaci*
Black margate, *Anisotremus surinamensis*
Black Sea Bass, *Centropristis striata*
Black snapper, *Apsilus dentatus*
Blackfin snapper, *Lutjanus buccanella*
Blue runner, *Caranx crysos*
Blueline tilefish, *Caulolatilus microps*
Bluestriped grunt, *Haemulon sciurus*
Coney, *Cephalopholis fulva*
Cottonwick, *Haemulon melanurum*
Crevalle jack, *Caranx hippos*
Cubera snapper, *Lutjanus cyanopterus*
Dog snapper, *Lutjanus jocu*
French grunt, *Haemulon flavolineatum*
Gag, *Mycteroperca microlepis*
Golden tilefish, *Lopholatilus chamaeleonticeps*
Goliath grouper, *Epinephelus itajara*
Grass porgy, *Calamus arctifrons*
Gray (mangrove) snapper, *Lutjanus griseus*
Gray triggerfish, *Balistes capriscus*
Graysby, *Cephalopholis cruentata*
Greater amberjack, *Seriola dumerili*
Hogfish, *Lachnolaimus maximus*
Jolthead porgy, *Calamus bajonado*
Knobbed porgy, *Calamus nodosus*
Lane snapper, *Lutjanus synagris*
Lesser amberjack, *Seriola fasciata*
Longspine porgy, *Stenotomus caprinus*
Mahogany snapper, *Lutjanus mahogoni*
Margate, *Haemulon album*
Misty grouper, *Epinephelus mystacinus*
Mutton snapper, *Lutjanus analis*
Nassau grouper, *Epinephelus striatus*
Ocean triggerfish, *Canthidermis sufflamen*
Porkfish, *Anisotremus virginicus*
Puddingwife, *Halichoeres radiatus*
Queen snapper, *Etelis oculatus*
Queen triggerfish, *Balistes vetula*
Red grouper, *Epinephelus morio*
Red hind, *Epinephelus guttatus*
Red porgy, *Pagrus pagrus*
Red snapper, *Lutjanus campechanus*
Rock hind, *Epinephelus adscensionis*
Rock Sea Bass, *Centropristis philadelphica*
Sailors choice, *Haemulon parra*
Sand tilefish, *Malacanthus plumieri*
Saucereye porgy, *Calamus calamus*
Scamp, *Mycteroperca phenax*
Schoolmaster, *Lutjanus apodus*
Scup, *Stenotomus chrysops*
Sheepshead, *Archosargus probatocephalus*
Silk snapper, *Lutjanus vivanus*
Smallmouth grunt, *Haemulon chrysargyreum*
Snowy Grouper, *Epinephelus niveatus*
Spanish grunt, *Haemulon macrostomum*
Speckled hind, *Epinephelus drummondhayi*
Tiger grouper, *Mycteroperca tigris*
Tomtate, *Haemulon aurolineatum*
Yellow jack, *Carangoides bartholomaei*
Yellowedge grouper, *Epinephelus flavolimbatus*
Yellowfin grouper, *Mycteroperca venenosa*
Yellowmouth grouper, *Mycteroperca interstitialis*
Yellowtail snapper, *Ocyurus chrysurus*
Vermilion snapper, *Rhomboplites aurorubens*
Warsaw grouper, *Epinephelus nigritus*
White grunt, *Haemulon plumierii*
Whitebone porgy, *Calamus leucosteus*
Wreckfish, *Polyprion americanus*

Dolphin Wahoo FMU
Dolphinfish *Coryphaena hippurus*
Wahoo *Acanthocybium solandri*

Golden Crab FMU
Chaceon fenneri

***Sargassum* FMU**
Sargassum fluitans
Sargassum natans

1.2 Purpose of the Proposed Action

The *purpose* of the Comprehensive Annual Catch Limit Amendment for the South Atlantic Region (Comprehensive ACL Amendment) is to implement measures expected to prevent overfishing and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. Optimum yield, the ultimate goal of any fishery management plan, is the portion of the fish stock that provides the greatest economic, social, and ecological benefit to the nation.

Measures include the implementation of the following items: 1) changes to the snapper grouper fishery management unit, including the removal of some species, designation of Ecosystem Component (EC) species, and the development of species groups; 2) acceptable biological catch (ABC) control rules; 3) annual catch limits (ACLs) and annual catch targets (ACT); 4) jurisdictional and sector allocations; 5) accountability measures (AMs); and 6) management measures necessary to ensure mortality is at or below the annual limits and targets.

1.3 Need for the Proposed Action

The *need* for action is to specify overfishing limits (OFLs), ACLs, and AMs, where needed, and comply with the Magnuson-Stevens Act requirements.

1.4. Process for Defining Limits and Targets

The South Atlantic Fishery Management Council (South Atlantic Council) is utilizing several tools to achieve OY for stocks addressed in this comprehensive amendment **(Table 1-2)**. These tools include a determination from the South Atlantic Council's Scientific and Statistical Committee (SSC) for ABC based on an ABC control rule. Another tool is the OFL, which is an estimate of the catch level above which overfishing is occurring. This value may stem from the outcome of a stock assessment and is equivalent to the yield at the maximum fishing mortality threshold (MFMT). An SSC may use other methods to estimate OFL in the absence of a stock assessment. The ABC is defined as the annual catch of a stock or stock complex that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and should be specified based on the ABC control rule. The South Atlantic Council is proposing an ACL for the stocks in the South Atlantic based on ABC. The ACL is an annual limit expressed in pounds or numbers of fish that serves as the basis for invoking AMs. AMs are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur (50 CFR 600.310 (g) (1)). The South Atlantic Council is proposing the implementation of AMs in this amendment. While AMs act to prevent overfishing in a fishery, the South Atlantic Council must specify actions in order to ensure that overfishing does not occur. **Figure 1-2** summarizes the generalized process to specify tools to achieve OY.

Table 1-2. A summary of the tools being used to achieve OY in this amendment. Source: National Standard 1 Guidelines (**Appendix J**) and NMFS Glossary (**Appendix B**).

Tool	Acronym	Who sets?	Definition
Overfishing Limit	OFL	SSC	An estimate of the catch level above which overfishing is occurring and is expressed in terms of numbers or weight of fish.
Acceptable Biological Catch	ABC	Council with advice of SSC	A level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty and should be specified based on the ABC control rule.
Annual Catch Limit	ACL	Council	The level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed the ABC, but may be divided into sector-ACLs.
Annual Catch Target	ACT	Council	The amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL.
Accountability Measures	AM	Council	Management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur.
Allocations	n/a	Council	Distribution of the quantity of catch, effort, or biomass among user groups or individuals.
Management Measures	n/a	Council	Actions that affect a resource and its exploitation with a view to achieve certain objectives, such as maximizing the production of that resource. Examples include catch quotas, bag limits, size limits, seasonal closures, and area closures.

Step 1. Council considers removing species from FMU and designating EC species
Step 2. SSC specifies OFL and recommends ABC
Step 3. Council implements ABC Control Rule
Step 4. Council specifies ACL
Step 5. Council divides ACL into sectors. Sector ACLs determined using allocations
Step 6. Council specifies Sector ACTs when needed, and may sub-divide within a sector
Step 7. Council determines management measures to keep total mortality (landings + release/discard mortality) less than or equal to sector ACTs
Step 8. Council determines sector accountability measures to keep total mortality below ACL and respond to overages of the ACL
Step 9. Council determines necessary data to implement and monitor ACLs, AMs, and management measures

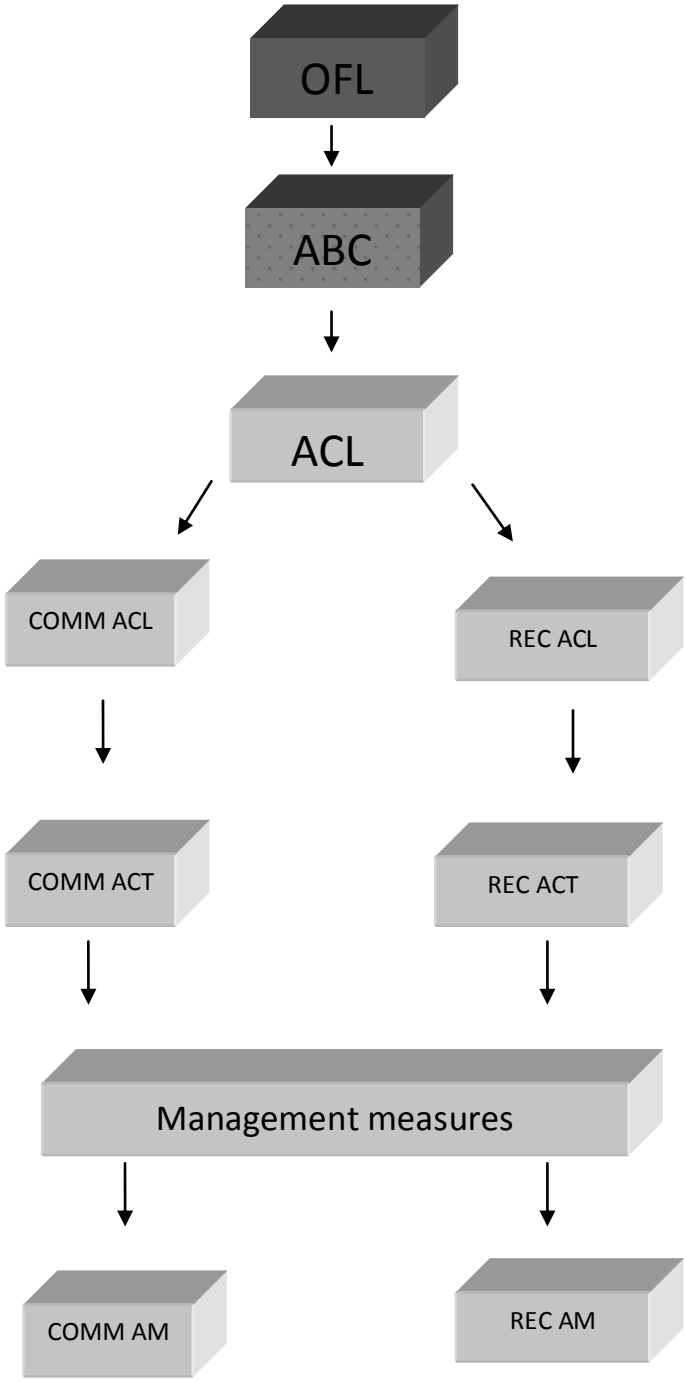

Figure 1-2. The process employed in the Comprehensive ACL Amendment. The South Atlantic Council is proposing allocating to two sectors (commercial and recreational) in this amendment.

SSC Designation of OFL and ABC

The Magnuson-Stevens Act in 2006 required specification of additional management criteria in federal fisheries management plans. These criteria include an OFL, an ACL, and appropriate AMs. The Magnuson-Stevens Act also stated that the fishery management council's SSCs should specify an ABC that is reduced from the OFL to address scientific uncertainty. The Magnuson-Stevens Act national standard 1 (NS1) suggests that the fishery management councils should establish a process for developing ABC control rules, and establishing ABC control rules based on scientific advice from their SSCs. ABC control rules should specify a level of separation between OFL and ABC that is based on scientific uncertainty in the estimate of OFL and the level of scientific knowledge about the stock. The SSC is charged with recommending an ABC to the Council based on the ABC control rule, while also having a role in advising fishery management councils on establishing the ABC control rule.

The following excerpts from the NS 1 guidelines describe the process for establishing ABCs:

Specification of ABC. ABC may not exceed OFL. Fishery management councils should develop a process for receiving scientific information and advice used to establish ABC. This process should identify the entity that will apply the ABC control rule (i.e., calculates the ABC), and identify the review process that will evaluate the resulting ABC. The SSC must recommend the ABC to the fishery management council. An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why. While the ABC is allowed to equal OFL, NOAA Fisheries Service expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year.

Expression of ABC. ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC.

ABC for overfished stocks. For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan.

ABC control rule. For stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule based on scientific advice from its SSC. The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50% and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed. The process of establishing an ABC control rule could also involve science advisors or the peer review process established under Magnuson-Stevens Act section 302(g)(1)(E). The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific

knowledge about the stock or stock complex and the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The ABC control rule should consider uncertainty in factors such as stock assessment results, time lags in updating assessments, the degree of retrospective revision of assessment results, and projections. The control rule may be used in a tiered approach to address different levels of scientific uncertainty.

The South Atlantic Council's SSC first discussed ABC control rules in June 2008. An issue paper outlining various alternative approaches to establishing ABC was provided to the South Atlantic Council in September 2008. The intent was to obtain initial feedback on control rules and the level of overfishing risk that the South Atlantic Council considered appropriate for various stock information levels. Control rule options were therefore presented in general terms rather than as specific alternatives and sub-alternatives. The South Atlantic Council supported further developing a control rule approach, which specified ABC as a function of yield at maximum sustainable yield (MSY) and assessment uncertainty. The South Atlantic Council further specified that ABC should be set at a level providing a 25% chance of overfishing, with a range of values corresponding to a 10 to 40% chance of overfishing.

While the approach suggested in September 2008 provided general guidance for assessed stocks for which the probability of overfishing can be provided in terms of yield, it did not address those stocks that lacked assessments and it did not explicitly account for varying levels of uncertainty in assessments. Therefore, the SSC requested a special meeting for March 2009 devoted solely to developing an ABC control rule that could be applied to all managed stocks and which would provide an objective means to evaluate levels of uncertainty. During that meeting, the SSC decided on general characteristics and components of the rule and developed a framework of dimensions and tiers. The SSC agreed that the ABC control rule should provide an objective means of determining the buffer between the overfishing level (typically MSY) and the ABC. The resulting approach, however, was only applicable when the OFL could be stated in fish weight and some measure of statistical uncertainty about the OFL could be estimated. Adjustments to the level of buffer for assessed species, which are not overfished, are based on the probability of overfishing, which can be reflected in yield through frequency distributions or a "P*" analysis.

Discussion of the general concept and approach led to creation of a system of dimensions composed of multiple tiers that are scored to provide a value that can be used to select the appropriate probability of overfishing for each stock. Each stock evaluated receives a single "adjustment factor", which is the sum of tier scores across dimensions and which ultimately determines the amount of buffer or separation between OFL and ABC. Adjustment factors are subtracted from the "base probability of overfishing" to provide the "critical probability". The base probability of overfishing is the value used to determine OFL. The critical probability is a probability of overfishing that is used to determine ABC in the same manner that the base probability is used to determine MSY and OFL. Through this process, tier scores equate to an adjustment in the probability of overfishing occurring, and do not represent, or necessarily correspond to, a specific poundage or percentage of the OFL. Recommended ABC values for assessed species are

derived from probability density functions that provide the probability of overfishing occurring for any particular yield.

At its December 2008 meeting, the SSC recommended that the ABC levels for overfished species be set consistent with the rebuilding plans for those species until they can be further amended using more updated scientific information. The SSC reaffirmed, at its April 2010 meeting, that "For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan."

Also at their April 2010 meeting, the SSC further developed the ABC control rule for stocks which are unassessed and for which no P* analyses are available. An alternative control rule was developed and presented to the South Atlantic Council in June 2010. However, some aspects of the proposed rule and its criteria were considered inappropriate considering guidance that the rule should account for scientific uncertainty. The South Atlantic Council ultimately rejected the unassessed stocks control rule as put forth by the SSC, and provided specific recommendations and guidance for further consideration. The SSC met again in August 2010 to reconsider the control rule for unassessed stocks. During this meeting, they developed a rule incorporating several tiers reflecting varying levels of data availability for the unassessed stocks. This approach was presented to the South Atlantic Council in September 2010 and the revised ABC control rule was used for both assessed and unassessed stocks. The SSC finalized their approach for specifying ABCs for unassessed species in April 2011 (**Table 1-3**). The South Atlantic Council is adopting the SSC's ABC control rule in **Action 4** of this amendment.

Table 1-3. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the ABC Control Rule (as of April 2011), proposed in **Action 4**.

1. Will catch affect stock? NO: Ecosystem Species (Council largely done this already, ACL amend). YES: GO to 2.
2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series. YES: Go to 3.
3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008. Bycatch/Incidental: If yes. Go to 4.
4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? what are the regulations? what is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Annual Catch Limits (ACLs) , Annual Catch Targets (ACTs), and Accountability Measures (AMs)

The Magnuson-Stevens Act also required that by 2010, FMPs for fisheries determined by the Secretary of Commerce to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective fishery management council's SSC or other established peer review processes. These FMPs also are required to establish within this timeframe, measures to ensure accountability. AMs are management controls that ensure that the ACLs are not exceeded; examples include corrective measures if overages occur and implementation of an in-season monitoring program. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements.

The South Atlantic Council is employing a step-wise decision-making process in setting ACLs, ACTs, and management measures to ensure harvest is at or below the ACL. The ACL is expressed in pounds or numbers of fish that serves as the basis for invoking AMs. Setting the ACL provides an opportunity to divide the total ACL into sector-specific ACLs, but this division is not required. The ACT is the target specified in pounds or numbers of fish. Specifying an ACT is optional and up to the discretion of the South

Atlantic Council. Catch includes fish that are retained for any purpose, as well as dead discards. For fisheries where bycatch estimates are not available in a timely enough manner to manage annual catch, targets may be specified for landings, as long as an estimate of bycatch is accounted for such that total of landings and bycatch will not exceed the stock's ACL.

The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations, the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. Therefore, the Comprehensive ACL Amendment includes a discussion of existing harvest level designations, which could be used by the South Atlantic Council to specify OFLs, ACLs, ACTs, ABCs, and AMs.

AMs are management controls to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. In-season AMs include prohibiting retention of species once the sector ACL is met or is projected to be met. Post-season AMs include shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACL in the subsequent fishing season to pay back ACL overages.

Modify management measures as needed to limit harvest to the ACL or ACT

The South Atlantic Council is responsible for choosing actions that ensure annual catches do not exceed the ACL to ensure overfishing does not occur. The Magnuson-Stevens Act required establishment of limits and targets for managed species undergoing overfishing by 2010 and for all other managed fisheries by 2011. To meet these mandates, the South Atlantic Council put in place Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) to the FMP for the Snapper Grouper Fishery of the South Atlantic Region, and is developing the current Comprehensive ACL Amendment, the Comprehensive Ecosystem-Based Amendment 2, as well as two joint amendments with the Gulf of Mexico Fishery Management Council (Amendment 18 to the FMP for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico and Amendment 10 to the FMP for Spiny Lobster in the Gulf of Mexico and South Atlantic). The NS1 guidelines, however, do not specify that management measures need to be put in place alongside the new limits and targets. Because the Comprehensive ACL Amendment sets limits for so many snapper grouper species, the South Atlantic Council chose not to address the implementation of additional management measures for snapper grouper species in this amendment. The public should be aware, however, that the South Atlantic Council intends to move quickly as the need arises to put in place additional management measures (i.e., bag limit changes, seasonal closures, etc.) to ensure that ACLs are not exceeded. Action for snapper grouper species can be taken through the Framework (modified through Amendment 17B to the Snapper Grouper FMP) to allow for any needed changes to ABC, ACL, ACT and AM, which is a more rapid process than a plan amendment. In addition, the current amendment establishes AMs to correct for ACL

overages. Given trends in landings over the recent years, the South Atlantic Council anticipates that some overages will occur in 2012. Thus, the public should expect some of the AMs put in place through this amendment to take effect in 2012 without any further action by the South Atlantic Council. For instance, the South Atlantic Council's preferred post-season AM to address an overage in the recreational ACL for greater amberjack, would be for the Regional Administrator to publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season. This AM would not require any further action by the South Atlantic Council to be implemented.

Removing Species From the Snapper Grouper FMU and Designating Others As Ecosystem Component Species

There are currently 73 species in the snapper grouper FMU. Some of these species are taken predominantly in state waters, or are rarely landed. The South Atlantic Council evaluated why the 73 species were originally included in the FMU, the need for federal management for species that are landed predominantly in state waters, and if infrequently taken species meet the criteria for removal from the FMU. The Council also considered designating some species as Ecosystem Components based on the criteria specified in the NS 1 guidelines.

Recreational Data

The Marine Recreational Information Program (MRIP) is modifying the catch estimation method for recreational harvest from 2004-2010 to address improvements identified for estimation algorithms. The modifications will address concerns raised in the 2006 National Resource Council review that estimation methods may not be consistent with the sampling probabilities of individually sampled access sites and could result in biased estimates. Revised estimation procedures have been developed and are undergoing review, and will be applied to existing data going back to 2004. Correction of estimates prior to 2004 will also be considered in the future.

Due to planned changes in the estimation procedure, MRIP estimates of recreational catch for 2004-2010 are likely to change. Estimates for 2011 and beyond will be based on the new method. Changes in recreational catch estimates for 2004-2010 raise several concerns for developing South Atlantic Council amendments, the Comprehensive ACL Amendment in particular, since the new MRIP values could result in changes to the values of ABC, OFL, and sector-based allocations and ACLs included in this document. If proposed ACL, ABC, OFL values are not updated with the new MRIP estimates, there could be a disjunction between the information used to set targets and limits and the information used to evaluate current conditions to determine if ACLs are met and AMs are triggered. As of September 2011, the new MRIP estimates had not yet been released.

While the South Atlantic Council is fully aware of these issues, the Reauthorized Magnuson-Stevens mandate of establishing ACLs and AMs by 2011 has not been revised to account for the impending change to recreational data. Hence, the South Atlantic Council and NOAA Fisheries Service must still meet the 2011 deadline to establish the required limits and targets. The South Atlantic Council will take action as needed via

plan amendment or framework amendment to revise the appropriate values as needed in 2012 and beyond.

1.5 History of Management

The South Atlantic fisheries are highly regulated; some of the species included in this amendment have been regulated since 1983. A detailed history of management for all species in the amendment may be found in **Appendix D**.

2 Actions and Alternatives

Section 2.1 outlines alternatives considered by the South Atlantic Fishery Management Council (South Atlantic Council) in this comprehensive amendment and compares their environmental consequences (described in detail in **Section 4.0**). These alternatives were identified and developed through multiple processes, including the scoping process, public hearings and/or comments, interdisciplinary plan team (IPT) meetings, and meetings of the South Atlantic Council, including its Committees and Advisory Panels (AP) for Snapper Grouper, Dolphin Wahoo, Golden Crab, Habitat, and the SSC. Species affected by the proposed actions and alternatives below include: 73 species in the snapper grouper complex, dolphin, wahoo, golden crab, and 2 species of *Sargassum*. Alternatives the South Atlantic Council considered but eliminated from detailed study during the development of this document are described in **Appendix A**.

2.1 Actions under the Snapper Grouper Fishery Management Plan (except wreckfish; black grouper non-ABC actions; and jurisdictional allocations for yellowtail and mutton snappers)

2.1.1 Action 1: Remove Species from the Snapper Grouper Fishery Management Unit (FMU)

Alternative 1 (No Action). Do not remove any species from the Snapper Grouper FMU.

Alternative 2 (Preferred). Remove species from the Snapper Grouper FMU with 95% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate		

Alternative 3. Remove species from the Snapper Grouper FMU with 90% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice	

Alternative 4. Remove species from the Snapper Grouper FMU with 80% (or greater) of landings in state waters, except hogfish and mutton snapper.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice
Graysby	Schoolmaster	Saucereye porgy	Puddingwife	Margate

Alternative 5 (Preferred). Remove all the species under the Florida Marine Life Species Rule from the Snapper Grouper FMU.

Queen triggerfish	Porkfish	Puddingwife

Alternative 6. Remove species with state and federal (combined) landings that are less than, or equal to 10,000 lbs (with the exception of speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Spanish grunt
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Puddingwife
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 7. Remove species with state and federal (combined) landings that are less than, or equal to 20,000 lbs (with the exception of cubera snapper, warsaw grouper, lesser amberjack and speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Puddingwife
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Bar jack
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	Ocean triggerfish
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	
Sand tilefish	Yellowfin grouper	Graysby	Sailors choice	Spanish grunt	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 8. Remove tomtate, knobbed porgy, jolthead porgy, and whitebone porgy from the Snapper Grouper FMU.

Tomtate Knobbed porgy Jolthead porgy Whitebone porgy

Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the Snapper Grouper FMU.

Tiger grouper Smallmouth grunt
Note: Zero landings for both species.

Table 2-1. Snapper grouper species listed in **Alternative 2 (Preferred)** with ≥95% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**98,080**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 2-2. Snapper grouper species listed in **Alternative 3** with ≥90% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,872,331**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 2-3. Snapper grouper species listed in **Alternative 4** with ≥80% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

COMMON NAME	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
	EEZ	State	EEZ	State	EEZ	State	EEZ	State	EEZ	State	EEZ	State	% State	MRFSS	HBS
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**
Schoolmaster	115	868	0	5,623	1,904	4,722	1,492	3,836	10	6,159	**3,521**	**21,208**	**86%**	**FL**	**FL**
Margate	1,727	28,788	2,676	18,025	3,071	18,104	1,815	4,650	3,721	5,283	**13,010**	**74,850**	**85%**	**FL**	**FL**
Saucereye porgy	139	4,453	591	769	325	0	0	0	0	223	**1,055**	**5,445**	**84%**	**FL**	**FL**
Graysby	1,624	8,722	2,620	7,266	530	4,428	1,099	8,132	1,219	1,953	**7,091**	**30,500**	**81%**	**FL**	**SC**

Source: SEFSC ACL and SE HBS CRNF datasets.*

*Note: **MRFSS**, **TPWD**, and **Commercial** data are from SEFSC ACL datasets and **HBS** data are from the SE HBS CRNF files. Therefore, **all sectors** are being considered for the state vs. federal landings analysis. Note that the CRNF files state vs. federal determination was based upon the headboat's "Distance from Shore" field. This field is sometimes not completed, and the weights of fish landed may not be very accurate. Additionally, the CRNF files may represent an incomplete landings dataset due to non-compliance with reporting requirements. As such, the landings values from the HBS component of the state vs. federal analysis will likely be underestimates of the total lbs landed and should not be substituted for the HBS landings data found within the SEFSC ACL dataset (which does not contain a state vs. federal breakout for headboat). Note ACL recreational dataset landings estimates may differ from MRFSS website queries because 'For Hire' includes headboat and charter, and SEFSC has used improved weight substitution and charter boat estimation procedures that differ from those on the MRFSS website. Note 'Atlantic' for recreational data includes MRFSS: SE Atl. states (NC-FLE) and Headboat: Atlantic (NC-FL Keys areas 1-17). Note gag and black grouper landings have been adjusted for misidentification prior to 1990.

Tiger grouper, black snapper, smallmouth grunt, misty grouper, and cottonwick did not have any reported landings. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest and sale is prohibited as per Amendment 17B.

Table 2-4. Total landings (lbs whole weight) of snapper grouper species under consideration for removal from the FMU in **Alternatives 2, 5,** and **9 (Preferreds)** under **Action 1**, and primary harvest location.
If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Queen triggerfish	5	0	3,503	3,503	Federal
Sheepshead	2	251,552	1,743,372	1,994,924	FL
Crevalle jack	2	208,540	551,131	759,671	FL
Black margate	2	0	86,428	86,428	FL
Bluestriped grunt	2	0	44,873	44,873	FL
Yellow jack	2	8	35,209	35,217	FL
Porkfish	2,5	0	20,756	20,756	FL
French grunt	2	0	1,142	1,142	FL
Grass porgy	2	0	791	791	FL
Puddingwife	2,5	0	418	418	FL
Spanish grunt	2	0	138	138	FL
Smallmouth grunt	9	0	0	0	N/A
Tiger grouper	9	0	0	0	N/A

Table 2-5. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 10,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325

Table 2-5. Continued. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)*
Coney	2,453
Queen triggerfish	3,503
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,423
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 2-6. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 20,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Queen triggerfish	3,503

Table 2-6. Continued. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)*
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,423
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511
Bar jack	10,726
Ocean triggerfish	10,962
Sand tilefish	11,168
Yellowfin grouper	12,930
Graysby	14,648
Sailors choice	19,239

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 2-7a. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location.
If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Yellowfin grouper	7	5,562	7,368	12,930	Federal
Scup	6,7	0	8,511	8,511	Federal
Queen snapper	6,7	4,804	282	5,086	Federal
Yellowmouth grouper	6,7	17	3,487	3,504	Federal
Queen triggerfish	5,6,7	0	3,503	3,503	Federal
Rock sea bass	6,7	609	1,716	2,325	FL
Misty grouper	6,7	1,833	0	1,834	Federal
Mahogany snapper	6,7	8	459	467	Federal
Longspine porgy	6,7	12	360	372	Federal
Black snapper	6,7	141	0	141	Federal
Sailors choice	3,4,7	0	19,239	19,239	FL
Graysby	4,6,7	520	14,129	14,648	FL

Table 2-7. Continued. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Sand tilefish	7	2,205	8,963	11,168	FL
Ocean triggerfish	7	0	10,962	10,962	FL
Bar jack	7	4,528	6,198	10,726	Federal
Dog snapper	6,7	528	5,930	6,458	FL
Schoolmaster	4,6,7	186	5,237	5,423	FL
Coney	6,7	8	2,445	2,453	Federal
Blackfin snapper	6,7	816	1,271	2,087	Federal
Saucereye porgy	4,6,7	0	1,975	1,975	FL
Bank sea bass	6,7	355	5,212	5,567	Federal
French grunt	2,3,4,6,7	0	1,142	1,142	FL
Grass porgy	2,3,6,7	0	791	791	FL
Puddingwife	2,3,4,5,6,7	0	418	418	FL
Spanish grunt	2,3,4,6,7	0	138	138	FL
Cottonwick	6,7	0	6	6	N/A
Smallmouth grunt	6,7	0	0	0	N/A
Tiger grouper	6,7	0	0	0	N/A

SOURCE: SEFSC ACL Datasets (2010).

Comparison of Alternatives

Landings of species in the alternatives are shown in **Tables 2-1** through **2-7**. Under **Alternative 1 (No Action)**, all 73 species in the snapper grouper FMU would remain subject to current federal regulations. Additionally, that alternative would make all 73 species subject to the ABC control rule the South Atlantic Council chooses to adopt in this comprehensive amendment to generate ACLs for managed species. Moreover, adoption of **Alternative 1 (No Action)** would imply that each of the 73 species in the snapper grouper FMU is in need of federal fishery conservation and management, including species for which few or no landings were recorded in federal waters between 2005-2009. **Alternatives 2, 5,** and **9 (Preferreds)** would remove select species from the snapper grouper FMU, using criteria intended to identify species that meet NMFS guidelines regarding the need for federal fishery conservation and management.

NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)): The importance of the fishery to the Nation and the regional economy; whether an FMP can improve the condition of the stock; extent to which the fishery could be or already is

adequately managed by states; whether an FMP can further the resolution of competing interests and conflicts; whether an FMP can produce more efficient utilization of the fishery; whether an FMP can foster orderly growth of a developing fishery; and costs of the FMP balanced against benefits. Based on these criteria, the South Atlantic Council has determined 13 species identified in **Alternatives 2, 5**, and **9 (Preferreds)** should be removed from the FMU. Greater than 95% of the landings of ten of these 13 species occur in state waters, and three species are already subject to management by the Florida Marine Life Rule. Thus, these species could be or already are adequately managed by the states. In addition, two species identified for removal have no commercial or recreational landings. The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (SAFE reports) to determine whether they should be added back into the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU. The South Atlantic Council evaluated whether the species included in the FMU could be considered as ecosystem component (EC) species (see **Action 2**), and determined six of the 73 species met criteria established for classification as EC species in the NS1 Guidelines.

The potential effects of **Alternatives 2, 5,** and **9 (Preferreds)** on bycatch are expected to be minimal in most cases because the species proposed for removal are not generally targeted or desired.

The biological effects (positive or negative) of **Alternatives 4** and **5 (Preferred)** are expected to be relatively minor. In addition, as the species listed in **Alternative 7** and **8** constitute about 1% of the total snapper grouper species, removal of these species from the FMU is not expected to have significant biological effects. Therefore, there is very little difference in the biological effects of **Alternatives 2, 5,** and **9 (Preferreds)**. Among the alternatives considered, **Alternatives 4** and **7** would have the greatest negative biological effect because they would remove the most species from the FMU.

The economic benefits associated with retaining management of the 13 snapper grouper species' effective landings would be relatively small. The impact of removing these landings from federal management under the preferred alternatives (**Preferred Alternatives 2, 5**, and **9**) would be reduced by other factors, such as the fact that individual states can still manage species directly if landings occur at ports within their respective jurisdictions. Further, removing species effectively managed by the states from the snapper grouper FMP is expected to result in more efficient management of all snapper grouper species. Specifically, the states will obtain management authority over snapper grouper species which they have more direct control over and federal authorities (SAFMC and NOAA Fisheries Service) will retain management over snapper grouper species which, to some or a large extent, fall within their jurisdiction and are harvested in relatively significant numbers based on landings. In turn, federal resources (labor and capital) could be used to more effectively manage the remaining snapper grouper species in the FMU. In general, the allocation of management authority over all snapper grouper species and thus the associated costs will more closely mirror the distribution of the resource.

The overall social effects of removal should be beneficial as management may be less encumbered with oversight of species that are not encountered or targeted on a regular basis and may still be accounted for through state landings. If budgets are reduced in the future, the removal of these species may lessen the burden of monitoring and assessment so that key species can continue to be assessed with the best available science through quality data collection.

Table 2-7b. Summary of effects under **Action 1**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action). Do not remove any species from the FMU	(+) No species removed from FMU.	(+-) Positive short-term socioeconomic impacts. Negative administrative impact.
Alternative 2 (Preferred). Remove species with ≥ 95% landings in state waters from the FMU	(+-) 10 species removed from FMU, minimal effect on bycatch mortality.	(+-) Would incur a lower level social and administrative impacts compared to **Alternatives 3, 4, 6, 7,** and **8**.
Alternative 3. Remove species with ≥ 90% landings in state waters from the FMU	(-) 11 species removed from FMU, possible increase in landings and bycatch mortality.	(+-)Would incur a lower level of social and administrative impacts compared to **Alternatives 4, 6, 7,** and **8**.
Alternative 4. Remove species with ≥ 80% landings in state waters from the FMU	(-) 15 species removed from FMU, possible increase in landings and bycatch mortality.	(+-) Highest net benefits over time in conjunction with **Alternatives 5, 6, 7,** and **8**.
Alternative 5 (Preferred). Remove species covered under the Florida Marine Life Species Rule from the FMU	(+) 3 species removed from FMU. Non-lethal methods of harvest, small landings.	(+) Would incur lowest level of socioeconomic impact because landings are small. Highest net benefits over time in conjunction with **Alternatives 4, 6, 7,** and **8**.
Alternative 6. Remove species with combined landings ≤ 10,000 lbs from the FMU	(-) 22 species removed from FMU, possible increase in landings and bycatch mortality.	(+-) Highest net benefits over time in conjunction with **Alternatives 4, 5, 7,** and **8**.
Alternative 7. Remove species with combined landings ≤ 20,000 lbs from the FMU	(-) Largest number of species (28) removed from FMU, possible increase in landings and bycatch mortality.	(+-) Highest net benefits over time in conjunction with **Alternatives 4, 6, 7,** and **8**.
Alternative 8. Remove tomtate, knobbed porgy, whitebone porgy, and jolthead porgy from the FMU.	(+-) Four species removed from FMU, small landings.	(+) Would incur a lower level of socioeconomic impact because landings are small. Highest net benefits over time in conjunction with **Alternatives 4, 5, 6,** and **7**.
Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the FMU.	(+) Two species with zero landings removed.	(+) Would not incur socioeconomic impact because landings are zero.

2.1.2 Action 2: Designate Ecosystem Component (EC) Species

Alternative 1 (No Action). Do not designate EC species.

Alternative 2. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 10,000 lbs, as EC species.

Alternative 3. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 1,000 lbs, as EC species.

Alternative 4. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 2,500 lbs, as EC species.

Alternative 5. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 5,000 lbs, as EC species.

Alternative 6 (Preferred). Designate snapper grouper species that meet three out of four NS1 criteria, as EC species.

Table 2-8. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as EC species.
A score of 0 indicates ecosystem criteria are met for the category. A total score of less than 2 suggests the species could be considered as an EC species. Thirteen species met this criterion, but seven overlapping species (highlighted in yellow) are excluded under the preferred alternatives in **Action 1**. Six EC candidate species qualified and are highlighted in green.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Almaco jack	1	0	1	1	3
Atlantic spadefish	1	0	1	1	3
Banded rudderfish	1	0	1	1	3
Bank sea bass	0	0	1	0	1
Bar jack	1	0	1	0	2
Black grouper	1	0	1	1	3
Black margate	1	0	1	1	3
Black sea bass	1	1	1	1	4
Black snapper	0	0	1	1	2
Blackfin snapper	0	0	1	1	2
Blue runner	1	0	1	1	3
Blueline tilefish	1	0	1	1	3
Bluestriped grunt	1	0	0	0	1

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Coney	0	0	1	1	2
Cottonwick	0	0	0	1	1
Crevalle jack	1	0	1	1	3
Cubera snapper	1	0	1	1	3
Dog snapper	0	0	1	1	2
French grunt	0	0	0	0	0
Gag	1	1	1	1	4
Grass porgy	0	0	1	0	1
Gray snapper	1	0	1	1	3
Gray triggerfish	1	0	0	1	2
Graysby	1	0	0	1	2
Greater amberjack	1	0	1	1	3
Hogfish	1	0	1	1	3
Jolthead porgy	1	0	1	1	3
Knobbed porgy	1	0	1	1	3
Lane snapper	1	0	0	1	2
Lesser amberjack	1	0	1	1	3
Longspine porgy	0	0	1	0	1
Mahogany snapper	0	0	1	1	2
Margate	1	0	1	0	2
Misty grouper	0	0	1	1	2
Mutton snapper	1	0	1	1	3
Ocean triggerfish	0	0	1	0	1
Porkfish	1	0	1	0	2
Puddingwife	0	0	1	0	1
Queen snapper	0	0	1	1	2
Queen triggerfish	0	0	1	0	1
Red grouper	1	1	1	1	4
Red hind	1	0	1	1	3
Red porgy	1	1	1	1	4
Red snapper	1	1	1	1	4
Rock hind	1	0	1	1	3
Rock sea bass	0	0	1	0	1
Sailors choice	1	0	1	0	2
Sand tilefish	1	0	1	0	2
Saucereye porgy	0	0	1	1	2

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Scamp	1	0	1	0	2
Schoolmaster	0	0	1	0	1
Scup	1	0	0	1	2
Sheepshead	1	0	1	1	3
Silk snapper	1	0	1	1	3
Smallmouth grunt	0	0	0	1	1
Snowy grouper	1	1	1	1	4
Spanish grunt	0	0	1	1	2
Tiger grouper	0	0	1	0	1
Tilefish (Golden)	1	1	1	1	4
Tomtate	1	0	0	1	2
Vermilion snapper	1	1	1	1	4
White grunt	1	0	0	1	2
Whitebone porgy	1	0	1	1	3
Yellow jack	1	0	1	0	2
Yellowedge grouper	1	0	1	1	3
Yellowfin grouper	1	0	1	1	3
Yellowmouth grouper	0	0	1	1	2
Yellowtail snapper	1	0	1	1	3
Wreckfish	1	0	1	1	3

In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Comparison of Alternatives

Most of the species in **Alternatives 2-6 (Preferred)** are subject to little management and are infrequently landed. Exceptions include the grouper (coney, misty grouper, yellowmouth grouper) and snapper species (dog snapper, mahogany snapper, blackfin snapper, and black snapper), which have limits on the number of individuals that can be retained by recreational fishermen. Furthermore, coney and yellowmouth grouper are included in the four-month spawning season closure for shallow water grouper species. Therefore, designating grouper (coney, misty grouper, and yellowmouth grouper) and snapper (mahogany snapper, blackfin snapper, dog snapper, and black snapper) species through proposed actions in **Alternatives 2-5** could result in increased harvest (albeit small) of the species by commercial and recreational fishermen since they would no

longer be subject to management. Therefore, the beneficial biological effects for these species would be greatest for **Alternative 1 (No Action)** and would be least for **Alternative 2**.

In general, the net economic effects of designating species as EC species in the snapper grouper FMU are expected to be beneficial. More specifically, net economic benefits are expected to be maximized under **Alternative 6 (Preferred)** relative to the other alternatives. Since the designation of species as EC species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net benefits are the result of indirect rather than direct economic effects.

The overall social effects should be positive for both recreational and commercial sectors as these species will not require unnecessary management thresholds that could trigger further management for species that are rarely encountered.

Table 2-9. Summary of effects under **Action 2** (assumes removal of species under preferreds in **Action 1**).

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action). Do not designate EC species	(+) No species designated as EC. Highest biological benefits.	(+-) Least reduction in administrative costs.
Alternative 2. Designate snapper grouper species with combined landings ≤10,000 lbs, as EC species	(-) 4 species designated as EC. Least beneficial impacts.	(+-) Higher benefits compared to **Alternatives 3-5.**
Alternative 3. Designate snapper grouper species with combined landings ≤ 1,000 lbs, as EC species.	(+-) 2 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+-) Higher beneficial impacts compared to **Alternative 1 (No Action).**
Alternative 4. Designate snapper grouper species with combined landings ≤ 2,500 lbs, as EC species.	(+-) 3 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+-) Higher benefits compared to **Alternatives 5** and **3**.
Alternative 5. Designate snapper grouper species with combined landings ≤ 5,000 lbs, as EC species.	(+-) 3 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+-) Higher benefits compared to **Alternative 3**.
Alternative 6 (Preferred). Designate snapper grouper species that meet three out of four NS 1 criteria, as EC species.	(+-) 6 species designated as EC. Possible small increase in harvest since species no longer subject to management.	(+) Highest net benefits. Highest reduction in administrative costs.

2.1.3 Action 3: Establish Species Groupings for Snapper Grouper Species

Alternative 1 (No Action). Do not establish multi-species groupings for the Snapper Grouper FMU.

Alternative 2. Establish species groups (**Table 2-10**) for the Snapper Grouper FMU using associations based on life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. Establish sub-complexes within species complexes. Complex and/or sub-complex ACLs will be a sum of the individual ACLs included in that complex (all sectors combined) and/or sub-complex. When a complex ACL is exceeded, all species in that complex, as well as those in sub-complexes will be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex will be subject to AMs.

Table 2-10. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Deepwater Complex	Deepwater Subcomplexes	Individual ACLs w/o Complex
Yellowedge grouper	Yellowedge grouper	Atlantic spadefish
Snowy grouper$_1$	Snowy grouper$_1$	Bar jack
Golden tilefish$_1$	Golden tilefish$_1$	Black sea bass$_1$
Blueline tilefish	Blueline tilefish	Blue runner
Silk Snapper	Silk Snapper	Goliath grouper$_{1,3}$
Misty grouper$_2$	Misty grouper$_2$	Gray triggerfish
Sand tilefish	Sand tilefish	Hogfish$_1$
Queen snapper	Queen snapper	Nassau grouper$_3$
Black snapper	Black snapper	Red snapper$_{1,3}$
Blackfin snapper	Blackfin snapper	Speckled hind$_3$
Jacks Complex	**Jacks Subcomplexes**	Vermilion snapper$_1$
Greater amberjack$_1$	Greater amberjack$_1$	Warsaw grouper$_3$
Almaco jack	Almaco jack	Wreckfish
Banded rudderfish	Banded rudderfish	
Lesser amberjack$_2$	Lesser amberjack$_2$	

Table 2-10. Continued. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Snappers Complex	Snappers Subcomplexes
Yellowtail snapper$_1$	Yellowtail snapper$_1$
Mutton snapper$_1$	Mutton snapper$_1$
Gray snapper	Gray snapper
Lane snapper	Lane snapper
Cubera snapper$_2$	Cubera snapper$_2$
Dog snapper	Dog snapper
Mahogany snapper	Mahogany snapper
Grunts Complex	**Grunts Subcomplex**
White grunt	White grunt
Sailors choice$_2$	Sailors choice$_2$
Tomtate	Tomtate
Margate	Margate
Shallow-Water Groupers Complex	**Shallow-Water Groupers Subcomplexes**
Gag$_{1,2}$	Gag$_{1,2}$
Red grouper$_1$	Red grouper$_1$
Black grouper$_1$	Black grouper$_1$
Scamp	Scamp
Red hind	Red hind
Rock hind	Rock hind
Yellowmouth grouper	Yellowmouth grouper
Yellowfin grouper	Yellowfin grouper
Coney	Coney
Graysby	Graysby
Porgies Complex	**Porgies Subcomplexes**
Red porgy$_1$	Red porgy$_1$
Jolthead porgy	Jolthead porgy
Knobbed porgy	Knobbed porgy
Saucereye porgy$_2$	Saucereye porgy$_2$
Scup	Scup
Whitebone porgy$_2$	Whitebone porgy$_2$

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Alternative 3. Establish species groups (**Table 2-11**) for the Snapper Grouper FMU based on similar life histories. (indicator species in bold).

Table 2-11. Complexes (units) for snapper grouper species under the **Alternative 3** species grouping approach.

SHALLOW WATER GROUPER	**JACK UNIT**
UNIT 1	**Greater amberjack**
Gag	Almaco jack
Red grouper	Banded rudderfish
Black grouper	Lesser amberjack
Scamp	Bar jack
Red hind	Blue runner
Rock hind	**GRUNT AND PORGY UNIT**
Yellowmouth grouper	**UNIT 1**
Yellowfin grouper	**White grunt**
Coney	Sailor's choice
Graysby	Tomtate
UNIT 2	Margate
Goliath grouper	
UNIT 3	**UNIT 2**
Nassau grouper	**Red porgy**
DEEP WATER GROUPER UNIT	Jolthead porgy
Snowy grouper	Knobbed porgy
Yellowedge grouper	Saucereye porgy
Speckled hind	Scup
Warsaw grouper	Whitebone porgy
Misty grouper	**SEA BASS UNIT**
TILEFISH UNIT	**Black sea bass**
Golden tilefish	**SHALLOW WATER SNAPPER AND WRASSE UNIT**
Blueline tilefish	**Yellowtail snapper**
Sand tilefish	**Mutton snapper**
WRECKFISH	Gray snapper
Wreckfish	Lane snapper
MID-SHELF SNAPPER UNIT	Cubera snapper
Vermilion snapper	Dog snapper
Red snapper	Mahogany snapper
Silk Snapper	Hogfish
Queen snapper	**TRIGGERFISH AND SPADEFISH UNIT**
Black snapper	**Gray triggerfish**
Blackfin snapper	Atlantic spadefish

Alternative 4 (Preferred). Establish single species ACLs and grouped species complexes for the establishment of ACLs (**Table 2-12**). Single species ACLs would be established for assessed and targeted species, species where ACL=0, and species that cannot be placed in a complex based on the criteria below. Complexes for groups of species would be established for other species using associations based on one or more of the following: life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. When a complex ACL is exceeded, all species in that complex will be subject to AMs. When an individual ACL is exceeded, the individual stock will be subject to AMs.

Table 2-12. Complexes (gray) and individual ACLs (white) for snapper grouper species under the **Alternative 4 (Preferred)** species grouping approach.

Deepwater Complex	Individual ACLs
Yellowedge grouper	Atlantic spadefish
Blueline tilefish	Greater amberjack$_1$
Silk Snapper	Blue runner
Misty grouper$_2$	Bar jack
Sand tilefish	Gray triggerfish
Queen snapper	Snowy grouper$_1$
Black snapper	Golden tilefish$_1$
Blackfin snapper	Warsaw grouper$_3$
Jacks Complex	Wreckfish
Almaco jack	Scamp
Banded rudderfish	Gag$_1$
Lesser amberjack$_2$	Red grouper$_1$
Snappers Complex	Goliath grouper$_{1,3}$
Gray snapper	Nassau grouper$_3$
Lane snapper	Black sea bass$_1$
Cubera snapper$_2$	Black grouper$_1$
Dog snapper	Speckled hind$_3$
Mahogany snapper	Red porgy$_1$
Grunts Complex	Hogfish$_1$
White grunt	Yellowtail snapper$_1$
Sailors choice$_2$	Red snapper$_{1,3}$
Tomtate	Vermilion snapper$_1$
Margate	Mutton snapper$_1$
Shallow-Water Groupers Complex	Porgies
Red hind	Jolthead porgy
Rock hind	Knobbed porgy
Yellowmouth grouper	Saucereye porgy$_2$
Yellowfin grouper$_2$	Scup
Coney	Whitebone porgy$_2$
Graysby	

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Comparison of Alternatives

The Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires regional fishery management councils to implement ACLs and accountability measures (AMs) for all stocks under federal management by 2011 to ensure overfishing does not occur. **Alternative 1 (No Action)** would not accomplish this since stock assessments and values for determining overfished/overfishing status are not available for many of these species. **Alternatives 2, 3,** and **4 (Preferred)** would help to accomplish the Magnuson-Stevens Act goal of ensuring overfishing does not occur, with **Alternative 2** and **Alternative 4 (Preferred)** having the highest potential of yielding the best biological effect. Similar to **Alternative 2**, the approach in **Alternative 4 (Preferred)** helps prevent overfishing of all species in stock complexes while mitigating variability in landings data by combining species into a single, complex-level ACL. **Alternative 2** and **Alternative 4 (Preferred)** also allow individual ACL management of assessed or prohibited species. This approach streamlines and simplifies ACL management, and provides an incentive to move stocks up the scientific and statistical committee's (SSC) ABC tiers by promoting individual ACLs for species with completed assessments. Additionally, **Alternative 4 (Preferred)** promotes attaining optimum yield (OY) for assessed stocks while providing a mechanism to prevent overfishing of the unassessed stocks, which are potentially less productive and/or more vulnerable. The approach proposed in **Alternative 4 (Preferred)** is relatively simple and carries a minimal administrative burden with regards to quota monitoring as compared to the other alternatives. The proposed establishment of species complexes in **Alternative 2** and **Alternative 4 (Preferred)** explicitly considered discard information when available (**Appendix O**).

Administrative costs arise from fishery management and the required scientific research to support management. Administrative costs would be greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. Relative to **Alternative 1 (No Action)**, the reduction in number of species with ACLs and thus expected administrative costs is 64% under **Alternative 3**, 24% under **Alternative 4 (Preferred)**, and 12% under **Alternative 2**. Since the methodology under **Alternative 2** is considered more scientifically complex, and thus more costly in terms of research costs, relative to **Alternative 4 (Preferred)**, the difference in administrative costs is even greater than the difference in the number of ACLs suggests. On the other hand, the probability of triggering an AM action in the future is inversely related to the number of ACLs, all else being equal. Thus, the probability of triggering an AM action in the future would be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. AM actions in the future are expected to generate adverse indirect economic effects on fishery participants. Thus, total expected economic costs are expected to be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**.

Although quantitative estimates of the expected net economic benefits cannot be generated for these alternatives, a qualitative assessment based on the available information can be conducted. An analysis of the information discussed above suggests that expected net economic benefits would be greatest under **Alternative 4 (Preferred)**, followed by **Alternative 2**, **Alternative 3**, and **Alternative 1 (No Action)**. However, this conclusion must be cautioned by the fact that it is unknown how fishing behavior will be altered under the different species grouping methodologies and potential AMs in the future.

It is difficult to determine what the social effects would be from species groupings as many of the impacts would come from the thresholds for ACLs that are determined for each species group as a result. If thresholds are set lower than actual harvest rates, then there will be negative social impacts as species complexes are closed, forcing fishermen to switch to other species, use catch and release only, or not fish at all. Catch and release could increase discards/bycatch mortality and not fishing at all could have negative impacts on local economies.

If the number of ACLs in the snapper grouper FMU can be reduced by incorporating species complexes and groupings, the administrative impacts of establishing, monitoring, and implementing ACLs, ACTs, and AMs will be reduced.

Table 2-13. Summary of effects under **Action 3**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action).	(-) No species groups. ACLs/AMs required for all 73 species. Stock assessments and SDC are not available for many of these species.	(+-) Smallest net economic benefits.
Alternative 2.	(+) Species grouped into complexes/sub-complexes, and individual ACLs. ACLs/AMs will apply to species included in groups.	(+-) Benefits between **Alternative 1 (No Action)** and **Alternative 3**.
Alternative 3.	(+) Species grouped into complexes/sub-complexes, and individual ACLs, less quantitative analysis compared with **Alternative 2**.	(+-) Benefits lower than Alternative 3, but greater than **Alternatives 1 (No Action)** and **2**.
Alternative 4 (Preferred).	(+) Species grouped into complexes and individual ACLs. ACLs/AMs will apply to species included in groups.	(+-) Greatest net economic benefits.

2.1.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species

Alternative 1 (No Action). Do not establish an ABC Control Rule for species in the Snapper Grouper FMU.

Alternative 2. Where applicable, establish an ABC Control Rule where ABC equals OFL.

Alternative 3. For unassessed species: establish an ABC Control Rule where ABC equals a percentage of OFL or a percentage of the median landings 1999-2008, as appropriate.

Subalternative 3a. ABC=65% (OFL or median landings 1999-2008)
Subalternative 3b. ABC=75% (OFL or median landings 1999-2008)
Subalternative 3c. ABC=85% (OFL or median landings 1999-2008)
Subalternative 3d. ABC=95% (OFL or median landings 1999-2008)

Alternative 4. For assessed species: establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

Subalternative 4a. ABC=yield at 65%MFMT
Subalternative 4b. ABC=yield at 75%MFMT
Subalternative 4c. ABC=yield at 85%MFMT

Alternative 5. For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 2-14**. For unassessed species: adopt the South Atlantic Council SSC's Control Rule in **Table 2-14** but establish an interim ABC = median landings 1999-2008 and OFL = unknown until the SSC's control rule can be fully applied.

Alternative 6. For assessed species: establish ABCs based on the South Atlantic's SSC's ABC control rule. For unassessed species: Adopt the Gulf of Mexico Council SSC's ABC Control Rule for unassessed species as described in **Table 2-15**. The indicated default ABC buffer levels for Tier 3a and 3b are to be used unless specified otherwise by the Council on a stock by stock basis.

Alternative 7 (Preferred). For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 2-14**. Recommended ABC values are shown in **Table 2-18.** For unassessed species: When the ABC control rule portion for unassessed species is complete, establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 2-14**. Until the ABC Control Rule is complete, establish ABCs based upon the approach in **Table 2-16** and OFL = unknown. Recommended ABC values are shown in **Table 2-17**.

Table 2-14. The South Atlantic Council's SSC's ABC control rule.
Note: The ABC control rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension. See **Appendix Q** for details on the methodology.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. Assessment Information (10%)	1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%) 2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%) 3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%) 4. Reliable catch history. (7.5%) 5. Scarce or unreliable catch records. (10%)
2. Uncertainty Characterization (10%)	1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%) 2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%) 3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%) 4. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%) 5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. Stock Status (10%)	1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%) 2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%) 3. Stock is either overfished or overfishing. (5%) 4. Stock is both overfished and overfishing. (7.5%) 5. Either status criterion is unknown. (10%)
4. Productivity and Susceptibility – Risk Analysis (10%)	1. Low risk. High productivity, low vulnerability, low susceptibility. (0%) 2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%) 3. High risk. Low productivity, high vulnerability, high susceptibility. (10%)
Level 2 - Unassessed Stocks. Reliable landings and life history information available	
OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible.	
Level 3 - Unassessed Stocks. Inadequate data to support DBSRA	
ABC derived directly, from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.	
Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA	
OFL and ABC derived on a case-by-case basis. ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC.	

Table 2-15. The Gulf of Mexico Fishery Management Council's (Gulf of Mexico Council) SSC's ABC control rule for unassessed species.
Note: The South Atlantic Council is only considering Tiers 3a and 3b in **Alternative 6**.

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. a. Risk of exceeding OFL = 45% b. Risk of exceeding OFL = 35% c. Risk of exceeding OFL = 25% (default level for unassigned stocks) d. Risk of exceeding OFL = 15% Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.

Table 2-15. Continued. The Gulf of Mexico Fishery Management Council's (Gulf of Mexico Council) SSC's ABC control rule for unassessed species.

ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as: a. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) b. ABC = mean of the landings plus 1.0 * standard deviation (default) (risk of exceeding OFL = 16%) c. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) d. ABC = mean of the landings (risk of exceeding OFL = 2.3%)
Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: e. ABC = 100% of OFL f. ABC = 85% of OFL g. ABC = 75% of OFL (default level for unassigned stocks) h. ABC = 65% of OFL

*Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.

Table 2-16. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the ABC control rule (**Table 2-14**).

1. Will catch affect stock? NO: Ecosystem Species (Council largely done this already, ACL amend) YES: GO to 2
2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series. YES: Go to 3
3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes. Go to 4.
4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? what are the regulations? what is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Table 2-17. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.
The table excludes species that would be removed from the FMU (**Action 1**) and those proposed for designation as Ecosystem Component (EC) species (**Action 2**). OFL is unknown.

Species Common Name	Preferred Alt. 7 ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)
Yellowedge grouper	30,221[1]
Blueline tilefish	592,602[4]
Silk Snapper	27,519[1]
Misty grouper	2,863[3]
Sand tilefish	8,823[3]

Table 2-17. Continued. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.

Species Common Name	Preferred Alt. 7 ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)
Queen snapper	9,344[3]
Black snapper	382[3]
Blackfin snapper	4,154[3]
Almaco jack	291,922[2]
Banded rudderfish	152,999[2]
Lesser amberjack	10,568[2]
Gray snapper	894,019[2]
Lane snapper	153,466[2]
Cubera snapper	31,772[2]
Dog snapper	7,523[3]
Mahogany snapper	160[3]
White grunt*	635,899[1]
Sailors choice	35,266[3]
Tomtate	70,948[3]
Margate	34,662[3]
Red hind	25,885[2]
Rock hind	37,569[2]
Yellowmouth grouper	4,661[3]
Yellowfin grouper	9,258[3]
Coney	2,589[3]

Table 2-17. Continued. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.

Species Common Name	Preferred Alt. 7 ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)
Graysby	17,856[3]
Jolthead porgy	42,533[3]
Knobbed porgy	61,194[3]
Saucereye porgy	4,205[3]
Scup	8,9993
Whitebone porgy	30,6843
Atlantic spadefish	282,8412
Blue runner	1,289,9412
Bar jack	20,5203
Gray triggerfish*	672,5652
Nassau grouper	0
Goliath grouper	0
Scamp	492,5721
Hogfish	147,6382

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]ABC based on median landings (1999-2008) as per South Atlantic SSC; [2]ABC based on 3rd highest landings (1999-2008) as per South Atlantic SSC; [3]ABC proxy value based on the South Atlantic SSC's ABC control rule, to be discussed by the South Atlantic SSC at a later date; and [4]ABC based on modified approach as per South Atlantic SSC.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 2-18. ABCs (landed catch) for assessed snapper grouper species. ABCs are being adopted in this amendment for greater amberjack, yellowtail snapper, mutton snapper, and black grouper.

Species[1]	ABC
Black sea bass	847,000 lbs ww
Gag	949,000 lbs ww
Snowy grouper	102,960 lbs ww
Red porgy	395,304 lbs ww
Vermilion snapper	1,109,000 lbs ww
Greater amberjack	1,968,000 lbs ww
Yellowtail snapper[2]	2,173,875 lbs ww
Mutton snapper[2]	926,600 lbs ww
Black grouper[2,3]	245,595 lbs ww
Red grouper[4]	622,000 lbs ww

[1] The SSC chose not to specify an ABC for golden tilefish in June 2009 because the age of the 2004 assessment and lack of a current estimate of abundance. In April 2010, however, the SSC provided an ABC recommendation of 311,000 lbs. A new ABC will be provided for golden tilefish through SEDAR 25 in December 2011. The Council will take action to adopt the new ABC for golden tilefish in Amendment 18B, currently under development.
[2] Values for ABC for black grouper, yellowtail snapper and mutton snapper are for South Atlantic only (see **Actions 13 18** and **19** for jurisdictional separation of ABC between the South Atlantic and Gulf of Mexico)
[3] ABC recommended by the Gulf Council's SSC
[4] ABC recommended by South Atlantic's SSC, but may change in Amendment 24.

Table 2-19. ABC values for unassessed species, which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2, 3** and **5**.
The table excludes species that would be removed from the FMU (**Action 1**). OFL is unknown.

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Yellowedge grouper	30,221	n/a	19,643	22,665	25,687	28,710
Blueline tilefish	146,134	n/a	94,987	109,600	124,214	138,827
Silk Snapper	27,519	n/a	17,887	20,639	23,391	26,143
Misty grouper	2,346	n/a	1,525	1,760	1,994	2,229
Sand tilefish	6,353	n/a	4,130	4,765	5,400	6,036
Queen snapper	7,584	n/a	4,930	5,688	6,446	7,205
Black snapper	229	n/a	149	171	194	217
Blackfin snapper	2,154	n/a	1,400	1,615	1,830	2,046
Almaco jack	229,236	n/a	149,004	171,927	194,851	217,775
Banded rudderfish	119,916	n/a	77,945	89,937	101,928	113,920
Lesser amberjack	7,490	n/a	4,869	5,618	6,367	7,116
Gray snapper	769,475	n/a	500,159	577,107	654,054	731,002
Lane snapper	114,395	n/a	74,357	85,797	97,236	108,676
Cubera snapper	22,362	n/a	14,535	16,771	19,007	21,244
Dog snapper	2,586	n/a	1,681	1,940	2,198	2,457
Mahogany snapper	53	n/a	34	40	45	50
White grunt*	635,899	n/a	413,335	476,925	540,514	604,104
Sailors choice	18,458	n/a	11,998	13,844	15,689	17,535
Tomtate	64,454	n/a	41,895	48,341	54,786	61,231
Margate	25,412	n/a	16,518	19,059	21,600	24,142
Red hind	24,406	n/a	15,864	18,304	20,745	23,185
Rock hind	32,792	n/a	21,315	24,594	27,873	31,152
Yellowmouth grouper	2,147	n/a	1,396	1,610	1,825	2,040
Yellowfin grouper	4,414	n/a	2,869	3,310	3,752	4,193
Coney	1,975	n/a	1,284	1,481	1,678	1,876
Graysby	16,265	n/a	10,573	12,199	13,826	15,452
Jolthead porgy	32,829	n/a	21,339	24,622	27,905	31,188

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Knobbed porgy	45,912	n/a	29,843	34,434	39,025	43,616
Saucereye porgy	2,952	n/a	1,919	2,214	2,509	2,805
Scup	6,579	n/a	4,276	4,934	5,592	6,250
Whitebone porgy	24,715	n/a	16,065	18,537	21,008	23,480
Atlantic spadefish	231,056	n/a	150,187	173,292	196,398	219,503
Blue runner	1,007,120	n/a	654,628	755,340	856,052	956,764
Bar jack	10,009	n/a	6,506	7,507	8,508	9,509
Gray triggerfish*	529,309	n/a	344,051	396,981	449,912	502,843
Scamp	492,572	n/a	320,172	369,429	418,686	467,944
Hogfish	133,136	n/a	86,539	99,852	113,166	126,479
Goliath grouper	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 2-20a. Gulf of Mexico Council's SSC ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic Council jurisdiction]. Tier 3a from **Table 2-15**.

Species Common Name	OFL (Mean + 2 SD)	Mean + 0.5 SD	Mean + 1 SD (Default)	Mean + 1.5 SD
Yellowedge grouper	52,025	35,458	40,980	46,503
Blueline tilefish	747,365	392,193	510,584	628,975
Silk Snapper	69,988	42,887	51,921	60,954
Misty grouper	4,518	2,813	3,381	3,950
Sand tilefish	18,775	10,576	13,309	16,042
Queen snapper	17,090	10,095	12,427	14,759
Black snapper	604	309	407	506
Blackfin snapper	6,113	3,626	4,455	5,284
Almaco jack	366,092	261,828	296,583	331,338
Banded rudderfish	212,007	147,439	168,962	190,485
Lesser amberjack	17,566	11,114	13,264	15,415
Gray snapper	1,104,046	875,775	951,865	1,027,955
Lane snapper	184,619	140,153	154,975	169,797
Cubera snapper	54,401	30,935	38,757	46,579
Dog snapper	15,697	7,763	10,408	13,053
Mahogany snapper	3,020	1,192	1,802	2,411
White grunt*	773,769	675,044	707,952	740,860
Sailors choice	49,021	28,946	35,638	42,329
Tomtate	100,360	74,989	83,446	91,903
Margate	59,750	35,930	43,870	51,810
Red hind	30,162	24,771	26,568	28,365
Rock hind	47,791	35,886	39,854	43,823
Yellowmouth grouper	9,704	4,722	6,383	8,044
Yellowfin grouper	33,789	15,197	21,395	27,592
Coney	3,956	2,259	2,825	3,390
Graysby	29,763	19,075	22,638	26,200
Jolthead porgy	63,190	43,307	49,934	56,562
Knobbed porgy	76,545	56,714	63,325	69,935
Saucereye porgy	5,937	3,821	4,526	5,232
Scup	14,904	8,572	10,682	12,793
Whitebone porgy	39,634	28,016	31,889	35,761
Atlantic spadefish	577,785	347,101	423,996	500,890
Blue runner	1,534,169	1,116,354	1,255,626	1,394,897
Bar jack	27,908	16,316	20,180	24,044
Gray triggerfish*	873,883	641,940	719,255	796,569
Scamp	642,258	522,282	562,274	602,266
Hogfish	208,964	152,939	171,614	190,289
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Table 2-20b. Gulf of Mexico Council's SSC ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic Council jurisdiction]. Tier 3b from **Table 2-15**.

Species Common Name	OFL (Mean)	85% OFL	75% OFL (Default)	65% OFL
Yellowedge grouper	29,936	25,445	22,452	19,458
Blueline tilefish	273,802	232,732	205,352	177,971
Silk Snapper	33,854	28,776	25,390	22,005
Misty grouper	2,244	1,908	1,683	1,459
Sand tilefish	7,844	6,667	5,883	5,098
Queen snapper	7,763	6,599	5,822	5,046
Black snapper	211	179	158	137
Blackfin snapper	2,798	2,378	2,098	1,818
Almaco jack	227,074	193,013	170,305	147,598
Banded rudderfish	125,917	107,029	94,438	81,846
Lesser amberjack	8,963	7,618	6,722	5,826
Gray snapper	799,685	679,732	599,764	519,795
Lane snapper	125,331	106,531	93,998	81,465
Cubera snapper	23,113	19,646	17,335	15,023
Dog snapper	5,119	4,351	3,839	3,327
Mahogany snapper	583	496	438	379
White grunt*	642,136	545,816	481,602	417,388
Sailors choice	22,255	18,916	16,691	14,466
Tomtate	66,533	56,553	49,900	43,246
Margate	27,990	23,791	20,992	18,193
Red hind	22,974	19,528	17,231	14,933
Rock hind	31,918	27,130	23,938	20,746
Yellowmouth grouper	3,062	2,603	2,296	1,990
Yellowfin grouper	9,000	7,650	6,750	5,850
Coney	1,694	1,440	1,270	1,101
Graysby	15,513	13,186	11,635	10,083
Jolthead porgy	36,679	31,177	27,509	23,841
Knobbed porgy	50,104	42,588	37,578	32,568
Saucereye porgy	3,115	2,648	2,336	2,025
Scup	6,461	5,492	4,846	4,200
Whitebone porgy	24,144	20,522	18,108	15,693
Atlantic spadefish	270,206	229,675	202,655	175,634
Blue runner	977,083	830,520	732,812	635,104
Bar jack	12,452	10,584	9,339	8,094
Gray triggerfish*	564,626	479,932	423,470	367,007
Scamp	482,290	409,946	361,717	313,488
Hogfish	134,264	114,125	100,698	87,272
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Comparison of Alternatives

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act, since it would not establish an ABC control rule for all species in the Snapper Grouper FMU. Although there are currently no ABC control rules, there are status quo ABC values for some snapper grouper species based on recommendations from the South Atlantic Council's SSC. For overfished species, the SSC previously recommended ABCs equal to the value specified in the rebuilding plan, and for other species experiencing overfishing, ABCs are specified and included in Amendments 15A, 16, 17A, and 17B to the Snapper Grouper FMP.

Alternatives 2-4 would specify an ABC control rule for assessed and non-assessed species or species groups where needed. Under **Alternative 2**, ABC would be equal to OFL. The NS 1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3-6**, which would account for scientific and management uncertainty. However, the Council's SSC has indicated that OFL cannot be determined for most unassessed species based on their recommended ABC control rule. Therefore, given the SSC's recommendation, **Alternative 2** could only be applied to species that have an OFL from a stock assessment.

Alternative 3 would set the ABC for unassessed species as a percentage of the OFL (equal to the median landings from 1999-2008) where **Subalternative 3a** would be the most conservative subalternative where ABC = 65%OFL and **Subalternative 3d** would be the least conservative subalternative where ABC = 95%OFL. Therefore, **Alternative 3** would be expected to have a greater biological benefit among **Alternatives 1 (No Action), 2,** and **3**.

Alternative 4 and its subalternatives would set ABC to a percentage of the yield at the maximum fishing mortality threshold (MFMT) for assessed species. **Subalternative 4a**, the most conservative subalternative under **Alternative 4**, would set ABC = yield at 65%MFMT, which is equivalent to about 93.6%OFL. **Subalternative 4b** would set ABC = yield at 75%MFMT, which is equivalent to 97.1%OFL. **Subalternative 4c** would be the least conservative subalternative under **Alternative 4** and would set ABC = yield at 85%MFMT, which is equivalent to about 98.9%OFL. Stock assessments have provided values for the yield a 65%, 75%, and 85% of MFMT for many of these species when the stock is at the biomass associated with the Maximum Sustainable Yield (B_{MSY}); however, values are not available for these species at current biomass levels.

For assessed species, **Alternative 5** would consider the probability of overfishing in determining ABC. **Alternative 5** would establish ABCs based on the SSC's ABC control rule for assessed species that have four dimensions included in the control rule framework: Assessment information; characterization of uncertainty; stock status; and productivity/susceptibility of the stock. Since the ABC would be specific to the stock, the ABC from **Alternative 5** could be greater or less than the ABC that would result from **Alternatives 2-4**. Therefore, the associated biological effects could be greater or less, but they would be considered to be appropriate for the stock.

Similar to **Alternative 5**, **Alternative 6** would specify an ABC control rule based on the South Atlantic SSC's control rule for assessed species. However, for unassessed species, the Gulf of Mexico Council SSC's ABC control rule would be used. **Alternative 6** would follow Tier 3a of the

Gulf of Mexico's Council SSC's ABC control rule where landings are small relative to stock biomass and recent historical landings are without trend. For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternatives 2** and **3** (along with its subalternatives) capture the range of ABCs that provide a buffer between the ABC and OFL described in Tier 3b. The Gulf of Mexico Council SSC's ABC control rule for unassessed species would result in a higher allowable catch than an ABC control rule based on median landings 1999-2008. Therefore, the biological effect of **Alternative 6** would likely be less than **Alternative 5**.

Alternative 7 (Preferred) would establish ABCs for assessed species, based on the South Atlantic SSC's ABC control rule **(Table 2-14)**. However, ABCs for unassessed species would be based upon the approach shown in **Table 2-16**, with OFL being unknown. In April 2011, the SSC further developed their ABC control rule and recommended ABC values for unassessed species, which are higher for all species compared with those in **Alternatives 1 (No Action)** through **5**, except for those in **Alternative 6** (**Table 2-15)**. The biological effects of **Alternative 7 (Preferred)** may be similar to **Alternative 5**, since the SSC took into account many different sources of uncertainty in their ABC recommendations.

The ranking of alternatives with respect to generating the least short-term adverse economic effects and potential long-term positive economic effects is as follows: **Alternative 1 (No Action), Alternative 2, Alternative 7 (Preferred)**, **Alternative 6** (Tier 3a), **Alternative 5**, **Subalternative 3d**, **Subalternative 3c**, **Subalternative 3b** and **Alternative 6** (Tier 3b), and **Subalternative 3a**. Since MFMT values at current biomass levels are not available for the unassessed species that do not already have ABCs, it is difficult to determine the economic effects of **Alternative 4**. These conclusions must be used with caution as the cumulative economic effects of reduced harvests from all these species is difficult to determine. If the ACL is restrictive as a result the selected ABC and the harvest of all species is subsequently reduced, the effects on fishing behavior will differ across vessels depending on their physical and operational characteristics. Such behavioral changes cannot be predicted using the currently available science.

One of the difficulties in understanding what the social effects would be is that the cumulative effect of reduced harvest from the combination of all these different species is difficult to ascertain. If a restrictive ABC level is chosen and harvests for all species are reduced, how those reductions will affect fishing behavior will depend upon individual fishing behaviors and sector makeup. These effects can differ dramatically from one region to another or from state to state depending upon the species that are predominant in that area and the composition of the respective fishing sector.

The establishment of an ABC Control Rule is a purely administrative process. The rule is developed by the South Atlantic Council's SSC for consideration by the South Atlantic Council. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

Table 2-21. Summary of effects under **Action 4**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Only 11 Snapper Grouper species would have ABCs, with no ABC specified for unassessed species. Would not meet MSA requirements.	(+-) Largest short-term positive benefits, smallest long-term benefits.
Alternative 2. ABC=ACL	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC, does not account for scientific and management uncertainty like **Alternatives 3-6**.	(+-) Smaller long-term, bigger short-term positive benefits compared with subalternatives under **Alternatives 3** and **4**.
Alternative 3: **Subalternative 3a.** ABC=65% OFL OFL=Median landings (1999-2008)	(+-) Most conservative of the four subalternatives under **Alternative 3**. Offers a large buffer between ACL and ABC.	(+-) Smallest short-term benefits, largest long-term benefits.
Subalternative 3b. ABC=75% OFL OFL=Median landings (1999-2008)	(+-) Benefits could be less than **Subalternative 3a**, and more than **Subalternatives 3c** and **3d**.	(+-) Short-term benefits could be less than **Subalternative 3a**, and more than **Subalternatives 3c** and **3d**.
Subalternative 3c. ABC=85% OFL OFL=Median landings (1999-2008)	(+-) Benefits between **Subalternatives 3b** and **3d**.	(+-) Benefits between **Subalternatives 3b** and **3d**.
Subalternative 3d. ABC=95% OFL OFL=Median landings (1999-2008)	(+-) Least conservative of the four subalternatives under **Alternative 3**. Offers the smallest buffer between ACL and ABC.	(+-) Largest short-term positive benefits, smallest long-term benefits.
Alternative 4: **Subalternative 4a.** ABC=65% MFMT	(+-) Translates to 93.6% of OFL, benefits close to **Subalternative 3d**. Most conservative of the subalternatives under **Alternative 4**.	(+-) Benefits close to **Subalternative 3d**.
Subalternative 4b. ABC=75% MFMT	(+-) Benefits between **Subalternatives 4a** and **4c**.	(+-) Benefits between **Subalternatives 4a** and **4c**.

Table 2-21. Continued. Summary of effects under **Action 4**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative. ABC=85% MFMT	(+-) Translates to 98.9% of OFL, benefits close to **Subalternative 3d**. Least conservative of the subalternatives under **Alternative 4**.	(+-) Benefits close to **Subalternative 3d**.
Alternative 5. Assessed sp.= SAFMC SSC's ABC Control Rule Unassessed sp. = 75% OFL OFL = Median landings (1999-2008) (until ABC Control Rule established)	(+-) Benefits include a buffer between OFL and AC for assessed species. Benefits for unassessed species would be identical to **Subalternative 3b** until an ABC Control Rule is established for them, and then, unknown.	(+-) Larger long-term and smaller short-term benefits for assessed species. Benefits similar to **Subalternative 3b** for unassessed species until an ABC Control Rule is established for them, and then unknown.
Alternative 6. Assessed sp.=SAFMC SSC's ABC Control Rule Unassessed sp. = Gulf of Mexico SSC's ABC Control Rule (option with ABC = 1.5*S.D. (above Mean landings, 1999-2008).	(+-) Benefits for assessed species would be identical to **Alternative 5**. Benefits for unassessed species would be less than **Alternative 5**, since the Gulf of Mexico's ABC Control Rule results in more fish that can be landed.	(+-) Larger long-term and smaller short-term benefits for assessed species. Larger short-term, and smaller long-term benefits for unassessed species. Smaller long-term benefits compared to **Alternative 5**.
Alternative 7 (Preferred). Assessed sp.= SAFMC SSC's ABC Control Rule Unassessed sp. = approach in Table 2-16 and OFL = unknown	(+-) Benefits include a buffer between OFL and AC for assessed species. Benefits for unassessed species would be similar to **Alternative 5**, with a better analysis regarding scientific uncertainty.	(+-) Larger long-term and smaller short-term benefits for assessed species. Benefits better than **Alternative 5**, since the new ABC values allow for an increase in landings.

2.1.5 Action 5: Specify Allocations for Snapper Grouper Species That Do Not Currently Have Allocations

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat). When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Alternative 1 (No Action). Retain the current allocations (**Table 2-22**). Do not specify allocations for those species where no allocations have been specified.

Table 2-22. Allocations for snapper grouper species established in other amendments. Allocations are specified for wreckfish and black grouper in **Actions 9** and **14**, respectively.

	Allocations	
	Commercial	**Recreational**
Black sea bass	43%	57%
Gag	51%	49%
Golden tilefish	97%	3%
Red porgy	50%	50%
Snowy grouper	95%	5%
Vermilion snapper	68%	32%
Red grouper (proposed in Am 24)	44%	56%

Alternative 2 (Preferred). Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3. Specify allocations for species that do not currently have allocations among three sectors, commercial, recreational, and for-hire, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 1986-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 5. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 1986-1998. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 6. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 1999-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 7. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using average landings from 2006-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Table 2-23. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4**, **5**, **6**, and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**.
Allocations will be established for red grouper in Amendment 24. Allocations for wreckfish and black grouper are addressed in **Actions 9** and **14**, respectively.

Species or Species Complex	**Preferred Alternative 2**		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Deepwater Complex	**Comm**	**Rec**	Comm	Private	For-Hire	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Yellowedge grouper	96.19%	3.81%	96.19%	3.14%	0.67%	94.00%	6.00%	98.48%	1.52%	88.28%	11.72%	99.64%	0.36%
Blueline tilefish	47.39%	52.61%	47.39%	16.94%	35.67%	73.25%	26.75%	94.69%	5.31%	57.03%	42.97%	38.11%	61.89%
Silk Snapper	73.14%	26.86%	73.14%	2.02%	24.84%	74.17%	25.83%	67.34%	32.66%	84.95%	15.05%	71.34%	28.66%
Misty grouper	70.91%	29.09%	70.91%	28.69%	0.39%	47.26%	52.74%	15.11%	84.89%	98.33%	1.67%	99.97%	0.03%
Sand tilefish	16.22%	83.78%	16.22%	52.77%	31.00%	16.82%	83.18%	8.59%	91.41%	23.62%	76.38%	15.86%	84.14%
Queen snapper	93.12%	6.88%	93.12%	0.69%	6.19%	87.95%	12.05%	78.18%	21.82%	97.76%	2.24%	100.00%	0.00%
Black snapper	91.52%	8.48%	91.52%	8.37%	0.11%	86.46%	13.54%	82.36%	17.64%	100.00%	0.00%	100.00%	0.00%
Blackfin snapper	31.68%	68.32%	31.68%	37.90%	30.42%	34.56%	65.44%	21.09%	78.91%	46.51%	53.49%	29.33%	70.67%
Jacks Complex													
Almaco jack	51.53%	48.47%	51.53%	14.87%	33.60%	51.06%	48.94%	40.18%	59.82%	47.08%	52.92%	51.77%	48.23%
Banded rudderfish	25.25%	74.75%	25.25%	14.11%	60.64%	28.08%	71.92%	25.21%	74.79%	26.33%	73.67%	23.20%	76.80%
Lesser amberjack	46.62%	53.38%	46.62%	17.28%	36.10%	67.06%	32.94%	79.68%	20.32%	52.75%	47.25%	28.79%	71.21%
Snappers Complex													
Gray snapper	20.00%	80.00%	20.00%	46.87%	33.13%	29.59%	70.41%	39.85%	60.15%	18.72%	81.28%	11.87%	88.13%
Lane snapper	12.21%	87.79%	12.21%	54.14%	33.64%	16.95%	83.05%	21.90%	78.10%	10.32%	89.68%	6.15%	93.85%
Cubera snapper	19.75%	80.25%	19.75%	44.45%	35.80%	16.25%	83.75%	16.12%	83.88%	16.58%	83.42%	25.55%	74.45%
Dog snapper	9.41%	90.59%	9.41%	75.83%	14.76%	15.72%	84.28%	27.37%	72.63%	11.13%	88.87%	6.66%	93.34%
Mahogany snapper	5.05%	94.95%	5.05%	84.71%	10.25%	10.95%	89.05%	47.80%	52.20%	6.43%	93.57%	2.17%	97.83%
Grunts Complex													
White grunt	32.67%	67.33%	32.67%	27.00%	40.33%	35.79%	64.21%	37.01%	62.99%	33.68%	66.32%	29.22%	70.78%
Sailors choice	0.00%	100.00%	0.00%	62.66%	37.34%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%
Tomtate	0.00%	100.00%	0.00%	30.80%	69.20%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%
Margate	19.83%	80.17%	19.83%	29.01%	51.16%	21.73%	78.27%	28.83%	71.17%	13.78%	86.22%	17.57%	82.43%
Shallow-Water Groupers Complex													
Red hind	73.28%	26.72%	73.28%	16.88%	9.84%	76.03%	23.97%	77.55%	22.45%	73.71%	26.29%	70.28%	29.72%
Rock hind	62.54%	37.46%	62.54%	11.97%	25.49%	55.19%	44.81%	40.43%	59.57%	65.33%	34.67%	67.17%	32.83%
Yellowmouth grouper	1.35%	98.65%	1.35%	52.97%	45.69%	2.86%	97.14%	2.62%	97.38%	2.95%	97.05%	0.69%	99.31%
Yellowfin grouper	40.78%	59.22%	40.78%	54.48%	4.75%	46.16%	53.84%	42.62%	57.38%	53.00%	47.00%	37.57%	62.43%
Coney	23.26%	76.74%	23.26%	64.79%	11.95%	49.31%	50.69%	70.56%	29.44%	1.29%	98.71%	0.25%	99.75%
Graysby	14.48%	85.52%	14.48%	34.06%	51.46%	32.29%	67.71%	55.76%	44.24%	18.77%	81.23%	2.64%	97.36%

Table 2-23. Continued. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4, 5, 6**, and **7** as well as commercial, private, and for-hire sectors under Alternative 3.

Porgies													
Jolthead porgy	4.05%	95.95%	4.05%	55.82%	40.13%	3.77%	96.23%	2.24%	97.76%	5.84%	94.16%	4.29%	95.71%
Knobbed porgy	54.12%	45.88%	54.12%	5.59%	40.30%	51.58%	48.42%	50.02%	49.98%	55.16%	44.84%	58.89%	41.11%
Saucereye porgy	0.01%	99.99%	0.01%	43.41%	56.58%	0.01%	99.99%	0.01%	99.99%	0.00%	100.00%	0.00%	100.00%
Scup	0.00%	100.00%	0.00%	19.70%	80.30%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%
Whitebone porgy	0.96%	99.04%	0.96%	51.36%	47.69%	1.70%	98.30%	2.54%	97.46%	0.01%	99.99%	0.01%	99.99%
Individual ACLs													
Atlantic spadefish	12.90%	87.10%	12.90%	43.98%	43.13%	15.06%	84.94%	14.46%	85.54%	15.74%	84.26%	10.87%	89.13%
Greater amberjack	40.66%	59.34%	Data not available by mode			42.79%	57.21%	42.53%	57.47%	43.32%	56.68%	37.35%	62.65%
Blue runner	14.60%	85.40%	14.60%	29.24%	56.16%	15.51%	84.49%	15.30%	84.70%	15.67%	84.33%	14.00%	86.00%
Bar jack	32.58%	67.42%	32.58%	21.25%	46.17%	17.42%	82.58%	6.88%	93.12%	35.53%	64.47%	59.42%	40.58%
Gray triggerfish	45.39%	54.61%	45.39%	27.74%	26.87%	47.46%	52.54%	48.80%	51.20%	45.55%	54.45%	43.63%	56.37%
Warsaw grouper	17.79%	82.21%	17.79%	53.23%	28.97%	21.17%	78.83%	23.75%	76.25%	10.62%	89.38%	5.73%	94.27%
Mutton snapper[1]	17.02%	82.98%	Data not available by mode			25.75%	74.25%	30.07%	69.93%	19.24%	80.76%	9.84%	25.75%
Scamp	69.36%	30.64%	69.36%	9.86%	20.78%	71.78%	28.22%	77.06%	22.94%	65.52%	34.48%	67.14%	32.86%
Goliath grouper	43.77%	56.23%	43.77%	44.36%	11.86%	51.80%	48.20%	53.32%	46.68%	0.00%	100.00%	0.00%	100.00%
Nassau grouper	9.52%	90.48%	9.52%	68.69%	21.79%	9.52%	90.48%	10.04%	89.96%	0.01%	99.99%	n/a	n/a
Speckled hind	65.59%	34.41%	65.59%	5.82%	28.59%	73.97%	26.03%	76.60%	23.40%	60.08%	39.92%	40.95%	59.05%
Hogfish	33.03%	66.97%	33.03%	62.16%	4.81%	37.56%	62.44%	42.31%	57.69%	30.43%	69.57%	28.30%	71.70%
Yellowtail snapper[1]	52.56%	47.44%	Data not available by mode			53.53%	46.47%	47.22%	52.78%	64.46%	35.54%	51.38%	48.62%
Red snapper	28.07%	71.93%	28.07%	41.90%	30.04%	33.35%	66.65%	40.34%	59.66%	26.38%	73.62%	24.07%	75.93%

Note: Greater amberjack were not identified to species in the commercial data prior to 1992; thus, commercial landings from SEDAR-15 and recreational landings from the ACL dataset were deemed 'best available' per the SEFSC. For the other amberjacks (banded rudderfish, almaco jack, lesser amberjack), no commercial landings data were available for 1986-1991; thus, the commercial average was computed from 1992-2008. All unclassified grunt landings were assigned to white grunt. All unclassified triggerfish landings were assigned to gray triggerfish.

[1] Post-stratifies MRFSS data for Monroe County to the South Atlantic.

Comparison of Alternatives

Alternative 1 (No Action) would retain the allocations that are currently in place for some species (**Table 2-22**), but would not specify commercial or recreational allocations for the remaining species or species groups in the Snapper Grouper FMP. **Alternatives 2 (Preferred)-5** would divide the ABC specified in **Action 4** between the recreational and commercial sectors. There is little difference in the biological effects among the five alternatives, as a similar amount of ABC would generally be allocated to the commercial and recreational sectors.

Alternative 2 (Preferred) would divide allocations between the recreational and commercial sectors based on historical landings information from 1986-2008 and 2006-2008 (**Table 2-23**), and therefore considers past and present participation. **Alternative 3** would be similar to **Alternative 2 (Preferred)** with the exception that the allocations for the recreational sector would be divided into private recreational and for-hire recreational components (**Table 2-23**). The commercial allocation under **Alternatives 2 (Preferred)** and **Alternative 3** would be identical. Sector specific ACLs would be based on allocations. Therefore, there is a greater chance that the ACLs would be exceeded for private recreational and for-hire recreational sectors under **Alternative 3** than for private recreational and for-hire recreational combined under **Alternative 2 (Preferred)**. Furthermore, estimates of recreational landings could be less certain for rarely encountered species or species groups when recreational data are divided into sectors.

Alternative 4, which would set allocations based on data from 1986 to 2008, is almost identical to **Alternative 2 (Preferred)**, which uses landings data from 1986-2008 and 2006-2008 (**Table 2-21**). **Alternative 5**, which is based on data from 1986-1998, would generally allocate a larger portion of the ACL to the commercial sector than allocation alternatives that include more recent landings information (**Table 2-23**). Allocation **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than alternatives that include data from earlier years (**Table 2-23**).

Alternatives 5, **6**, and **7** will likely generate less economic disruption to the snapper grouper fishery relative to **Alternatives 2**, **3**, and **4** since these more closely capture the status quo.

It is difficult to predict the social effects with any allocation scheme, as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains.

Alternatives 2 (Preferred) through **7** would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

Table 2-24. Summary of effects under **Action 5**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Only six out of 73 Snapper Grouper species would have allocations. A single ACL would be established for both sectors, no ACLs in the recreational sector, and limited options for AMs.	(+-) Maintains current caps on landings between commercial and recreational sectors.
Alternative 2 (Preferred).	(+) Would divide allocations between two sectors based on historical landings from 1986-2008, and 2006-2008. Combines beneficial effects of older data (favoring commercial sector) and newer data (favoring recreational sector). Sector specific ACLs would be based on allocations.	(+-) Groups with a higher allocation would have a higher economic benefit. This alternative considers both sectors, with two time frames that may represent them in a fair manner.
Alternative 3.	(+-) Benefits could be identical to **Alternative 2 (Preferred)**, except that a third sector (for-hire) would be added. This could have a lower benefit compared to **Alternative 2 (Preferred)** due to a greater chance of the ACLs to be exceeded for the recreational sector(s).	(+-) Benefits could be identical to **Alternative 2 (Preferred)**, with greater financial stability to the for-hire sector.
Alternative 4.	(+-) Benefits could be almost identical to **Alternative 2 (Preferred)**, except that all landings data would be from 1986-2008.	(+-) Benefits could be higher for the recreational sector than the commercial sector.
Alternative 5.	(+-) Benefits could favor the commercial sector more than the recreational sector since they would consider landings data from 1986-1998.	(+-) Benefits could favor the commercial sector more than the recreational sector.

Table 2-24. Continued. Summary of effects under **Action 5**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 6.	(+-) Benefits could favor the recreational sector more than the commercial sector since they would consider more recent landings data, from 1999-2008.	(+-) Benefits could favor the recreational sector more than the commercial sector.
Alternative 7.	(+-) Benefits could favor the recreational sector more than the commercial sector since they would consider more recent landings data, from 2006-2008.	(+-) Benefits could favor the recreational sector more than the commercial sector.

2.1.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery

Alternative 1 (No Action). Retain existing ACLs and OYs (**Table 2-25**) for snapper grouper species or species groups. Do not specify ACLs and OYs for species that already have them.

Table 2-25. Annual Catch Limits and OY information in place.

Species	ACLs In Place	OY Information in Place
Black grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	To be established in Action 14 of Comprehensive ACL Amendment.
Black sea bass	309,000 lbs gw comm. (364,620 lbs ww) 409,000 lbs gw (rec.)	Yield @ 75% MFMT (Amendment 15A) 2,324,196 lbs gw (2,742,551 lbs ww) when stock is at B_{MSY}
Gag	352,940 lbs gw comm. (416,469 lbs ww) 340,060 lbs gw rec. (401,271 lbs ww) <u>IN ADDITION</u> Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,636 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Yield @ 75% MFMT (Amendment 16) 1,238,000 lbs gw (1,460,840 lbs ww) when stock is at B_{MSY}
Golden tilefish	282,819 lbs comm. (316,757 lbs ww) 1,578 fish rec.	Yield @ 75% MFMT (Amendment 15B) 291,566 lbs gw (326,554 lbs ww)
Red grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Will be specified in Amendment 24
Snowy grouper	82,900 lbs gw comm. (97,822 lbs ww) 523 fish rec.	Yield @ 75% MFMT (Amendment 15A) 255,747 lbs gw (301,781 lbs ww) when stock is at B_{MSY}
Speckled hind	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Vermilion snapper	315,523 lb gw (350,231 lbs ww) Jan-June; comm. 302,523 lbs gw (335,801,lbs ww) July-Dec; comm. 307,315 lbs gw (341,120 lbs ww) recreational	Yield @ 75% MFMT (Amendment 16) 2,306,731 lbs gw (2,560,471 lbs ww) When stock at B_{MSY}, biomass and MSY values determined unreliable from assessment. (Value from Vermilion Snapper Update Assessment 2007)
Warsaw grouper	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Red snapper	0 (landings only) comm. and rec.	Yield @ 98% MFMT (Amendment 17A) 2,184,685 lbs gw (2,425,000 lbs ww) when stock is at B_{MSY}

Table 2-25. Continued. Annual Catch Limits and OY information in place.

Species	ACLs In Place	OY Information in Place
Red porgy	190,050 lbs gw comm. (197,652 lbs ww) Recreational ACL specified in Action 5 Table 4-27 of Comprehensive ACL Amendment	Yield @ 75% MFMT (Amendment 15A) 584,711 lbs gw (608,099 ww) when stock is at B_{MSY}
Greater amberjack	1,169,931 lbs gw comm.(1,216,782 lbs ww) Recreational ACL specified in Action 5 Table 4-27 of Comprehensive ACL Amendment	Specified in Action 5, Table 4-27 of Comprehensive ACL Amendment

Alternative 2 (Preferred). Establish ACLs for species as needed where ACL = OY = ABC. (Current values by species are shown in **Table 2-26**. Individual ACLs are summed to get the complex ACLs and allocated to get the sector ACLs shown in **Table 2-27**.)

Alternative 3. Establish ACLs for species as needed where ACL = OY = 90% of the ABC.

Alternative 4. Establish ACLs for species as needed where ACL = OY = 80% of the ABC.

Table 2-26. ACLs and OYs for species based on **Alternative 2 (Preferred)** and **Alternatives 3** and **4**.

Species Common Name	ACL=OY=100% of ABC Preferred Alternative 2	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
Yellowedge grouper	30,221	27,199	24,177
Blueline tilefish	592,602	533,342	474,082
Silk Snapper	27,519	24,767	22,015
Misty grouper	2,863	2,577	2,290
Sand tilefish	8,823	7,941	7,058
Queen snapper	9,344	8,409	7,475
Black snapper	382	344	306
Blackfin snapper	4,154	3,739	3,323
Almaco jack	291,922	262,730	233,538
Banded rudderfish	152,999	137,699	122,399
Lesser amberjack	10,568	9,511	8,454
Gray snapper	894,019	804,617	715,215
Lane snapper	153,466	138,119	122,773
Cubera snapper	31,772	28,595	25,418
Dog snapper	7,523	6,770	6,018
Mahogany snapper	160	144	128

Table 2-26. Continued. ACLs and OYs for species based on Alternative 2 (Preferred) and **Alternatives 3** and **4**.

Species Common Name	ACL=OY=100% of ABC Preferred Alternative 2	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
White grunt	635,899	572,309	508,719
Sailors choice	35,266	31,739	28,213
Tomtate	70,948	63,853	56,758
Margate	34,662	31,196	27,730
Red hind	25,885	23,297	20,708
Rock hind	37,569	33,812	30,055
Yellowmouth grouper	4,661	4,195	3,729
Yellowfin grouper	9,258	8,333	7,407
Coney	2,589	2,330	2,071
Graysby	17,856	16,070	14,284
Jolthead porgy	42,533	38,279	34,026
Knobbed porgy	61,194	55,074	48,955
Saucereye porgy	4,205	3,785	3,364
Scup	8,999	8,099	7,199
Whitebone porgy	30,684	27,615	24,547
Atlantic spadefish	282,841	254,557	226,273
Black grouper[1,2]	245,595	221,036	196,476
Blue runner	1,289,941	1,160,947	1,031,953
Bar jack	20,520	18,468	16,416
Gray triggerfish	672,565	605,309	538,052
Scamp	492,572	443,315	394,058
Hogfish	147,638	132,874	118,110
Yellowtail snapper[1]	2,173,875	1,956,488	1,739,100
Greater amberjack	1,968,000	1,771,200	1,574,400
Mutton snapper[1]	926,600	833,940	741,280
Red porgy	395,304	355,774	316,243

NOTE: The values above reflect the preferred ABC values per Table 2-17
*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1] Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper, yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Recommended ABC for 2012. See **Table 4-48** for ABC projections for 2013-2015. ACL = 0 landings for Speckled hind and Warsaw grouper. ACL = 0 for Goliath and Nassau grouper.

Table 2-27. Annual catch limits and optimum yield (lbs whole weight)for snapper grouper species to be set in this amendment.
ACLs based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and Alternative 2 (Preferred) in Action 6 (ACLs and OY). ACLs for black grouper, yellowtail snapper, and mutton snapper based on applying ABCs in **Actions 13, 18**, and **19**, respectively, to preferred allocation alternative in **Action 5**. The ACL for wreckfish is specified in **Action 10** and allocations are identified in **Action 11**. The ACL for red grouper will be re-examined in Amendment 24.

Deepwater Complex	Comm.	Rec.
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	343,869	332,039
Jacks Complex	**Comm.**	**Rec.**
Almaco jack Banded rudderfish Lesser amberjack	193,999	261,490
Snappers Complex	**Comm.**	**Rec.**
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	204,552	882,388
Porgies Complex	**Comm.**	**Rec.**
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	35,129	112,485
Grunts Complex	**Comm.**	**Rec.**
White grunt* Margate Sailor's choice Tomtate	214,624	562,151

Shallow-Water Groupers Complex	Comm.	Rec.
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	49,488	48,329
Individual ACLs	**Comm.**	**Rec.**
Atlantic Spadefish	36,476	246,365
Bar Jack	6,686	13,834
Black grouper[1,2]	90,575	155,020
Blue Runner	188,329	1,101,612
Goliath Grouper	0	0
Gray Triggerfish*	305,262	367,303
Greater Amberjack[3]	800,163	1,167,837
Hogfish	48,772	98,866
Mutton Snapper[1]	157,707	768,893
Nassau Grouper	0	0
Red porgy[3]	197,652	197,652
Scamp	341,636	150,936
Wreckfish	237,500	12,500
Yellowtail Snapper[1]	1,142,589	1,031,286
Speckled hind	0 landings	0 landings
Warsaw grouper	0 landings	0 landings

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Based on 2012 ABC recommendation. See **Table 4-48** for 2013-2015. [3] Assessed species, but with no established recreational ACL. Recreational ACLs are being established in this amendment.

Comparison of Alternatives

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL/OY and ABC, with **Alternative 4** setting the most conservative ACL at 80% of the ABC. Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above B_{MSY}. However, the South Atlantic Council's SSC ABC control rule takes into account scientific uncertainty. The NS1 guidelines indicated ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. The preferred alternative in **Action 8** would establish an ACT for the recreational sector. Similar to **Alternative 2 (Preferred)**, subalternatives to **Alternatives 3** and **4** provide the opportunity to set sector specific ACLs for species or species groups.

The potential foregone gross revenue to the commercial fleet and foregone consumer surplus to the recreational fleet are presented in **Section 4.0.** However, the values should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple snapper grouper ACLs, particularly those for overfished and/or less productive species. For example, if commercial fishing firms could readily re-organize their product mix, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if commercial fishing firms had the flexibility to modify the composition of their catches, then they could reduce their overall snapper grouper landings, switch to other fishing gears, or exit the fishery altogether depending on how restrictive the ACLs are. Thus, the resulting benefits will be a function of the actual behavioral response, which is presently unknown. **Alternatives 3** and **4** presumably will achieve higher long-run stock abundances than **Alternative 2 (Preferred)**, which could allow the ACLs to be increased sooner allowing for higher ACLs in the long-run. Thus, **Alternatives 3** and **4** are anticipated to generate larger long-run economic benefits (i.e., higher gross revenue for the commercial sector and higher consumer surplus in the recreational sector) relative to **Alternative 2 (Preferred)**.

But it is likely that **Alternatives 3 and 4** could have negative social effects as reductions in current harvest levels may occur. Those reductions could cause fishermen to switch to other species, which could further trigger AMs in other fisheries. At this time, we do not have the capability to conduct an analysis to predict how that behavior would change. Under **Alternative 1 (No Action)** there may likely be few direct effects depending upon how other actions affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the later alternatives and would not further compound any negative effects of reduced harvest from other alternatives.

Table 2-28. Summary of effects under **Action 6**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Least conservative of the alternatives, since there is no buffer between ACL and ABC.	(+-) Smaller long-term short-term benefits when compared with **Alternatives 3** and **4**.
Alternative 3. ACL=OY=90% ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Provides a buffer between ABC and ACL. Benefits could fall in-between **Alternatives 2 (Preferred)** and **4**.	(+-) Greater long-term benefits than **Alternative 2 (Preferred)**.
Alternative 4. ACL=OY=80% ABC	(+) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Smallest short-term, and largest long-term benefits.

2.1.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for Species in the Snapper Grouper FMU

Alternative 1 (No Action). Do not specify new commercial AMs for the following species:

Yellowedge grouper	Blueline tilefish	Silk snapper	Almaco jack	Banded rudderfish	Lesser amberjack
Gray snapper	Lane snapper	Cubera snapper	White grunt	Atlantic spadefish	Greater amberjack
Red hind	Rock hind	Scamp	Hogfish	Yellowtail snapper	Blue runner
Gray triggerfish	Mutton snapper	Misty grouper	Queen snapper	Sand tilefish	Black snapper
Yellowmouth grouper	Yellowfin grouper	Coney	Graysby	Bar jack	Dog snapper
Mahogany snapper	Sailors choice	Tomtate	Margate		

Alternative 2. Specify individual Annual Catch Targets (ACT) for the species listed above.

Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Subalternative 2b. The individual ACT equals 90% of the individual ACL. The complex ACT equals 90% of the complex ACL.

Subalternative 2c. The individual ACT equals 80% of the individual ACL. The complex ACT equals 80% of the complex ACL.

Alternative 3 (Preferred). For the species listed above, if an ACL (i.e., individual or complex) is met or is projected to be met, all subsequent purchase and sale is prohibited and harvest and/or possession is limited to the bag limit for the species covered by that ACL. For example, if a complex ACL is met or projected to be met, all purchase and sale of all the species in the complex is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). For the species listed above, if an ACL (i.e., individual or complex) is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

Comparison of Alternatives

Because there are currently management measures in place that could be considered AMs for only some of the snapper grouper species in this amendment, **Alternative 1 (No Action)** would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

Alternative 2 invokes the concept of establishing a commercial sector ACT, which would be set lower than the commercial sector ACL, except under **Subalternative 2a (Preferred)**. **Subalternative 2a (Preferred)** would not set a commercial sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (90% and 80% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. Establishing an ACT that is 90% or 80% of the commercial ACL would also reduce the probability that post-season AMs that are meant to correct for an ACL overage would be needed.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of snapper grouper species in quantities exceeding the ACL, and thus provides a disincentive to target snapper grouper species once the ACL has been reached. **Alternative 3 (Preferred)** could serve as a complement to **Alternative 4 (Preferred)** in that it would correct for an ACL overage post-season if one were to occur during the fishing season. Because the ACL for unassessed species is equal to the ABC, which would cap landings at a level to ensure overfishing did not occur, it is possible the season for those species could be shortened under **Alternative 3 (Preferred)** since the ACL could be projected to be met earlier in the season than under the status quo conditions for species where there would be no restriction on the amount of commercial harvest. For assessed species, the greater the uncertainty associated with calculating the probability of overfishing, the more precautionary the value of the ABC and subsequent ACL, and the higher the probability the ACL would be met earlier in the season triggering the in-season AM under **Alternative 3 (Preferred)**. The biological benefits of a shortened fishing season for those species or species groups would depend on the exact reduction of the season length, and subsequent changes to fishing behavior. If a commercial fishing season is shortened due to triggering the **Alternative 3 (Preferred)** AM, regulatory discards may not necessarily increase since fishermen would still be allowed to retain the bag limit.

Alternative 4 (Preferred) could complement **Alternative 3 (Preferred)** because it would correct for an ACL overage in the post-season if such an event were to occur. **Alternative 4 (Preferred)** would reduce the commercial sector ACL in the following season by the amount of the overage if the species is overfished. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards if no level of harvest is permitted after the ACL is reached. However, under **Alternative 3 (Preferred)**, fishermen would still be able to retain bag limit quantities of fish, which may reduce the number of regulatory discards that would otherwise result from a shortened season. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit.

With regards to economic impacts, anticipated forgone landings and gross revenue increase as the ACTs become more conservative. **Alternative 3 (Preferred)** may generate lower short-run gross revenue in the commercial sector, but will still be bound by the estimated gross revenue changes, since this alternative theoretically prevents the commercial sector from harvesting snapper grouper species in quantities exceeding their respective ACLs. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability

of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could result in commercial sector ACL reductions and gross revenue losses in the following year under **Alternative 4 (Preferred)**.

Alternative 4 (Preferred) calls for reducing the commercial sector ACL in the following season by the amount of the overage if the species is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

The setting of AMs or ACTs can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest, either during the current season or the next. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects.

The burden on the administrative environment from **Alternative 1 (No Action)** could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

Table 2-29. Summary of effects under **Action 7**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and possible smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded, no buffer between ACT and ACL. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Greater short-term and possible smaller long-term benefits.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(+-) Possible smaller short-term and long-term benefits.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4 (Preferred)**, but less than **Alternative 1 (No Action)**.
Alternative 4 (Preferred). Commercial sector AM: ACL reduced in the following season by amount of overage if species is overfished.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greatest long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **Alternative 1 (No Action)**.

2.1.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for Species in the Snapper Grouper FMU

I. Types of Recreational AMs Under Consideration

1) ACTs
2) In-season AMs to prevent the ACL from being exceeded (i.e., closing fishery)
3) Post-season AMs
   - Payback provisions applied in a year following an ACL overage
   - Actions to prevent the ACL from being exceeded in the year following an ACL overage (i.e., shortening the following season, changing a bag limit).

II. Council Decision Process for Choosing Recreational AMs

The South Atlantic Council is employing a four-pronged approach to assessing the AM alternatives for the recreational sector (**Figure 2-1**). First, the South Atlantic Council determines whether or not to specify an ACT. The ACT alone would not trigger any corrective action. Second, the South Atlantic Council determines what years of landings would be used to determine whether or not an ACL overage has occurred. Next, the South Atlantic Council determines whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decides whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM. The resultant AM would be applied separately to species that have been assigned ACLs as part of a species complex, and to snapper grouper species that have been assigned individual ACLs (See **Tables 2-30** and **2-31**).

Step 1. Determine if an ACT will be specified.
Step 2. Specify an AM trigger, by determining whether data from a single year, a three-year running mean (average), or a modified mean would be used to determine if an ACL has been exceeded.
Step 3. Determine whether an in-season action would be taken to prevent an ACL from being exceeded.
Step 4. Determine whether post-season action would be taken to correct for an ACL overage, or to prevent future ACL overages from occurring.

Figure 2-1. Decision process for choosing preferred AM alternatives for the recreational sector of the snapper grouper fishery.

Table 2-30. Species that are part of a species complex and require recreational AMs.

Deepwater Complex	Jacks Complex	Snappers Complex	Grunts Complex	Porgies Complex	Shallow-water groupers Complex
Yellowedge grouper	Almaco jack	Gray snapper	White grunt	Jolthead porgy	Red hind
Blueline tilefish	Banded rudderfish	Lane snapper	Sailors choice	Knobbed porgy	Rock hind
Silk snapper	Lesser amberjack	Cubera snapper	Tomtate	Saucereye porgy	Yellowmouth grouper
Misty grouper		Dog snapper	Margate	Scup	Yellowfin grouper
Sand tilefish		Mahogany snapper		Whitebone porgy	Coney
Queen snapper					Graysby
Black snapper					
Blackfin snapper					

*AMs for species in this table would be applied on a species complex basis.

Table 2-31. Species that have been assigned individual ACLs and require recreational AMs.

Snapper Grouper Species With Individual ACLs
Atlantic Spadefish
Bar Jack
Greater Amberjack
Scamp
Red Porgy
Hogfish
Yellowtail Snapper
Blue Runner
Gray Triggerfish
Mutton snapper

*AMs for species in this table would be applied on an individual basis.

III. Recreational AM Alternatives

Alternative 1 (No Action). Do not specify new recreational AMs for the species in **Table 2-30**.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2]For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Why would an ACL change?

An ACL could change for the following reasons:

(1) From a rebuilding plan that specifies increasing ACLs.
(2) Based on new ABC recommendations from the SSC, including those from an updated stock assessment.
(3) From payback provisions if implemented.
(4) From a re-estimate of data.

Table 2-32. Recreational ACTs (lbs whole weight) to be established in this amendment as per **Subalternative 2d (Preferred)** in **Action 8**.
ACTs are based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). ACT for black grouper can be found in **Action 17**.

Deepwater Complex	Rec. ACT
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	205,516
Jacks Complex	**Rec. ACT**
Almaco jack Banded rudderfish Lesser amberjack	186,972
Snappers Complex	**Rec. ACT**
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	775,001
Porgies Complex	**Rec. ACT**
Knobbed porgy Saucereye porgy Whitebone porgy Scup	74,933
Grunts	**Rec.**
White grunt* Margate Sailor's choice Tomtate	466,864

Shallow-Water Groupers Complex	Rec. ACT
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	33,082
Individual ACTs	**Rec. ACT**
Atlantic Spadefish	177,382
Bar Jack	9,936
Black grouper[1,2]	94,562
Blue Runner	892,305
Goliath Grouper	0
Gray Triggerfish*	312,208
Greater Amberjack[3]	992,662
Hogfish	71,184
Mutton Snapper[1]	668,906
Nassau Grouper	0
Red porgy[3]	160,098
Scamp	96,599
Yellowtail Snapper[1]	897,160

Source: Average PSEs from MRFSS (2005-2009).
*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

[1] Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper, yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively.
[2] Based on ABC/ACL for 2012. For projected ABC/ACLs for 2013-2015 see **Table 4-48**.
Note: Nassau grouper and Goliath grouper are not included in the table above since these are prohibited species, and ACL = 0. [3]Assessed species, but with no current recreational ACL, commercial ACL shown here represents the preferred allocation percentage in **Action 5**.

Table 2-33. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Almaco Jack	24%
Atlantic Spadefish	28%
Banded Rudderfish	33%
Bank Sea Bass	32%
Bar Jack	28%
Black Grouper	39%
Black Margate	30%
Black Sea Bass	13%
Black Snapper	n/a
Blackfin Snapper	16%
Blue Runner	19%
Blueline Tilefish	39%
Bluestriped Grunt	16%
Coney	21%
Cottonwick	n/a
Crevalle Jack	21%
Cubera Snapper	36%
Dog Snapper	16%
French Grunt	2%
Gag	18%
Golden Tilefish	49%
Goliath Grouper	0
Grass Porgy	n/a
Gray Snapper	10%
Gray Triggerfish	15%
Graysby	39%
Greater Amberjack	15%
Hogfish	28%
Jolthead Porgy	34%
Knobbed Porgy	35%

Table 2-33. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Lane Snapper	19%
Lesser Amberjack	77%
Longspine Porgy	14%
Mahogany Snapper	0
Margate	16%
Misty Grouper	n/a
Mutton Snapper	13%
Nassau Grouper	0
Ocean Triggerfish	59%
Porkfish	26%
Puddingwife	26%
Queen Snapper	0
Queen Triggerfish	0
Red Grouper	31%
Red Hind	40%
Red Porgy	19%
Red Snapper	21%
Rock Hind	42%
Rock Sea Bass	50%
Sailors Choice	41%
Sand Tilefish	33%
Saucereye Porgy	8%
Scamp	36%
Schoolmaster	16%
Scup	34%
Sheepshead	11%
Silk Snapper	25%
Smallmouth Grunt	n/a
Snowy Grouper	41%
Spanish Grunt	0
Speckled Hind	4%
Tiger Grouper	n/a
Tomtate	23%
Vermilion Snapper	15%
Warsaw Grouper	2%

Table 2-33. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
White Grunt	14%
Whitebone Porgy	34%
Wreckfish	0
Yellowedge Grouper	20%
Yellowfin Grouper	0
Yellowmouth Grouper	6%
Yellowtail Snapper	13%

Comparison of Alternatives

Alternative 1 (No Action) would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 6**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or by one minus the percent standard error (PSE) from the recreational fishery, whichever is greater (**Table 2-32**).

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% confidence interval could be considered a more conservative parameter to use when estimating overage amounts.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous

compared to other alternatives since it would retain high and low landings years. In cases where it cannot be determined whether one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if regulations have been implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a time lag in when recreational data become available. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be adversely affected by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its sub-alternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. If **Subalternative 5b** is not selected as a preferred alternative, the magnitude of the ACL overage would simply compare the landings from a particular fishing year to the ACL. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological

benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**.

Alternative 1 (No Action) has the most potential to cause the greatest economic dislocation in the long term. **Subalternative 2c** generates higher short-term losses in consumer surplus for all species relative to **Subalternative 2b**, with the exception of those species with a zero recreational ACL. These estimates assume the recreational sector can harvest the ACT. The short-run losses are expected to be offset in the long term when stock abundance is anticipated to increase. Higher stock abundances are expected to increase harvest and thus consumer surplus, and also reduce the long-term harvesting costs in the for-hire sector, though the latter effect cannot be shown with available data. However, the results indicate that while **Subalternative 2d (Preferred)** is more conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species relative to **Subalternative 2b** and some species relative to **Subalternative 2c**, it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus.

Subalternative 3a would not generate any indirect economic effects. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Subalternative 4a (Preferred) would not generate any indirect economic effects. **Subalternative 4b** would generate greater adverse, indirect economic effects in the short term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if the fishery is closed too soon or too late due to inaccurate projections.

Subalternatives 5a and 5b would not generate any indirect economic effects. **Subalternative 5c** may generate the same indirect economic effects in the short-term as **Subalternative 5d (Preferred)** and **Subalternative 5e**. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternative 5c, Subalternative 5d (Preferred)** and **Subalternative 5e** in the short term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**. The payback that would be implemented under **Subalternative 5g** would further assist with protecting the stocks whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

Alternative 1 (No Action) may have negative social effects if stocks are not sufficiently protected through other management. **Subalternatives 2a-2d (Preferred)** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these

levels may be necessary to maintain a sustainable stock. Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. **Subalternative 3e** could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure when the ACL is projected to be met as in **Subalternative 4b**. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. In **Subalternative 5g**, payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

The administrative impacts of this action are expected to be similar to those for **Action 7**. However, collecting data for the recreational fishery may be more administratively burdensome than for the commercial fishery. The alternatives and associated subalternatives are not likely to differ much in their administrative impacts.

Table 2-34. Summary of effects under **Action 8**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest long-term negative effects.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.

Table 2-34. Continued. Summary of effects under **Action 8.**

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with Subalternative 2b.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL [(1-PSE) or 0.5, whichever is greater]	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT (**Subalternative 2d, Preferred)**.	(+-) No indirect economic effects.

Table 2-34. Continued. Summary of effects under **Action 8**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a**.
Alternative 5: Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f. Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5f**.

2.2 Snapper Grouper Fishery Management Plan (wreckfish)

Acceptable Biological Catch Control Rule for Wreckfish

The South Atlantic Council's SSC met in April 2010 to discuss ABC Control Rules for unassessed species. After extensive discussion of wreckfish issues, the SSC established that ABC was unknown and the South Atlantic Council should consider an ACL that did not exceed 200,000 lbs. One of the issues discussed was whether the management system of individual quotas tied to portions of the allowable harvest level potentially alters the relation between the recommended harvest and the realized harvest. Effort is reduced in the fishery, to the extent that recent landings are confidential because fewer than 3 harvesters have been in operation in recent years. Landings are reduced and recent trends in landings, even if such landings could be publicly disseminated, are possibly not representative of fishery productivity.

The SSC discussed setting an ABC for wreckfish during their August 2010 meeting. The SSC stated that the 2001 assessment (Vaughan et al. 2001) indicated depletion at higher historical levels of effort and that the catch reductions appeared to have come mainly from gear restrictions, spawning season closure, and individual transferable quota (ITQ) implementation. Since stock size cannot be projected, an estimate of overfishing limit from the 2001 assessment could not be produced. A Depletion-Based Stock Reduction Analysis (DBSRA) or Depletion-Corrected Average Catch DCAC estimate (**Table 2-14**) could be calculated, but recent landings are confidential, therefore the SSC was not be able to perform the calculations to produce these estimates. The SSC agreed the 2001 assessment was dated and did not apply to current landings and conditions. The SSC concluded that a control rule based on catch-only data should be used even though a stock assessment exists for wreckfish.

At the Second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based on the status of the stock relative to its fishery. The framework includes a category that labels a catch as "moderate." In these cases, it is possible that any increase in catch could result in overfishing.

In the absence of a current assessment and using a catch-only scenario at "moderate" historical catch, the SSC reached consensus that it was inappropriate to use an old assessment applied to new catch data for catches coming from potentially different fishing conditions than at the time of the assessment. Although an estimate of F_{MSY} exists, it cannot be applied to current stock biomass. A recent estimate of F is close to F_{MSY}, so increasing F could lead to overfishing if there were increases in catch. Even though B_{MSY} is unknown, fishing at F_{MSY} on a stock that is below B_{MSY} is acceptable for a stock that is not overfished and this will allow rebuilding. Therefore, in September 2010, the SSC recommended setting the ABC at the average historical catch (1997-recent) of 250,000 lbs whole weight. Due to confidentially of data, a more precise level could not be set. This level of harvest would cap fishery where it is, consistent with the "moderate" level of historical catch in Methot's table for catch-only scenarios. The SSC also recommended conducting DCAC or DBSRA analysis in the next year to compare with the current catch-only recommendation.

2.2.1 Action 9: Specify Allocations for the Wreckfish Fishery

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat).]

Alternative 1 (No Action). Do not specify allocation. In this scenario, the total allowable catch is essentially allocated 100% to the commercial sector.

Alternative 2. Divide allocations as 90% Commercial and 10% Recreational.

Alternative 3 (Preferred). Divide allocations as 95% Commercial and 5% Recreational.

Alternative 4. Allocate 100% of the allowable catch to the commercial sector.

Table 2-35. Allocation of wreckfish (lbs whole weight) by sector.

Alternative	Commercial		Recreational	
	Allocation(%)	Lbs (ww)	Allocation(%)	Lbs (ww)
1 (No Action)	100	250,000	0	0
2	90	225,000	10	25,000
3 (Preferred)	**95**	**237,500**	**5**	**12,500**
4	100	250,000	0	0

Comparison of Alternatives

Alternative 1 (No Action) would not specify allocations, thereby not allowing for an ACL for the recreational sector. **Alternative 2** would provide 90% (225,000 lbs whole weight) of the allowable biological catch (ABC) to the commercial sector and 10% (25,000 lbs whole weight) to the recreational sector (**Table 2-35**). **Alternative 3 (Preferred)** would allocate 95% (237,500 lbs whole weight) to the commercial sector and 5% (12,500 lbs whole weight) to the recreational sector (**Table 2-35**). Under **Alternative 4**, 100% of the ABC (250,000 lbs whole weight) would be allocated to the commercial sector, which is identical to **Alternative 1 (No Action)** (**Table 2-35**). The amount of wreckfish that would be allocated to recreational fishermen would be very small. Under **Alternative 3 (Preferred)**, approximately 300-350 fish would be allocated to the recreational sector as wreckfish average weight is 35 to 40 lbs whole weight. However, **Alternative 3 (Preferred) and Alternative 2** would allow for the incidental catch of wreckfish when targeting co-occurring species.

Current permits and regulations would not allow recreational fishermen to retain wreckfish unless they possess a federal snapper grouper permit, wreckfish permit, wreckfish shares, and coupons to land wreckfish. At their December 2010 meeting, the South Atlantic Council approved a motion to exempt recreational fishermen from this requirement.

Estimates of recreational landings are generally less certain for rarely encountered species in a survey-based system like MRFSS. Therefore, there is a greater chance that annual catch limits would be exceeded for the recreational sector under allocations specified in **Alternatives 2** and **3 (Preferred)** than for the commercial sector. In this situation, alternatives that allocate a greater portion of the catch to the commercial sector could have a greater biological benefit, since the commercial sector has better reporting and quotas can be monitored better to prevent overages.

However, if all landings (commercial and recreational) are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2-4** would be very similar. Furthermore, a recreational allocation could help mitigate bycatch mortality in this fishery. Currently, recreational fishermen have to discard any wreckfish they catch, and since the species inhabits deep water, discard mortality is high.

Alternative 1 (No Action) and **Alternative 4** provide the commercial sector with the greatest economic benefits, as measured by gross revenue, relative to **Alternative 2** and **Alternative 3 (Preferred)** because they give the entire ACL to the commercial sector. **Alternative 1 (No Action)** and **Alternative 4** are basically equivalent with respect to their economic effects since the commercial sector would implicitly or explicitly receive the entire ACL consistent with current and historical practice. On the other hand, the recreational sector would benefit the most under **Alternative 2**, followed by **Alternative 3 (Preferred)**.

Quantifying economic benefits of each of the alternatives to the commercial sector is complicated by the fact that the decrease in the TAC from 2 million lbs to 250,000 lbs decreases the annual poundage each shareholder can land by 88% under the Individual Transferable Quota (ITQ) Program that was implemented under Snapper Grouper Amendment 5 (SAFMC 1991). That is, each fisherman's wreckfish shares, which dictate the annual pounds that can be landed by that individual, will be reduced by 88%. If a fisherman wants to harvest more than this amount, the shareholder needs to purchase additional wreckfish shares or annual pounds from another wreckfish shareholder. Without purchase of additional shares or annual pounds, all of the alternatives will result in very small landings of wreckfish, if any at all since most fishermen have stated that they do not have the funds to purchase additional shares. Therefore, **Alternatives 1-4** differ little for the commercial sector since all alternatives will likely result in even smaller landings than currently are harvested, if any landings are made at all. However, if one or more of the highliners in the fishery are able to purchase additional shares or annual pounds, the fishery may continue and there would be a greater difference between the alternatives. **Alternatives 2** and **3 (Preferred)** make this situation worse for the commercial sector and require the purchase of even more shares or pounds. Under all alternatives, total commercial landings are expected to decline significantly.

Alternative 1 (No Action) would establish an overall ACL within the wreckfish component of the snapper grouper fishery with an allocation for the commercial sector only. This would not allow for a recreational fishery as the ITQ program only allows for transfer of quota to someone within the program. Because there has been increasing interest within the recreational sector in being allowed harvest of this species, other alternatives offer benefits to the recreational sector for harvest. The different allocation alternatives vary with **Alternative 2** allowing the most allocation to the recreational fishery and less with **Alternative 3 (Preferred)**. **Alternative 4** would keep all allocation with the commercial fishery. Again, with any allocation regime, the social effects would depend upon other alternatives and whether or not further harvest restrictions are implemented. While there may be benefits to allowing recreational harvest, dividing the allocation in combination with other actions could result in harvest restrictions that have negative effects upon the commercial sector. The commercial wreckfish fishery is small with only a few harvesters, but if there is a significant decrease in harvest thresholds as anticipated, there could be more negative social effects that accrue to the commercial fishery

with the allocation to the recreational fishery. However, the recreational fishery has and may see further restrictions for other species, which would make reallocation of wreckfish a possible alternative when other species are not available and therefore would have positive social effects.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2** through **4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for.

Table 2-36. Summary of effects under **Action 9**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) ACL would not be specified for the recreational sector.	(+-) No recreational allocation, less level of stability and predictability. Greatest long-term benefit to commercial fishery.
Alternative 2. 90% Comm./10% Rec.	(+-) ACLs would be specified for both sectors. Lesser benefit than **Alternative 3 (Preferred)** due to higher uncertainty in estimates of recreational landings. Could help mitigate bycatch mortality.	(+-) Greater benefits to recreational fishery compared with **Alternative 3 (Preferred)**.
Alternative 3 (Preferred). 95% Comm./5% Rec.	(+-) ACLs would be specified for both sectors. Higher benefit than **Alternative 2**, especially if all landings are tracked closely, with mandatory reporting in both sectors. Could help mitigate bycatch mortality.	(+-) Smaller benefits to recreational fishery compared with **Alternative 2**.
Alternative 4. 100% Comm.	(-) Identical to **Alternative 1 (No Action)**.	(+-) Identical to **Alternative 1 (No Action)**.

2.2.2 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Wreckfish

Alternative 1 (No Action). Do not establish an Annual Catch Limit (ACL) for wreckfish.

Alternative 2 (Preferred). ACL = OY = ABC.

Alternative 3. ACL = OY = 90% of the ABC.

Alternative 4. ACL = OY = 80% of the ABC.

Table 2-37. ACLs (lbs whole weight) for wreckfish.

Alternative	ACL (lbs ww)
1 (No Action)	N/A (TAC=2 Million lbs)
2 (Preferred) (ACL=OY=ABC)	**250,000**
3 (ACL=OY=90% ABC)	225,000
4 (ACL=OY=80% ABC)	200,000

Comparison of Alternatives

Alternative 1 (No Action), would retain the current regulations established for wreckfish, which includes a total allowable catch (quota) equal to 2 million lbs whole weight. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. **Alternative 2 (Preferred)** would set the ACL/OY equal to the ABC. The NS1 guidelines indicate the ACL may typically be very close to the ABC. The South Atlantic Council chose to allocate between two sectors (commercial and recreational) as their preferred alternative under **Action 9**. Under **Alternative 2 (Preferred)**, and with an ABC equal to an ACL/OY of 250,000 lbs whole weight (**Table 2-37**), the ACL for the commercial sector would be 237,500 lbs whole weight and the ACL for the recreational sector would be 12,500 lbs whole weight. **Alternatives 3** and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 3** setting an ACL at 90% (225,000 lbs whole weight) and **Alternative 4** setting the most conservative ACL at 80% (200,000 lbs whole weight) of the ABC (**Table 2-37**). However, the South Atlantic Council's SSC took scientific uncertainty into consideration in the specification of ABC, so establishing a buffer between the ACL and ABC may not be needed.

Alternative 1 (No Action) would likely generate the least long-run economic benefits relative to the other alternatives since it fails to adopt an ACL, which would increase the risk of overfishing. **Alternative 2 (Preferred)** would most likely generate the least forgone economic benefits in the short-run (relative to **Alternatives 3** and **4**), and the lowest long-run benefits. **Alternative 3** and **Alternative 4** would generate the highest short-run forgone economic benefits, but would likely generate the highest long-term economic benefits.

In **Alternative 1 (No Action),** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. **Alternative 2 (Preferred)** would be less restrictive than the other alternatives and would likely have more positive social effects. **Alternative 4** would likely have more negative social effects in the short term than would **Alternative 3**.

The administrative impacts of specifying an ACL through **Alternatives 2-4** are minimal and would not differ much between the three alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

Table 2-38. Summary of effects under **Action 10**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would allow for an ACL = 2 million lbs whole weight, higher than the current ABC recommendation of 250,000 lbs whole weight. Would not meet NS 1 guidelines.	(+-) Smallest long-term positive benefits of all alternatives.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Would not allow for a buffer between ACL and ABC. Possible risk of exceeding ABC.	(+-) Higher positive short-term benefits, smallest positive long-term benefits when compared with **Alternatives 3** and **4**.
Alternative 3. ACL=OY=90% ABC	(+-) Would allow for a buffer between ACL and ABC.	(+-) Benefits in-between **Alternative 2 (Preferred)** and **Alternative 4**.
Alternative 4. ACL=OY=80% ABC	(+-) Would allow for a larger buffer between ACL and ABC, greatest biological benefit.	(+-) Higher positive long-term benefits compared with **Alternative 3**.

2.2.3 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery

Alternative 1 (No Action). Do not specify AMs for a recreational sector of the wreckfish fishery. Do not add new AMs for the commercial sector of the wreckfish fishery. Currently, the commercial sector for wreckfish is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year.

Decision 1. Specify an ACT?

The specification of a recreational ACT for wreckfish was moved to the rejected alternatives appendix (Appendix A).

Decision 2. What is the AM trigger?

Alternative 2. Specify the AM trigger.

Subalternative 2a. Do not specify an AM trigger.

Subalternative 2b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 2c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 2d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 2e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

The specification of a commercial and recreational in-season AM for wreckfish (closing recreational fishery when ACL met) was moved to the considered but rejected alternatives appendix (Appendix A).

Decision 4. Is there a post-season AM?

Alternative 3. Specify the recreational post-season AM.

Subalternative 3a. Do not specify a recreational post-season AM.

Subalternative 3b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 3c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 3d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 3e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 3f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 3g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Comparison of Alternatives

Under **Alternative 1 (No Action)**, 100% of the allowable catch is currently allocated to the commercial sector, although **Action 9** contains alternatives that provide allocations to the recreational sector. Theoretically, when the commercial quota is reached the fishery would be closed. The commercial AM would be to close to the commercial sector when the commercial ACL is met or projected to be met. Because the proposed ACL is lower than the status quo quota, greater biological benefits may be expected if commercial fishing is prohibited once this much lower harvest threshold is reached.

As is the case for many fisheries, accurate in-season monitoring of ACLs can be very difficult for the recreational sector. With the exception of **Subalternative 2a**, **Alternative 2** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 2b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 2c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 2d** is similar to **Subalternative 2c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL then the AMs would be triggered. **Subalternative 2e** would trigger AMs if the lower 90% confidence interval (CI)

estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 2c-2e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. The biological benefits would increase in order from **Subalternatives 2e-2b (Preferred).**

With the exception of **Subalternative 3a**, which would not specify a post-season AM, **Alternative 3** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 3b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. If the ACL is exceeded, **Subalternatives 3c-3e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 3c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 3d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 3e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 3f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 3g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 3d (Preferred) and **3f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 3c-3e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 3f)**.

Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**. Because the probability that a post-season AM will be required is greater under **Subalternative 3f** and **Subalternative 3g** relative to **Subalternative 3c, Subalternative 3d (Preferred)** and **Subalternative 3e**, the expected adverse indirect economic effects resulting from

Subalternative 3f and **Subalternative 3g** are also expected to be greater than under **Subalternative 3c, Subalternative 3d (Preferred)** and **Subalternative 3e** in the short-term. Due to the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 3g** relative to **Subalternative 3f**.

Depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. **Alternative 1 (No Action)** may have negative social effects if the stock is made unsustainable over time as a result of no AMs. Under **Alternative 2** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 2a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 2b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 2c,** which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 2d,** which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 2e,** which could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 3a** could have negative social effects if stock status is affected by the lack of any accountability measures. **Subalternative 3b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and likely have fewer negative social effects than **Subalternative 3c,** which uses only the next years for monitoring. **Subalternative 3d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 3e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 3f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 3d (Preferred)**. In **Subalternative 3g** payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternative 2** and associated subalternatives are not likely to have any administrative impacts. **Alternative 3** and associated subalternatives will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

Table 2-39. Summary of effects under **Action 11**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Commercial sector: **Alternative 1 (No Action)**	(+-) ITQ acts as a form of AM. Current TAC of 2 million lbs has not been exceeded. New ABC of 250,000 lbs would add more benefits.	(+-) No indirect economic effects.
Recreational sector: **Alternative 2:** Specify the AM trigger. **Subalternative 2a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action).**	(+-) No indirect economic effects.
Subalternative 2b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest positive indirect long-term economic effects of all subalternatives under **Alternative 2**.
Subalternative 2c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive indirect long-term economic effects in-between **Subalternative 2b (Preferred)** and **Subalternative 2d**.
Subalternative 2d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, would have more benefits due to two additional years of data used to determine overage.	(+-) Positive indirect long-term economic effects lower than **Subalternative 2c,** but higher than **Subalternative 2e.**
Subalternative 2e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest positive indirect long-term economic effects of all subalternatives under **Alternative 2**.
Alternative 3: Specify the post-season AM. **Subalternative 3a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) Smallest negative indirect short-term economic effects of all subalternatives under **Alternative 3**.
Subalternative 3b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) Smaller negative indirect short-term economic effects compared to **Subalternatives 3c-3g**.
Subalternative 3c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Smaller negative indirect short-term economic effects compared to **Subalternatives 3d-3g**.
Subalternative 3d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative indirect short-term economic effects in-between **Subalternatives 3c-3e**.

Table 2-39. Continued. Summary of effects under **Action 11**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 3e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative indirect short-term economic effects higher than **Subalternatives 3a-3d**, but, lower than **Subalternatives 3f** and **3g**.
Subalternative 3f. Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 3c-3e**.	(+-) Negative indirect short-term economic effects greater than **Subalternatives 3a-3e**, but lower than **Subalternative 3g**.
Subalternative 3g. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Greatest negative indirect short-term economic effects of all subalternatives under **Alternative 3**.

2.2.4 Action 12: Establish Management Measures for Wreckfish

Alternative 1 (No Action). Retain the January 15-April 15 spawning season closure. Wreckfish is included in the 20-fish snapper grouper aggregate bag limit. The TAC/ACL for wreckfish is 2 million lbs.

Recreational Sector
Alternative 2. Remove wreckfish from the 20 fish aggregate snapper grouper bag limit.

Alternative 3 (Preferred). Implement a one-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 4. Implement a one-wreckfish per angler per day bag limit for the recreational fishery.

Alternative 5. Implement a 5-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 6 (Preferred). Establish a July-August recreational season.

Alternative 7. Establish a May-June recreational season.

Alternative 8. Exempt the recreational sector from having to have commercial permits (snapper grouper and wreckfish), wreckfish shares, and coupons to land wreckfish.

Comparison of Alternatives

Alternative 1 (No Action) would retain the January 15-April 15 spawning season closure for wreckfish in the commercial sector. **Alternative 1 (No Action)** would also retain wreckfish in the list of species included in the 20-fish aggregate bag limit, which includes all species in the snapper grouper fishery management unit, with the exception of tomtate and blue runner. However, a commercial snapper grouper permit, a wreckfish permit, and wreckfish shares and allocation are required to harvest wreckfish.

Alternatives 2-8 address the recreational sector for wreckfish. **Alternative 2** would remove wreckfish from the 20-fish aggregate bag limit and would be consistent with an alternative in **Action 9**, which would allocate 100% of the allowable catch to the commercial sector. **Alternatives 3 (Preferred)-5** explore various recreational bag and vessel limits for wreckfish, with **Alternative 3 (Preferred)** being the most conservative alternative limiting one wreckfish per vessel per day. **Alternative 4** would allow one wreckfish per angler per day to be retained, and **Alternative 5** would allow a five wreckfish per vessel per day bag limit. With landings data being confidential for the commercial fishery for most of the last decade, and an absence of recreational landings, the magnitude of harvest reductions from the alternatives cannot be quantified. Generally speaking, a reduction in harvest usually translates into positive biological benefits. Therefore, the biological effects of **Alternative 3 (Preferred)** would be expected to be more positive compared to **Alternatives 4** and **5**.

Alternatives 6 (Preferred) and **7** establish a two-month fishing season for the recreational sector. Since the preferred allocation alternative provides a small recreational ACL of 12,500 lbs whole weight, an abbreviated recreational fishing season may be appropriate. The negative aspects of having an established recreational fishing season for wreckfish is that incidentally captured wreckfish could not be retained and would have to be discarded outside the recreational season. Wreckfish do not survive the trauma of being brought to the surface due to the extreme water depths in which they occur.

Currently, there is a spawning season closure in place from January15-April 15 of each year. Biologically, the benefits from both these alternatives may not vary by much, but **Alternative 7** would allow for the recreational effort to start only two weeks after the spawning season closure ends. Alternatively, **Alternative 6 (Preferred)** would provide a longer time interval after the spawning season before the recreational fishing season began, which could provide a greater biological benefit to the fishery. **Alternative 6 (Preferred)** also provides an opportunity for recreational fishermen to fish for wreckfish in the summer time, when weather conditions are more favorable offshore with more fishermen on the water who might encounter wreckfish.

The preferred alternative under **Action 9** would allocate 95% of the allowable catch to the commercial sector and 5% to the recreational sector. Under **Action 10**, the preferred alternative (ACL=OY=ABC) would result in the ACL for the commercial sector of 237,500 lbs whole weight and the ACL for the recreational sector of 12,500 lbs whole weight. **Alternative 8** exempts the recreational sector from the constraints currently in place to retain wreckfish under the bag limit. The South Atlantic Council determined at their March 2011 meeting, that an alternative to exempt the recreational sector from requirements for the commercial sector is not needed, but should be discussed and explained within this action.

Since a recreational sector for wreckfish does not currently exist under the snapper grouper FMP, neither do the necessary data to conduct analysis of the expected economic effects of the various alternatives. In general, the direct and indirect economic effects of the alternatives considered under this action are expected to be minimal given the recreational ACL of 12,500 lbs whole weight under **Alternative 3 (Preferred)** for **Action 10**. However, the indirect economic benefits under **Alternative 6 (Preferred)** might be greater relative to **Alternative 7** as it may be safer to fish in July and August than May and June.

Alternative 1 (No Action) would continue the spawning closure and could have few social effects on the commercial fishery. **Alternative 2** would not allow any recreational catch. **Alternatives 3 (Preferred)-5** would allow the recreational sector a bag limit with the larger bag limit having positive social effects for the recreational fishery in the short term. The benefits of **Alternative 6** (**Preferred)** are that recreational fishing during that time may be safer since weather conditions are calmer during those late Spring months than the earlier months with **Alternative 7**. **Alternative 8** would reduce the administrative requirements and likely have positive social effects.

Alternative 1 (No Action) would not increase the administrative burden on the agency. **Alternatives 2-7** would require administrative support in the form of rule making, outreach, and enforcement, but the impacts would not differ much between the action alternatives and the status quo. **Alternative 8** would likely reduce administrative burden as it would eliminate the need for commercial permits, shares and coupons.

Table 2-40. Summary of effects under **Action 12**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Commercial sector: **Alternative 1 (No Action)**	(+-) Retains the spawning season closure of January 15-April 15, reduced ABC of 250,000 lbs whole weight could lead to positive effects	(+-) No net benefits.
Recreational sector: **Alternative 2.** Removed from 20 fish aggregate snapper grouper bag limit	(+-) Same as **Alternative 1 (No Action)**.	(+-) Same as **Alternative 1 (No Action)**.
Alternative 3 (Preferred). 1-fish/vessel/day bag limit	(+-) More conservative than **Alternatives 4** and **5**, hence more positive effects.	(+-) Minimal direct and indirect economic benefits.

Table 2-40. Continued. Summary of effects under **Action 12**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 4. 1-fish/angler/day bag limit	(+-) Benefits in between **Alternatives 3 (Preferred)** and **5**.	(+-) Minimal direct and indirect economic benefits.
Alternative 5. 5-fish/vessel/day bag limit	(+-) Least conservative of **Alternatives 3 (Preferred), 4,** and **5**, hence smaller benefits.	(+-) Minimal direct and indirect economic benefits.
Alternative 6 (Preferred). July-August recreational season	(+-) More beneficial than **Alternative 7**, provides additional time after spawning season closure ends.	(+-) Indirect economic benefits greater than **Alternative 7**.
Alternative 7. May-June recreational season	(+-) Less beneficial than **Alternative 6 (Preferred)**.	(+-) Indirect economic benefits smaller than **Alternative 7**.
Alternative 8. Exempt recreational fishermen from commercial regulations.	(+-) Administrative in nature, unknown biological effects.	(+-) Reduced administrative burden, possible positive social effects.

2.3 Snapper Grouper Fishery Management Plan (black grouper, yellowtail snapper & mutton snapper)

2.3.1 Action 13: Specify Jurisdictional Allocations for Black Grouper

Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper acceptable biological catch (ABC) based on one of the following methods:

Subalternative 2a. South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (Established by using average landings from 1991-2008).

Subalternative 2b (Preferred). South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).

Subalternative 2c. South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (Established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).

Subalternative 2d. South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).

Table 2-41. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Subalternatives 2a-2d** and preferred alternative for ABC of 522,543 lbs whole weight for Gulf of Mexico and South Atlantic specified for 2012 in **Table 4-46**.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	240,370	282,173
Alternative 2b	**245,595**	**276,948**
Alternative 2a	250,821	271,722
Alternative 2b	261,272	261,272

Table 2-42. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico by year using jurisdictional allocations specified in preferred **Subalternative 2b**.

Year	ABC	South Atlantic	Gulf of Mexico
2011	523,000	245,810	277,190
2012	522,543	245,595	276,948
2013	545,595	256,430	289,165
2014	558,711	262,594	296,117
2015	564,737	265,426	299,311

Comparison of Alternatives

Alternative 1 (No Action) would not establish jurisdictional allocation of the black grouper ABC between the Gulf of Mexico and South Atlantic Councils. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between them. Since black grouper are primarily landed off Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys.

The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Subalternatives 2a-2d** would be similar. The recent stock assessment (SEDAR 19 2008) indicates that management measures in both areas are sufficient to prevent overfishing. The South Atlantic Council has recently implemented a four-month spawning season closure for black grouper and the Gulf of Mexico Council has implemented an individual fishing quota system for grouper species. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure black grouper does not experience overfishing.

Relative to **Alternative 1 (No Action)**, the greatest increase in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic black grouper fishery would accrue under **Subalternative 2d**, followed by **Subalternative 2c** and **Subalternative 2b (Preferred)**, while **Subalternative 2a** would provide the lowest total economic benefits.

In establishing jurisdictional allocations for black grouper the social effects are similar to any allocation choice. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Under **Subalternative 2b (Preferred)**, ABC would be almost evenly divided between the two Councils.

Table 2-43. Summary of effects under **Action 13**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Current recreational landings in S. Florida may not accurately correspond to existing ABC levels between S. Atl. and Gulf of Mexico, and hence benefits may not be optimal.	(+-) No net economic benefits due to distributional nature of allocation.
Alternative 2: Percentage of ABC between S. Atl. and Gulf of Mexico; different time series for landings. **Subalternative 2a.** S. Atl.=46%; Gulf of Mexico=54%.	(+-) Slightly higher proportion of the ABC to the Gulf of Mexico, time series for landings takes into account better recreational effort from 1991 onwards. Benefits unclear.	(+-) Smallest net economic benefits of all subalternatives under **Alternative 2**.
Subalternative 2b (Preferred). S. Atl.=47%; Gulf of Mexico=53%.	(+-) Slightly higher proportion of the ABC to the Gulf of Mexico compared with **Subalternative 2a**. Time series for landings takes into account better fishing effort for all sectors. Benefits may be higher.	(+-) Net economic benefits between **Subalternatives 2a** and **2c**.
Subalternative 2c. S. Atl.=48%; Gulf of Mexico=52%.	(+-) Similar to **Subalternative 2b (Preferred)**. Benefits may be higher due to time series for landings taking into account better recreational effort from 1991 onwards.	(+-) Net economic benefits higher than **Subalternatives 2a** and **2b (Preferred)**, but lower than **Subalternative 2d**.
Subalternative 2d. S. Atl.=50%; Gulf of Mexico=50%.	(+-) Even distribution of ABC, benefits unclear between the two jurisdictional areas.	(+-) Greatest net economic benefits of all subalternatives under **Alternative 2**.

2.3.2 Action 14: Specify Sector Allocations for Black Grouper

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat). When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Note: Average landings used as "catch history" in computations. Data use the same post-stratification approach (MRFSS landings from Monroe County, Florida, re-assigned from Gulf of Mexico to South Atlantic), that was used in **Action 13** (jurisdictional allocations for black grouper).

Alternative 1 (No Action). Do not establish sector allocations for black grouper.

Alternative 2. Establish commercial and recreational sector allocations based on criteria outlined in subalternatives below.

Subalternative 2a. Commercial = 48.14% and recreational = 51.86% using average landings from 1986-2008.

Subalternative 2b. Commercial = 50.13% and recreational = 49.87% using average landings from 1986-1998.

Subalternative 2c. Commercial = 43.74% and recreational = 56.26% using average landings from 1999-2008.

Subalternative 2d. Commercial = 33.02% and recreational = 66.98% using average landings from 2006-2008.

Subalternative 2e (Preferred). Commercial = 36.88% and recreational = 63.12% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Alternative 3. Establish commercial, recreational, and for-hire sector allocations based on criteria outlined in subalternatives below.

Subalternative 3a. Commercial = 48.14% , for-hire = 11.11%, and recreational = 40.75% using average landings from 1986-2008.

Subalternative 3b. Commercial = 48.14% , for-hire = 8.45%, and recreational = 41.42% using average landings from 1986-1998.

Subalternative 3c. Commercial = 43.74% , for-hire = 16.99%, and recreational = 39.27% using average landings from 1999-2008.

Subalternative 3d. Commercial = 33.02% , for-hire = 15.06%, and recreational = 51.92% using average landings from 2006-2008.

Subalternative 3e. Commercial = 36.88% , for-hire = 15.29%, and recreational = 47.83% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Table 2-44. Commercial and recreational ACLs for the South Atlantic in **Alternatives 2** and **3** based on the ACL of 245,595 for 2012 specified in the preferred alternative in **Action 15**.

Alternative 2	Comm	Rec	
Sub Alt 2a	118,237	127,358	
Sub Alt 2b	123,120	122,475	
Sub Alt 2c	107,434	138,161	
Sub Alt 2d	81,104	164,491	
Sub Alt 2e (Preferred)	**90,575**	**155,020**	
Alternative 3	**Comm**	**For-Hire**	**Rec**
Sub Alt 3a	118,237	27,278	100,079
Sub Alt 3b	123,120	20,748	101,727
Sub Alt 3c	107,434	41,728	96,433
Sub Alt 3d	81,104	36,990	127,501
Sub Alt 3e	90,575	37,547	117,473

Table 2-45. Commercial and recreational ACLs by year based on commercial (36.88%) and recreational (63.12%) allocations specified in **Subalternative 2e (Preferred)**.

Year	South Atlantic	Comm	Rec
2012	245,595	90,575	155,020
2013	256,430	94,571	161,859
2014 (and onwards until modified)	262,594	96,844	165,750

Comparison of Alternatives

As the allocations in the various subalternatives are fairly similar, it would be expected that there would be similar biological effects among the subalternatives contained within **Alternatives 2** and **3**. The biological effects of the different allocation alternatives would be expected to be similar if landings in various sectors could be closely monitored. The biological effects of **Alternative 3** would be expected to be less than **Alternative 2** since recreational data can be less certain when they are divided into sectors. Further, the biological effects of subalternatives that allocate more to the commercial sector could have a positive biological effect because there is less of a chance that a commercial ACL would be exceeded than a recreational ACL. Commercial data can often be more closely monitored as they are based on dealer reports; whereas, much of the recreational data (except headboat data) are based on survey information.

With respect to economic impacts, **Subalternatives 2c-2e (Preferred)** and **3c-3e** will likely generate less economic disruptions in the short term relative to **Subalternatives 2a-2b** and **3a-3b** because they more closely align with the distribution of landings between the two sectors under the status quo (i.e., **Alternative 1, No Action)**.

Ideally, when examining the economic effects of alternative allocations, estimates of marginal commercial and recreational net economic benefits under the various allocation alternatives

should be considered so that scarce fish resources can be reallocated to those sectors that generate the highest net benefits to society. Economic benefits are maximized at the allocation level where the marginal net economic benefits to the commercial and recreational sectors are equal. However, marginal net economic benefits for the various alternatives are not available at this time and so the analysis relies on comparisons of gross revenue estimates in the commercial sector and consumer surplus estimates in the recreational sector.

Alternative 3 proposes five different allocations of the black grouper harvest that further separate the recreational allocation between the for-hire and private recreational sectors. As such, the potential changes in producer surplus or NOR to the for-hire sector should be measured separately in theory. However, as indicated in **Section 3.8.2**, there were no charter trips targeting black grouper and only an average of 642 charter trips per year harvesting black grouper in the South Atlantic between 2005 and 2009. Thus, it is difficult to analyze the expected economic effects of the proposed subalternatives under **Alternative 3**. However, if accurate, the data suggest the economic effects on the for-hire sector associated under the various subalternatives for **Alternative 3** will differ little.

In terms of social impacts, as mentioned previously, there can be many different effects that result as allocations are divided and perceptions are formed. It is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. However, with regard to **Alternative 3** and its subset of alternatives, there has been significant resistance from the private recreational component of the overall recreational sector to separate allocations. Some within the charter sector see some benefits from having a separate allocation as there may be more stability in having some accountability within each sector.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Under **Subalternative 2e (Preferred)**, ABC would be more evenly divided among the commercial and recreational sectors, but require more of an administrative burden than **Alternative 1 (No Action)**. Subalternatives under **Alternative 3** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

Table 2-46. Summary of effects under **Action 14**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) A single ABC, and therefore single ACL would be established for both sectors, no ABC for the recreational sector, could lead to overfishing.	(+-) Maintains an overall ABC, and consequent ACL, few socio-economic benefits.
Alternative 2: ABC divided into two sectors; different time series for landings. **Subalternative 2a.** Commercial=48.14%; Recreational=51.86%.	(+-)Would establish sector-specific ABCs, benefits are higher since ACLs and AMs would be required for both sectors. Landings data represent commercial sector better than more recent recreational effort.	(+-) No net benefits due to allocation.
Subalternative 2b. Commercial=50.13%; Recreational=49.87%.	(+-) Similar to **Subalternative 2a**, benefits may be lower since landings data represent commercial sector much better than more recent recreational effort.	(+-) No net economic benefits due to allocation.
Subalternative 2c. Commercial=43.74%; Recreational=56.26%.	(+-) Benefits in-between **Subalternatives 2a** and **2b**.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Subalternative 2d. Commercial=33.02%; Recreational=66.98%.	(+-) Benefits similar to **Subalternative 2c**, except recreational effort is captured better in this time series.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Subalternative 2e (Preferred). Commercial=36.88%; Recreational=63.12%.	(+-) Highest benefit of all subalternatives under **Alternatives 2** and **3**. Landings data for both sectors are from time periods with the best reporting.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Alternative 3: ABC divided into three sectors; different time series for landings. **Subalternative 3a.** Commercial=48.14%; Recreational=40.75%; For-hire=11.11%.	(+-) Lower benefit than **Subalternative 2a**. Uncertainty in recreational landings increased by adding another recreational sector.	(+-) No net economic benefits due to allocation.
Subalternative 3b. Commercial=48.14%; Recreational=41.42%; For-hire=8.45%.	(+-) Lower benefit than **Subalternatives 2b** and **3a**. Earlier time series has better commercial reporting, recreational landings and associated uncertainty may lead to overfishing.	(+-) No net economic benefits due to allocation.
Subalternative 3c. Commercial=43.74%; Recreational=39.27%; For-hire=16.99%.	(+-) Benefits in-between **Subalternatives 3a** and **3b**.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.

Table 2-46. Continued. Summary of effects under **Action 14**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 3d. Commercial=33.02%; Recreational=51.92%; For-hire=15.06%.	(+-) Benefits lower than **Subalternative 2d**, and similar to **Subalternative 3c**, except recreational effort is captured better in this time series.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.
Subalternative 3e. Commercial=36.88%; Recreational=47.83%; For-hire=15.29%.	(+-) Highest benefit of all subalternatives under **Alternative 3**, but, lower than **Subalternative 2e (Preferred)**.	(+-) No net economic benefits due to allocation. Less short-term economic disruption.

2.3.3 Action 15: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper

Alternative 1 (No Action). Retain aggregate recreational and commercial ACLs and OY for black grouper, red grouper, and gag.

Alternative 2 (Preferred). ACL = OY = ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 3. ACL = OY = 90% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 4. ACL = OY = 80% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Table 2-47. ACL formula, ACL, and OY value (lbs whole weight) for black grouper (without discard projections). Commercial and recreational ACL values are based on preferred allocation alternative (36.88% commercial/63.12% recreational) in **Action 14**.

Alternative	ACL Formula	Years	Total ACL (South Atl.)	Comm ACL	Rec ACL
1 (No Action)	The group ACL for gag, black grouper, and red grouper is 662,403 gw (781,636 ww) for the commercial sector and 648,663 gw (765,422 ww) for the recreational sector. The total group ACL is 1,311,066 gw (1,547,058 ww). *				
2 (Preferred)	**ACL=ABC**	**2012**	**245,595**	**90,575**	**155,020**
		2013	**256,430**	**94,571**	**161,859**
		2014+	**262,594**	**96,844**	**165,750**
3	ACL=90% ABC	2012	221,036	81,518	139,518
		2013	230,787	85,114	145,673
		2014+	236,335	87,160	149,175
4	ACL=80% ABC	2012	196,476	72,460	124,016
		2013	205,144	75,657	129,487
		2014+	210,075	77,475	132,600

*Note: An individual ACL is currently not in place for black grouper. These values are equivalent to the expected catch resulting from the implementation of management measures for black grouper in Amendment 16 and specified in Amendment 17B. The black grouper portion of the combined gag, black, and red grouper ACL would translate to a total ACL of 140,124 lbs ww (118,749 lbs gw); 102,526 lbs ww (86,866 lbs gw) for the commercial ACL; and 37,598 lbs ww (31,868 lbs gw) for the recreational ACL.

Comparison of Alternatives

Alternative 1 (No Action) would retain the commercial and recreational aggregate ACL specified for gag, black grouper, and red grouper in Amendment 17B (SAFMC 2010b). The aggregate commercial ACL for gag, black grouper, and red grouper is 662,403 lbs gutted weight, and the aggregate recreational ACL is 648,663 lbs gutted weight. The aggregate ACL is based on expected landings from actions taken in Amendment 16 (SAFMC 2009a) and therefore does not take into consideration recent information from the black grouper stock assessment.

Alternatives 2 (Preferred)-4 would specify an individual ACL and OY for black grouper based on the ABC from the recent SEDAR stock assessment. Under **Alternatives 2 (Preferred)-4,** ACLs for the commercial and recreational sectors would increase through 2014 and then remain at 2014 levels until otherwise specified by the South Atlantic Council. The ACLs would not increase in a subsequent years if present year projected catch has exceeded the total ACL. The ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico SSC for 2012 is 522,543 lbs whole weight (without dead discards). The South Atlantic Council's preferred jurisdictional allocation of ABC specified in **Action 13** is 47% for the South Atlantic, resulting in South Atlantic black grouper ABC equal to 245,595 lbs whole weight. Based on the preferred allocation alternatives in **Action 14**, 63.12% of the ACL would be allocated to the recreational sector and 36.88% of the ACL would be allocated to the commercial sector. The commercial and recreational ACLs based on alternatives in this action as well as the preferred allocation alternative in **Action 14** are shown in **Table 2-47**.

In terms of economic impacts, in general, the short-run benefits tend be higher when there is no or little buffer between the ACL and the ABC, as is the case under **Alternative 2 (Preferred**). As the ACL becomes more conservative under **Alternatives 3** and **4**, the anticipated short-term losses in economic benefits tend to increase. **Alternative 3** is preferable to **Alternative 4** in the short term, at least, since it results in a higher ACL for the commercial and recreational fisheries. Long-term economic benefits may be maximized under **Alternative 2 (Preferred**) as long as there is very little uncertainty regarding whether the ACL will be exceeded or not. If there is uncertainty, then long-term economic benefits are greatest under scenarios where a buffer is in place (**Alternatives 3** and **4**). Long-term economic benefits will depend on the ability of the ACL to increase stock abundance and reduce harvesting costs.

Establishing an ACL for black grouper will have social effects similar to the discussions under other actions establishing ACLs. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status as black grouper would have no specific ACL, just an ACL as part of the grouper aggregate. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2** (**Preferred)** would be less restrictive than **Alternatives 3** and **4** and have fewer negative social effects. Although black grouper has never had an ACL, it has been part of the larger grouper aggregate catch limit. By establishing a specific ACL for this species there could be changes in fishing behavior that may induce other social effects if target switching causes closures for black grouper or other species.

The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-4** are minimal and would not differ much among the three action alternatives.

Table 2-48. Summary of effects under **Action 15**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Least conservative of the alternatives, since there is no buffer between ACL and ABC.	(+-) Smaller long-term benefits when compared with **Alternatives 3** and **4**.
Alternative 3. ACL=OY=90% ABC	(+-) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Provides a buffer between ABC and ACL. Benefits could fall in-between **Alternatives 2 (Preferred)** and **4**.	(+-) Benefits in-between **Alternatives 2 (Preferred)** and **4**.
Alternative 4. ACL=OY=80% ABC	(+) Would establish sector-specific ACLs, benefits are higher since AMs would be required for both sectors. Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Smallest short-term, and largest long-term benefits.

2.3.4 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper

Alternative 1 (No Action). Retain the existing commercial AMs for black grouper (**Table 2-49**).

Table 2-49. Current commercial regulations for black grouper.

Current Commercial Regulations	
Aggregate ACL and in-season closures	Group commercial ACL for gag, black grouper and red grouper of 662,403 lbs gutted weight. After the commercial ACL is met, all purchase and sale of the following species is prohibited and harvest and/or possession is limited to the bag limit: gag; black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: gag, black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.

Alternative 2. Specify Annual Catch Targets (ACT) for the commercial sector.

Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if overfished.

Comparison of Alternatives

Alternative 1 (No Action) would maintain the current AMs for black grouper established through Amendment 17B, and would not result in any additional cost or benefit to the biological environment over the status quo. **Subalternative 2a (Preferred)** would not set an ACT for the commercial sector. **Alternative 3 (Preferred)** would prevent the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus would provide a disincentive to target black grouper once the ACL has been reached. **Alternative 3 (Preferred)** could serve as a complement to **Alternative 4 (Preferred)** since it would correct for an ACL overage post-season if one were to occur during the fishing season, but only if the species is determined to be overfished. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit if effort were to increase enough to trigger the AM.

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run than **Alternative 2. Alternative 4 (Preferred)** will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue), but potentially long-run positive economic effects relative to **Alternative 1 (No Action),** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Alternative 1 (No Action) would have few negative social impacts. A buffer could be imposed through **Alternative 2** which might reduce the harvest threshold further from the ACL. **Subalternative 2a (Preferred)** would be less restrictive than **Subalternative 2b or 2c** and therefore have fewer negative social effects. Once the ACL is met in **Alternative 3 (Preferred)** there should be beneficial social effects in keeping the fishery sustainable. The payback provision in **Alternative 4 (Preferred)** should provide added protection for the stock and beneficial social effects.

Alternative 1 (No Action) would not produce near-term administrative impacts. Administrative impacts of **Alternatives 2-4 (Preferred)** would be greatest relative to the commercial AMs proposed. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

Table 2-50. Summary of effects under **Action 16**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Greater short-term and smaller long-term benefits.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(-) Smaller short-term and long-term benefits.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4 (Preferred)**, but less than **Alternative 1 (No Action)**.
Alternative 4 (Preferred). Commercial sector AM: ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greatest long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **1 (No Action)**.

2.3.5 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper

Alternative 1 (No Action). Do not specify new recreational AMs for black grouper (**Table 2-51**).

Table 2-51. Existing recreational regulations for black grouper.

Current Recreational Regulations	
Bag limit	Included in three grouper aggregate bag limit per person per day (1 may be black or gag). Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby, and coney.
ACL/AM	Establish a recreational ACL for gag, black grouper, and red grouper of 648,663 lbs gutted weight. If at least one of the species (gag, red grouper, or black grouper) *is overfished* and the sector ACL is projected to be met, prohibit the harvest and retention of the species or species group. If the ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the sector ACL in the following year by the amount of the overage. For black grouper compare the recreational ACL with recreational landings over a range of years. For 2010, use only 2010 landings. For 2011, use the average landings of 2010 and 2011. For 2012 and beyond, use the most recent three-year running average.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.

Subalternative 2b. The ACT equals 85% of the ACL.

Subalternative 2c. The ACT equals 75% of the ACL.

Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage if the species is overfished.

Table 2-52. The black grouper recreational ACTs for **Alternative 2**. Average PSE during 2005-2009 equals 39 (**Table 2-33**). Values are in lbs whole weight.

Year	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 5a; ACT=85%(ACL)	ACT Subalt. 5b; ACT=75%(ACL)	ACT Subalt. 5c (Preferred); ACT equals sector ACL [(1-PSE) or 0.5, whichever is greater]
2012	155,020	131,767	116,265	94,562
2013	161,859	137,580	121,394	98,734
2014+	165,750	140,888	124,313	101,108

Table 2-53. Landings (lbs gutted weight (gw) and whole weight (ww)) for black and red grouper in 2010. An ACL is currently in place for gag, and an aggregate ACL is in place for gag, black, and red grouper.

	Commercial (lbs)	Recreational (lbs gw)	Total (lbs gw)
Gag ACL *(Amend 16)*	352,940 (gw) 416,469 (ww)	340,060 (gw) 401,271 (ww)	693,000 (gw) 817,740 (ww)
Black grouper landings (2010)	37,258 (gw) 43,964 (ww)	35,222 (gw) 41,562 (ww)	72,480 (gw) 85,526 (ww)
Red grouper landings (2010)	277,337(gw) 327,258(ww)	91,508(gw) 107,979 (ww)	368,845(gw) 435,237 (ww)
Gag, black, red aggregate ACL	662,403 (gw) 781,635 (ww)	648,663 (gw) 765,422 (ww)	1,311,006 (gw) 1,546,987 (ww)

Comparison of Alternatives

Alternative 1 (No Action) would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 15**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL**.** **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish an ACT as an actual harvest level that presumably once exceeded, would trigger an AM . **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d**

(Preferred) would have the greatest biological benefit of the three subalternatives by reducing the ACL by 50% or by one minus the percent standard error (PSE) from the recreational fishery, whichever is greater.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined whether one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if regulations have been implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), and scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a time lag in when recreational data become available. There would likely be considerable uncertainty in imposing in season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological effects may not be adverse by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM

actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of three years to determine the magnitude of the ACL overage for imposing post-season AMs. If the ACL is exceeded, **Subalternatives 5c – 5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**.

Alternative 1 (No Action) would have the most potential to cause the greatest economic dislocation in the long run. **Subalternative 2c** generates higher short-term losses in consumer surplus relative to **Subalternative 2b** and **Subalternative 2d (Preferred)** generates higher short-term losses in consumer surplus relative to **Subalternative 2c**. These estimates assume the recreational sector can harvest the ACT and the short-run losses are expected to be offset in the long run when stock abundance is anticipated to increase. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. **Subalternative 4a (Preferred)** would not generate any indirect economic effects. **Subalternative 4b** would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**. **Subalternatives 5a** and **5b** would not generate greater adverse, indirect economic effects. **Subalternative 5c** may generate the same indirect economic effects in the short-term as **Subalternative 5d (Preferred)** and **Subalternative 5e**. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than those under **Subalternative 5d (Preferred)** in the short-term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternative 5c, Subalternative 5d (Preferred)** and **Subalternative 5e** in the short-term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**.

Alternative 1 (No Action) may have negative social effects if stocks are not sufficiently protected through other management. **Subalternatives 2a-2d** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. Under **Alternative 3**, the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**,which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d,** which may be more beneficial if landings are especially volatile. **Subalternative 3e** could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure when the ACL is projected to be met in **Subalternative 4b**. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c,** which uses only the next year for monitoring. **Subalternative 5d (Preferred)** may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as does **Subalternative 5d (Preferred)**. In **Subalternative 5g**, payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

The administrative impacts of this action are expected to be similar to those for **Action 8**. However, collecting data for the recreational fishery may be more administratively burdensome than for the commercial fishery. The alternatives and associated subalternatives are not likely to differ much in their administrative impacts.

Table 2-54. Summary of effects under **Action 17**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest long-term negative effects.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with **Subalternative 2b**.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL [(1-PSE) or 0.5, whichever is greater]	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or one minus the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.

Table 2-54. Continued. Summary of effects under **Action 17**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT (**Subalternative 2d, Preferred)**.	(+-) No indirect economic effects.
Alternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a**.
Alternative 5: Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f. Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5f**.

2.3.6 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper

Alternative 1 (No action). Do not establish jurisdictional allocation of the yellowtail snapper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

> **Subalternative 2a.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using average landings from 1987-2001).
> **Subalternative 2b.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).
> **Subalternative 2c.** South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (Established by using highest catch history from 1987-2001).
> **Subalternative 2d.** South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (Established by using lowest catch history from 1987-2001).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (Established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

Alternative 4 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (Established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (Established by using average landings from 2005-2009).

Table 2-55a. Values for ABC (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdiction allocations specified in **Alternatives 2-6** based on recommended ABC of 2,898,500 lbs whole weight for Gulf of Mexico and South Atlantic.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	2,840,530	57,970
Alternative 2b	2,840,530	57,970
Alternative 2c	2,898,500	0
Alternative 2d	2,753,575	144,925
Alternative 3	2,115,905	782,595
Alternative 4 (Preferred)	**2,173,875**	**724,625**
Alternative 5	2,231,845	666,655
Alternative 6	2,057,935	840,565

Table 2-55b. Yellowtail snapper values (lbs whole weight) for ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational, and recreational ACT based on preferred alternative of ABC = 2,173,875 lbs whole weight for the South Atlantic.

Parameter	Value	Source
ABC	2,173,875	Action 18, Preferred Alternative 4
ACL	2,173,875	Action 6, Preferred Alternative 2
Comm ACL	1,142657	Action 5, Preferred Alternative 2
Rec ACL	1,031,218	Action 5, Preferred Alternative 2
Rec ACT	897,160	Action 8, Preferred Alternative 2d

Comparison of Alternatives

Under **Alternative 1 (No Action)**, the Gulf of Mexico and South Atlantic Councils would need to agree on an ACL and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)), and sector allocations. **Alternative 2** would establish a jurisdictional allocation for yellowtail snapper, based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003), which does not consider stratified yellowtail snapper data for Monroe County, Florida. Juvenile yellowtail are likely more abundant in the Gulf of Mexico Council's jurisdiction and adults along the reef tract are more abundant in the South Atlantic Council's jurisdiction. Therefore, alternatives that consider post-stratified data are likely more appropriate for determining jurisdictional allocations than **Alternative 2**.

Under **Alternatives 3-6,** data for yellowtail snapper in the Florida Keys were stratified into the South Atlantic and Gulf of Mexico. **Alternatives 3-6** take into account any management changes that took place for yellowtail snapper in both the Gulf of Mexico and South Atlantic Council's FMPs since all catch history data began in 1993. The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Alternatives 2-6** would be similar. The 2003 stock assessment indicates yellowtail snapper are not experiencing overfishing and are not overfished. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure yellowtail snapper does not experience overfishing.

Relative to **Alternative 1 (No Action)**, the greatest change in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic yellowtail snapper fishery would accrue under **Subalternative 2c**, followed by **Subalternative 2a** and **Subalternative 2b** (which are equivalent), **Subalternative 2d**, **Alternative 5**, **Alternative 4 (Preferred)**, **Alternative 3**, and the least, under **Alternative 6**.

The allocation procedure selected may have few social effects depending upon the other restrictions that come from the administration by each Council. At present it is difficult to ascertain any specific social effects other than any reduction in harvest or increased regulatory burden from the allocation scheme may have negative social effects.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. All of the action alternatives and subalternatives would carry a moderate administrative burden. Establishing jurisdictional allocation would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in both the Gulf of Mexico and South Atlantic in relation to the commercial and recreational portion of the allocation for overage and commercial quota purposes. **Subalternative 2c** would carry the least administrative burden.

Table 2-56. Summary of effects under **Action 18.**

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Both councils would need to agree on ACLs and a common set of regulations. Benefits may not be optimal.	(+-) No net benefits due to distributional nature of allocation.
Alternative 2. Percentage of ABC between South Atlantic and Gulf of Mexico based on SEDAR 3 (2003) stock assessment. **Subalternative 2a.** South Atlantic =98%; Gulf of Mexico=2%.	(+-) Benefits unclear, all landings data for Monroe County, Florida was assigned to the South Atlantic, in SEDAR 3 (2003) stock assessment.	(+-) Higher total economic benefits to the South Atlantic region.
Subalternative 2b. South Atlantic=98%; Gulf of Mexico=2%; 50% from 1987-2001 + 50% from 1999-2001.	(+-) Identical to **Subalternative 2a.**	(+-) Benefits same as **Subalternative 2a.**
Subalternative 2c. South Atlantic =100%; Gulf of Mexico=0%.	(+-) Similar to **Subalternative 2a**.	(+-) Highest total economic benefits to the South Atlantic region.
Subalternative 2d. South Atlantic =95%; Gulf of Mexico=5%.	(+-) Similar to **Subalternative 2a**.	(+-) Lowest total economic benefit to the South Atlantic region of all the subalternatives under **Alternative 2**.

Table 2-56. Continued. Summary of effects under **Action 18**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 3. South Atlantic =73%; Gulf of Mexico=27%.	(+-) Benefits unclear, but data incorporates more recent years, and all catch history data since 1993 is post-stratified between the two Councils for Monroe County, Florida	(+-) Higher net economic benefits than **Alternative 6**, but lower than **Alternatives 4** and **5**, to the South Atlantic region.
Alternative 4 (Preferred). South Atlantic =75%; Gulf of Mexico=25%.	(+-) Similar to **Alternative 3**.	(+-) Benefits between **Alternatives 3** and **5**.
Alternative 5. South Atlantic =77%; Gulf of Mexico=23%.	(+-) Similar to **Alternatives 3** and **4**.	(+-) Net economic benefits higher than **Alternatives 3, 4,** and **6**, to the South Atlantic region.
Alternative 6. South Atlantic =71%; Gulf of Mexico=29%.	(+-) Similar to **Alternative 3**, gives the largest jurisdictional allocation to the Gulf of Mexico of all the alternatives.	(+-) Least net economic benefits of all alternatives under this action to the South Atlantic region.

2.3.7. Action 19: Establish Jurisdictional Allocations for Mutton Snapper

Alternative 1. (No Action). Do not establish jurisdictional allocation of the mutton snapper Acceptable Biological Catch (ABC) between the Gulf and South Atlantic Councils.

Alternative 2 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of ABC and Gulf = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper Acceptable Biological Catch (ABC) based on the following method: South Atlantic = 79% of ABC and Gulf = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

Comparison of Alternatives

Alternative 1 (No Action) would not establish jurisdictional allocations of mutton snapper between the Gulf and South Atlantic Councils. The two Councils would need to agree on an ACL and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)). If the Councils decided not to allocate this species by region they would have to agree on a recreational and commercial allocation.

Alternative 2 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper ABC based on the following method: South Atlantic = 82% of the ABC and Gulf = 18% of the ABC. These percentages were derived by using the formula: 50% of the catch history from 1990-2008 + 50% of the catch history from 2006-2008. In **Alternatives 2 (Preferred)** and **3**, data from Monroe County, Florida are stratified using methodology described in **Action 18**. Employing the ABC for the preferred jurisdictional **Alternative 2** to the preferred alternatives in **Actions 5, 6,** and **8** for snapper grouper species results in the ACL and ACT values specified in **Table 2-57**.

Alternative 3 would establish a jurisdictional allocation based on the following method: South Atlantic = 79% of the ABC and Gulf = 21% of the ABC. These percentages were derived by using catch histories from 2002-2006.

Alternatives 2 (Preferred) and **3** are similar, with only 3% difference in allocation of the ABC between the Gulf and South Atlantic Councils. Based on the stock assessment for mutton snapper (SEDAR 15A 2008), the commercial landings (handline and longline combined) are close to a 50:50 split between the Gulf and South Atlantic Councils. The recreational landings (Marine Recreational Fisheries Statistical Survey (MRFSS) and heaboat) are primarily from the South Atlantic jurisdiction.

Alternative 4 would be dependent upon the Gulf Council relinquishing management of mutton snapper. Under this alternative the South Atlantic Council would manage mutton snapper in the South Atlantic (where most of the landings occur), as well as the Gulf of Mexico. The biological effects of **Alternative 4** could be slightly greater than **Alternatives 2 (Preferred)** and **3** because management measures (a two month spawning season closure) are more restrictive for the commercial sector in the South Atlantic than in the Gulf of Mexico. However, commercial landings of mutton snapper are small relative to recreational landings, and landings from the Gulf of Mexico are much less than those in the South Atlantic.

Regardless of which alternative is selected, SEDAR 15A (2008) indicates management measures in both areas are sufficient to prevent overfishing of mutton snapper. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure mutton snapper does not experience overfishing.

Relative to **Alternative 1 (No Action)**, the greatest losses in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic mutton snapper fishery would accrue under **Alternative 2 (Preferred)**.

Losses in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic mutton snapper fishery would also accrue under **Alternative 3.** Thus, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 1 (No Action)** relative to **Alternative 2 (Preferred)** and **Alternative 3**. Conversely, participants in the South Atlantic mutton snapper fishery would experience gains in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits under **Alternative 4**. Therefore, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 4** relative to **Alternative 1 (No Action)**, **Alternative 2 (Preferred)** and **Alternative 3**.

Alternative 1 (No Action) may make management of mutton snapper more difficult as monitoring of landings with ACLs and AMs creates scenarios for more administrative burdens in accounting for catches. The allocation based upon **Alternatives 2 (Preferred)** and **3** are very close in their allocation and the social effects would differ minimally between the two. Both alternatives use data from the most recent years with **Alternative 2 (Preferred)** using older data also to account for the historical fishery. The social effects of **Alternatives 2 (Preferred)**, **3**, and **4** would likely be positive in the long term as it would allow for management and accountability based upon regional fishing activities. It becomes problematic in areas like the Florida Keys where fishermen may fish in both jurisdictional areas and management differences could make fishing decisions more complicated. Overall, if management becomes more accountable and fishing thresholds provide stability in harvest the benefits should be positive. It will depend upon the ability to monitor and implement any AMs through each council process over time.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Under **Alternatives 2 (Preferred)** and **3**, 82% and 79% of the ABC, respectively, would be divided between the commercial and recreational sectors in the South Atlantic. This could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored to ensure the commercial and recreational ACLs are not exceeded. **Alternative 4** could increase the administrative burden if changes are needed to the federal Gulf Reef Fish and the federal Snapper Grouper Permits.

Table 2-57. Mutton snapper values (lbs whole weight) for OFL, ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational ACL, and recreational ACT based on preferred alternative of ABC = 926,600 lbs whole weight for the South Atlantic.

Parameter	Value	Source
OFL	1,515,300	Action 19
ABC	926,600	Action 19, Preferred Alternative 2
ACL	926,600	Action 6, Preferred Alternative 2
Comm ACL	157,707	Action 5, Preferred Alternative 2
Rec ACL	768,893	Action 5, Preferred Alternative 2
Rec ACT	668,937	Action 8, Preferred Alternative 2d

Table 2-58. Summary of effects under **Action 19**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Both councils would need to agree on ACLs and a common set of regulations. Benefits may not be optimal.	(+-) No net benefits due to distributional nature of allocation.
Alternative 2 (Preferred). Percentage of ABC between South Atlantic and Gulf of Mexico. South Atlantic =82%; Gulf of Mexico=18%.	(+-) Benefits unclear, all landings data for Monroe County, Florida was assigned to the South Atlantic. Identical to the preferred alternative chosen by the Gulf of Mexico.	(+-) Higher total economic benefits to the South Atlantic region.
Subalternative 3. South Atlantic=79%; Gulf of Mexico=21%.	(+-) Benefits unclear.	(+-) Slightly lower economic benefit to the South Atlantic region.
Subalternative 4. No jurisdictional allocation, the South Atlantic Council would manage mutton snapper in both jurisdictional waters.	(+-) Translates to 100% allocation to the South Atlantic. Benefits unclear.	(+-) Highest total economic benefits to the South Atlantic region.

2.4 Dolphin Wahoo Fishery Management Plan

2.4.1 Dolphin

2.4.1.1. Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Dolphin

Alternative 1 (No Action). Do not establish an ABC Control Rule for Dolphin.

Alternative 2. Establish an ABC Control Rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule.
Note: The Gulf of Mexico Council's Control Rule, if applied to dolphin, would likely be Tier 3a and would set the OFL = mean 10 years most recent landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD.

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule described in **Table 2-14**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 2-16** and OFL = unknown (currently ABC = 14,596,216 lbs ww).

Comparison of Alternatives
Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act. **Alternatives 2-4 (Preferred)** would specify an ABC control rule for dolphin. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3 and 4 (Preferred)**. However, as the SSC indicated at their April 2011 meeting, OFL is unknown, therefore no value for ABC would be available under **Alternative 2**. In contrast to **Alternative 2**, **Alternative 3** would be based on the Gulf of Mexico SSC's ABC control, which would account for scientific uncertainty by providing a buffer between ABC and OFL. Again, the South Atlantic Council's SSC determined at their April 2011 meeting that OFL is unknown. **Alternative 4 (Preferred)** would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule, which also accounts for scientific uncertainty.

Alternative 3, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species would result in values that are similar to the South Atlantic Council SSC's ABC control rule value **(Alternative 4 Preferred)**. Therefore, the biological effects of **Alternative 3** would be very similar to those under **Alternative 4 (Preferred)**.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from commercial dolphin landings are predicted to total $1,582,000. This alternative is expected to generate the least dislocation in the short-run, but will also likely generate the smallest long-run economic benefits relative to other alternatives. **Alternative 2** would lead to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**, estimated at $115,000. **Alternative 3** is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL

increases (i.e., increasing the ABC) foregone gross revenue is predicted to decrease. The adoption of **Alternative 4 (Preferred)** is expected to result in a loss of $78,000 in gross revenues. **Alternative 4 (Preferred)** is the least restrictive of all the alternatives other than **Alternative 1 (No Action)**.

Alternatives that are the most restrictive have the potential of negative social effects, both short term and long term, even though there may be long-term biological benefits. **Alternative 2** is not as risk averse as other alternatives. Using the Gulf of Mexico Council SSC's ABC control rule in **Alternative 3** would be less restrictive than South Atlantic Council SSC's ABC control rule in **Alternative 4 (Preferred)** and only slightly more restrictive than **Alternative 2**. The combined effect of any of the reductions in harvest levels is likely to have negative social effects, both sort tem and long term.

The establishment of an ABC control rule is a procedural exercise. The rule is developed by a SSC for consideration by a fishery management council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

Table 2-59. Summary of effects under **Action 20**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet MSA requirements.	(+-) Largest short-term positive benefits, smallest long-term benefits.
Alternative 2. ABC=OFL; OFL=13,709,523 lbs.	(+-) Least conservative of the alternatives, since there is no buffer between OFL and ABC, does not account for scientific and management uncertainty like **Alternatives 3** and **4**.	(+-) Negative economic effects less than all alternatives, except **Alternative 4 (Preferred)**.
Alternative 3. Gulf of Mexico Council SSC's ABC Control Rule; ABC=1.5 S.D. above mean landings 1999 to 2008.	(+-) Benefits similar to **Alternative 4 (Preferred)**.	(+-) Negative economic effects least of all alternatives, except **Alternative 4 (Preferred)**.
Alternative 4 (Preferred). South Atlantic Council SSC's ABC Control Rule; ABC=third highest landings during 1999 to 2008.	(+-) Benefits similar to **Alternative 3**.	(+-) Negative economic effects least of all alternatives.

2.4.1.2 Action 21: Specify Allocations for Dolphin

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Continue to use the allocations for dolphin specified in the Dolphin Wahoo FMP (13% commercial/87% recreational).

Alternative 2. Define allocations for dolphin based upon landings from the accumulative landings system (ALS), MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 7% commercial and 93% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial and 92.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial, 38.4% for-hire, and 54.4% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

Comparison of Alternatives
Alternative 1 (No Action) was implemented through the Dolphin Wahoo FMP, which established a non-binding allocation of 13% on the commercial harvest and 87% for the recreational harvest in the Atlantic EEZ (SAFMC 2003a). The Dolphin Wahoo FMP also established this allocation as a "soft cap" on the commercial sector. The biological benefits of **Alternatives 2** and **4** would be slightly less than **Alternative 3 (Preferred)**. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the estimates.

Under **Alternative 1 (No Action)**, assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,582,000. The remaining alternatives would reduce the commercial allocation from 13% to 7% under **Alternative 2** and 7.3% under **Alternative 3 (Preferred)** and

Alternative 4. The predicted loss in gross revenue due to a 43.8% reduction (i.e., 13% to 7.3%) in allocation as defined by **Alternative 3 (Preferred)** is $78,000 (as well as **Alternative 4**). Note that this is the same loss associated with establishing the preferred ABC Control Rule in **Action 20**. The predicted loss in gross revenue due to a 46.2% reduction (i.e., 13% to 7%) in allocation as defined by **Alternative 2** is $105,000.

Alternative 1 (No Action) would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue if a closure were to occur. **Alternative 2** could have some negative social effects, especially if other actions further decreased the harvest thresholds. **Alternative 3** (**Preferred)** would also decrease the commercial allocation from the present level. **Alternative 4** may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed.

The administrative impacts associated with the proposed alternatives are expected to be similar to the administrative impacts under **Alternative 1 (No Action).** None of the action alternatives are expected to increase the administrative impacts relative to the others.

Table 2-60. Summary of effects under **Action 21**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Highest benefits compared to **Alternatives 1-3 (Preferred)**.	(+-) Maintains current caps on landings between commercial and recreational sectors.
Alternative 2. Commercial=7%; Recreational=93% Landings (1999-2008).	(+-) Benefits lower than **Alternatives 1 (No Action)** and **3 (Preferred)**, higher than **Alternative 4**.	(+-) No net benefits to the due to allocation, losses slightly higher than **Alternatives 3** and **4**.
Alternative 3 (Preferred). Commercial=7.3%; Recreational=92.7% Landings 50% * average catch 1999-2008 + 50% * average catch 2006-2008.	(+-) Benefits higher than **Alternatives 2** and **4**, less than **Alternative 1 (No Action)**. Combines beneficial effects of older data (favoring commercial sector) and newer data (favoring recreational sector).	(+-) No net benefits to the due to allocation, losses similar to **Alternative 4**.
Alternative 4. Commercial=7.3%; Recreational=54.4%; For-hire=38.4%. Landings 50% * average catch 1999-2008 + 50% * average catch 2006-2008.	(+-) Benefits would be less than **Alternatives 1-3 (Preferred)**, uncertainty in recreational landings higher due to addition of another recreational sector.	(+-) No net benefits to the due to allocation, losses similar to **Alternative 3 (Preferred)**.

2.4.1.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of the maximum sustainable yield (MSY) (between 14.1 and 34.9 million lbs).

Alternative 2 (Preferred). ACL = OY =ABC (currently estimated to be 14,596,216 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 12,406,784 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 10,947,162 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 9,487,540 lbs ww).

Discussion

The Dolphin Wahoo FMP (SAFMC 2003a) established what is called a "soft cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The wording is as follows:

> **ACTION 12**. Establish a cap of 1.5 million lbs or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.

The Dolphin Wahoo AP initially discussed adding an alternative that would set ACL equal to 65%, 75%, or 85% of 46.5 million lbs (the top end of the current MSY range). The Dolphin Wahoo AP did not provide an ACL recommendation at that time given the problems with the landings data. The Dolphin Wahoo AP did recommend the South Atlantic Council examine a regional approach to allocating the quotas.

Table 2-61. ACL formula, ACL/OY values (lbs whole weight) for dolphin under **Alternatives 2 (Preferred)-5**. Commercial and recreational ACL values are based on preferred allocation alternative (7.3% commercial/92.7% recreational) in **Action 21**.

Alternative	ACL Formula	ACL/OY	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**14,596,216**	**1,065,524**	**13,530,692**
Alternative 3	85% ABC	12,406,784	905,695	11,501,089
Alternative 4	75% ABC	10,947,162	799,143	10,148,019
Alternative 5	65% ABC	9,487,540	692,590	8,794,950

Comparison of Alternatives

Alternative 1 (No Action) would not establish an ACL for dolphin, and would not meet the requirements of the Magnuson-Stevens Act. **Alternative 2 (Preferred)** would set the ACL equal to the OY equal to the ABC. The SSC has recommended an ABC = 14,596,216 lbs whole weight. **Alternative 3** would set ACL = OY = 85% of ABC. Based on the preferred allocation alternatives in **Action 21**, 7.3% (1,065,524 lbs whole) of the ACL would be allocated to the commercial sector and 92.7% (13,530,692 lbs whole weight) of the ACL would be allocated to the recreational sector. **Alternative 3** would have a greater positive biological effect than **Alternative 2 (Preferred)** because it would create a buffer between the ACL and ABC. The biological effects of **Alternatives 4** and **5** would be greater than **Alternative 3**, with **Alternative 5** setting the most conservative ACL at 65% of the ABC.

Under **Alternative 1 (No Action)**, gross revenues derived from dolphin landings are predicted to total $1,582,000. This alternative is expected to generate the least dislocation in the short-run, but will also likely generate the smallest long-run economic benefits relative to other alternatives. **Alternative 2 (Preferred)** would lead to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**, estimated at $78,000. The greater the buffer, the greater the short-term forgone gross revenue. The adoption of **Alternative 3** is expected to result in a loss of $191,000 in gross revenue; whereas, the adoption of **Alternative 4** and **Alternative 5** are anticipated to result in $281,000 and $385,000 in forgone gross revenue, respectively.

A more restrictive ACL like that proposed under **Alternative 5** would likely have more negative social effects in the short term than would **Alternatives 1 (No Action), 2 (Preferred), 3,** or **4**. **Alternative 3** would be less restrictive than **Alternatives 4** and **5**, thereby having fewer negative social effects, if any, and more restrictive than **Alternative 1 (No Action)** or **2 (Preferred)**.

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase.

Table 2-62. Summary of effects under **Action 22**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC. Benefits may be lower than **Alternatives 3, 4,** and **5**.	(+-) Smallest short-term economic losses of all alternatives.
Alternative 3. ACL=OY=85% ABC	(+-) Provides a buffer between ABC and ACL. Benefits could be higher than **Alternative 2 (Preferred)** and smaller than **Alternatives 4** and **5**.	(+-) Short-term economic losses greater than **Alternative 2 (Preferred)**, but smaller than **Alternatives 4** and **5**.
Alternative 4. ACL=OY=75% ABC	(+-) Benefits in-between **Alternatives 3** and **5**.	(+-) Short-term economic losses in-between **Alternatives 3** and **5**.
Alternative 5. ACL=OY=65% ABC	(+-) Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Greatest short-term economic losses of all alternatives.

2.4.1.4 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin

Alternative 1 (No Action). Do not specify commercial sector ACTs or AMs for dolphin. There is no hard quota for dolphin and there are no AMs in place for dolphin.

Alternative 2. Specify commercial sector ACTs for dolphin.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Table 2-63. The commercial sector ACT for dolphin for each of the alternatives. Values are in lbs gutted weight.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Subalt. 2a (Preferred); No ACT	ACT Subalt. 2b; ACT=90%(ACL)	ACT Subalt. 2c; ACT=80%(ACL)
Dolphin	1,065,524	N/A	958,972	852,419

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the RA shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not establish an AM for dolphin, and would not meet the requirements of the Magnuson-Stevens Act. The most biologically beneficial ACT alternative would be **Subalternative 2c** since it would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL. **Alternative 3 (Preferred)** would remove the incentive to target dolphin on commercial trips since all purchase and sale would be prohibited once the ACL is met. This alternative would also still allow some level of harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the dolphin stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of dolphin.

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenues derived from commercial landings of dolphin are predicted to total $1,504,000. If the South Atlantic Council would have specified a commercial sector ACT, then the commercial sector would have forgone gross revenue in the future, if management measures enforcing the ACT are implemented, ranging from $83,000 for **Subalternative 2b** to $161,000 for **Subalternative 2c** due to specification of the ACT. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run. **Alternative 4** calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative would likely generate adverse short-run economic effects (i.e., lower short-run gross revenue), but potentially long-run positive economic effects relative to **Alternative 1 (No Action),** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

There would likely be few negative social effects from **Alternative 1 (No Action)** as no further reductions in harvest would be implemented either through a lower ACT threshold or accountability measures. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would

be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** could impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season. Because dolphin are a fast growing fish, it may not be necessary to impose any payback as this species has a very short lifespan which means those fish that are not caught may not provide the additional payback to the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. The administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs (**Alternative 2** and associated subalternatives) alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternatives 3 (Preferred)** and **4** would be expected to have similar administrative impacts.

Table 2-64. Summary of effects under **Action 23**.

Alternatives	Biological Effects	Socioeconomic/Admin Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded, no buffer between ACT and ACL. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Same as **Alternative 1 (No Action)**.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a (Preferred)** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(-) Smaller short-term benefits compared with **Subalternative 2b**.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4**, but less than **Alternative 1 (No Action)**.

Table 2-64. Continued. Summary of effects under **Action 23**.

Alternatives	Biological Effects	Socioeconomic/Admin Effects
Alternative 4. Commercial sector AM: ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greater long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **1 (No Action)**.

2.4.1.5 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin

Alternative 1 (No Action). Do not specify new recreational AMs for dolphin.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 3-year average (7.0).

Table 2-65. Percent Standard Errors (PSEs) for dolphin from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Dolphin	8.5	7.6	26.6	16.4	17.5	15.6	9.9	14.3	17.2

Note: The South Atlantic Council decided to use the 3-year average PSE because this better represented recent catches than the 5-year average.

Table 2-66. The recreational ACT for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 5a; ACT=85%(ACL)	ACT Subalt. 5b; ACT=75%(ACL)	ACT Subalt. 5c; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Dolphin	13,530,692	11,501,088	10,148,019	11,595,803

Average recreational landings for 2005-2009 from **Table 4-71** = 9,056,933 lbs ww.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed. [1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in

increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. *Reduce bag limit.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not specify recreational AMs for dolphin and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL**.** **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In

cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose to not have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after the end of a two-month wave. There would likely be considerable uncertainty in imposing in season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. **Subalternatives 5d (Preferred)** and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h** there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus for recreational dolphin trips is $211,755,000 using willingness-to-pay estimates from the nested logit (NL) model and $76,313,000 using willingness-to-pay estimates from the mixed logit (ML) model.[1] Since the South Atlantic Council specified a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to a potential marginal decrease in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)** and **Subalternative 2a**.

[1] See **Appendix P** for a description of these models.

The potential annual short-term loss to the recreational sector was estimated at $31,763,000 for the NL model and $11,447,000 for the ML model. **Subalternative 2d (Preferred)** leads to the greatest loss in consumer surplus resulting in potential annual short-term loss to the recreational sector of $57,502,000 for the NL model and $20,723,000 for the ML model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Subalternative 3a would not specify an AM trigger and thus would not generate any indirect economic effects. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Subalternative 4b would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**.

Subalternatives 5a and **5b** would not generate any indirect economic effects. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be less than under **Subalternative 5d (Preferred)** in the short-term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred),** and **5e** in the short-term. The adverse indirect economic effects resulting from **Subalternative 5f** are expected to be greater than under **Subalternative 5g** in the short-term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternatives 5f** or **5g**.

Alternative 1 (No Action) may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a,** which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** is the less restrictive than **Subalternatives 2b** and **2c**.

Alternative 3 in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c,** which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d,** which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e,** which could impose negative social effects as harvest levels are well below averages in most

years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure as when the ACL is projected to be met in **Subalternative 4b**.

Subalternative 5a could have negative social effects if stocks status is affected by the lack of any AMs through post-season measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c**. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended. In **Subalternative 5h** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternative 2** and associated subalternatives would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives, like **Alternative 5** (and associated subalternatives) will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated sub-alternatives are not likely to differ much in their impacts.

Table 2-67. Summary of effects under **Action 24**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.

Table 2-67. Continued. Summary of effects under **Action 24**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with **Subalternative 2b**.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL [(1-PSE) or 0.5, whichever is greater]	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or one minus the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c** and **3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT **(Subalternative 2d, Preferred)**.	(+-) No indirect economic effects.
Subalternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a (Preferred)**.

Table 2-67. Continued. Summary of effects under **Action 24**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 5: Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f . Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Reduce the bag limit following season.	(+-) Biologically beneficial due to reduced number of fish that can be taken the following season.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5f**.
Subalternative 5h. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5f and 5g**.

2.4.1.6 Action 25: Establish Management Measures for Dolphin

Note: The South Atlantic Council's preferred recreational ACT does not require a reduction in harvest based on 2005-2009 average recreational catch; in fact, the average catch (9,056,933 lbs whole weight; 2005-09) is 22% below the recreational ACT (11,595,803 lbs whole weight; **Table 2-66**). The commercial sector will be closed when the commercial ACL is met or projected to be met. The South Atlantic Council's preferred alternative for a commercial ACL is greater than the average landings during 2005-2009.

Alternative 1 (No Action). Retain current management regulations.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught dolphin in or from the Atlantic EEZ is prohibited. For-hire vessels possessing the necessary state and federal commercial permits can sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
- Commercial soft cap of 1.5 million lbs or 13% of total landings, whichever is greater.
- Recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Bag limit of 10 dolphin per paying passenger on headboats.
- Minimum size limit for dolphin of 20 inches fork length off Florida and Georgia, and no minimum size limit north of Georgia. Note: Florida regulations require a minimum size limit of 20 inches fork length; a 10 fish per person bag limit with a 60 fish boat limit; and a saltwater products license, a restricted species endorsement, and a federal commercial vessel permit to sell dolphin, exceed the10-fish bag limit, or exceed 60 per vessel per day statewide.
- Vessel permits and operator permits are required for commercial and for-hire sectors.
- Allowable gear is specified.
- For a commercial permitted vessel fishing north of 39°N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2 (Preferred). Prohibit bag limit sales of dolphin from for-hire vessels.
Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode.

Alternative 3 (Preferred). Establish a minimum size limit of 20 inches fork length from Florida through South Carolina.

Alternative 4. Establish a minimum size limit of 20 inches fork length from Florida through New England.

Alternative 5. Increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length.

Alternative 6. Reduce the boat limit (e.g. reduce by 1/3). Note: this applies only to charterboats and recreational vessels, not headboats.

Subalternative 6a. Reduce the boat limit by 25%.
Subalternative 6b. Reduce the boat limit by 33%.
Subalternative 6c. Reduce the boat limit by 50%.

Alternative 7. Consider a series of trip limits for the commercial fishery (e.g., 4,000 lbs with alternatives higher and lower).

Subalternative 7a. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.
Subalternative 7b. Establish a 5,000 pound trip limit.
Subalternative 7c. Establish a 4,000 pound trip limit.
Subalternative 7d. Establish a 3,000 pound trip limit.
Subalternative 7e. Establish a 2,000 pound trip limit.
Subalternative 7f. Establish a 1,000 pound trip limit.

Alternative 8. Reduce the recreational bag limit to 9 dolphin per person.

Table 2-68. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

						Formula	%Recreational Reduction from various time periods		
Dolphin	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL(7.3%)**	**Rec ACL(92.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**
SSC ABC Control Rule	Unknown	14,596,216	14,596,216	1,065,524	13,530,692	11,595,803	-22%	-23%	-23%
GMFMC Tier 3a*	16,743,471	15,415,524	15,415,524	1,125,333	14,290,191	12,246,693	-26%	-27%	-27%
Mean + 1.0 Std.Dev.		14,087,576	14,087,576	1,028,393	13,059,183	11,191,720	-19%	-20%	-20%
Mean + 0.5 Std.Dev.		12,759,629	12,759,629	931,453	11,828,176	10,136,747	-11%	-12%	-12%
Mean		11,431,682	11,431,682	834,513	10,597,169	9,081,774	0%	-2%	-2%
Average landings for time period from **Table 4-71**.							9,056,933	8,927,993	8,919,457

*GMFMC Tier 3a OFL = mean + 2.0 Std.Dev.; ABC = mean + 1.5 Std.Dev.

Comparison of Alternatives

Alternative 1 (No Action) would retain current management measures. **Alternatives 2-8** would all be expected to have positive biological effects. **Alternative 2 (Preferred)** would ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.

Establishing a 20-inch FL minimum size limit for dolphin landed from Florida through South Carolina under **Alternative 3 (Preferred)** would be expected to reduce total harvest of dolphin by 1.4%. The overall reduction in total kill would be less when release mortality is considered.

Establishing a 20-inch FL size limit for dolphin in South Carolina and North Carolina under **Alternative 4** would be expected to reduce harvest of dolphin by about 5%. A minimum size limit of 21 inches FL would provide about a 14% reduction in harvest. No reduction in recreational harvest is needed to ensure the recreational ACT is not exceeded. It is noted that obtaining length measurements from dolphin can be difficult since it is hard to restrain them when they are brought out of the water.

Increasing the minimum size limit to 24 inches FL under **Alternative 5** would be expected to provide a 35% reduction in harvest among all sectors off of Florida and Georgia, and therefore would have a greater biological effect than increasing the size limit to 22 inches FL.

Proposed reductions in the vessel limit under **Alternative 6** and its subalternatives would reduce harvest of dolphin by 6% to 18%, which would be biologically beneficial.

Subalternative 7a would be expected to reduce harvest north of 31° N. latitude by about 3.6%, and a 1,000 pound gutted weight trip limit would reduce harvest of dolphin by about 31% for areas south of 31° N. Latitude. **Subalternatives 7b-7f** would establish a trip limit for dolphin throughout the South Atlantic ranging from 5,000 lbs gutted weight to 1,000 lbs. The trip limit of 5,000 lbs gutted weight proposed in **Subalternative 7b** would do little to reduce harvest of dolphin. The greatest biological effect among the trip limit subalternatives would be provided by **Subalternative 7f**, which would be expected to provide a 26% reduction in dolphin harvest for all areas.

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. Based on data from the South Atlantic during 2007-2009, a 9-fish bag limit would reduce catches by 2%. A higher bag limit would achieve a higher reduction if combined with a modification in the minimum size limit in **Alternatives 3** and **4.**

Under **Alternative 1 (No Action),** regarding minimum size limits, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,517,000. **Alternative 3 (Preferred)** would result in predicted gross revenue of $1,504,000 (i.e., $13,000 in foregone revenue due to the minimum size limit only). This figure corresponds to the amount of gross revenue predicted under the preferred alternatives in **Actions 20-23**. The percentage of commercially landed dolphin less than 20 inches FL for South Carolina is 1.07%. It is assumed this means the reduction in harvest off South Carolina provided by establishing the commercial minimum size limit proposed in **Alternative 3 (Preferred)** would also be 1.07%. This is an

important assumption as this alternative is used as a fixed parameter when analyzing the other actions relating to dolphin in the Comprehensive ACL Amendment.

Under **Alternative 2 (Preferred)**, for-hire vessels will not be able to sell dolphin fish harvested under the bag limit, even with the appropriate permits. This will result in a loss of producer surplus relative to the no action alternative. Information is not available on the relevant costs of selling fish for for-hire vessels that is necessary to measure the loss in producer surplus associated with this alternative. Therefore, the loss in terms of foregone revenue from the sale of fish is estimated. The use of revenue will overstate the loss relative to the same loss measured in terms of producer surplus. It is assumed the average annual revenue associated with selling dolphin fish on for-hire trips is given by the amount sold by charter vessels with for-hire dolphin/wahoo permits from 2005 to 2009. The results and data sources are reported in **Table 4-92**.

Alternative 4 proposes increasing the minimum size limit from Florida to New England. Since the minimum size length in Florida and Georgia is already 20 inches FL, landings of dolphin in these states would be unaffected. However, updated data suggest that harvest of dolphin in South Carolina and North Carolina would be reduced by 11.23%. In light of this information the simulation model predicts that the commercial sector would lose $107,000 in gross revenue due to the implementation of **Alternative 4**.

Alternative 5 contains two minimum size subalternatives: **5a** (22 inches FL) and **5b** (24 inches FL). These subalternatives would result in foregone ex-vessel gross revenue of $116,000 and $309,000, respectively.

Alternative 6 would reduce the recreational boat limit. This alternative applies only to charterboats and private recreational vessels, not headboats. **Subalternative 6a** would reduce the boat limit by 25%, **Subalternative 6b** would reduce the boat limit by 33%, and **Subalternative 6c** would reduce the boat limit by 50%. The reduction in consumer surplus to the recreational sector predicted under this alternative is documented in **Tables 4-97** through **4-99**.

Alternative 7 presents several subalternative trip limits ranging from 1,000 lbs to 5,000 lbs throughout the Atlantic EEZ (South Atlantic through New England), with one subalternative proposing regional trip limits (**Subalternative 7a**). The least restrictive of the trip limits is 5,000 lbs (**Subalternative 7b**) and would result in foregone commercial gross revenue of $318,000. The most restrictive of the trip limits is 1,000 lbs (**Subalternative 7f**) and would result in foregone gross revenue in the order of $799,000. The regional trip limit (**Subalternative 7a**) would result in foregone gross revenue of $581,000. The majority of the financial burden of trip limits for the dolphin fishery would fall on participants that employ pelagic longline gear especially in North Carolina.

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. In December 2010, the South Atlantic Council approved a motion for a bag limit of 9 dolphin per person, but not as a preferred alternative. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-100**.

A summary of the reduction in economic value for all alternatives under **Action 25** is presented in **Table 4-101**.

Alternative 1 (No Action) would likely induce few social effects. **Alternative 2 (Preferred)** would likely have negative social effects on for-hire crew, at least in the short term. However, the lack of prohibiting sale could also have negative social effects as fish caught recreationally could be counted toward the commercial quota. Requiring a minimum size limit in South Carolina in **Alternative 3 (Preferred)** may have some social effects north of Georgia as there is no size limit and fishermen will have new regulatory regimes to follow. **Alternative 4** may have similar social effects as it establishes the size limit from Florida through New England. These alternatives may be a viable means of meeting threshold criteria for reductions that may be implemented elsewhere in this amendment. The same is true for **Alternative 5** by establishing a more restrictive size limit. **Alternative 6** and its associated subalternatives would accomplish similar reductions for the charter sector with its decreasing boat limit moving from **Subalternatives 6a** to **6c,** respectively. **Alternative 7** would accomplish similar reductions for the commercial sector with its decreasing trip limit moving from **Subalternatives 7b to 7f,** respectively. **Subalternative 7a** would split the trip limit near Jekyll Island with a smaller 1,000-pound limit to the south and 3,000 lb trip limit to the north. **Alternative 8** would reduce the boat limit to 9 and would likely have short-term negative social effects as fishermen adjust to the reductions.

The current management regime, as described **in Alternative 1 (No Action),** is quite comprehensive as it implements a quota, bag limits, trip limits, size limits and permits. The selection of **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would be expected to increase the administrative burden slightly due to increase monitoring and enforcement requirements. All of the action alternatives are expected to maintain the same level of administrative burden relative to each other. Administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

Table 2-69. Summary of effects under **Action 25**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) The commercial sector would be closed when the commercial ACL is projected to be met.	(+-) Negative long-term effects.
Alternative 2 (Preferred). Prohibit bag limit sales from for-hire vessels.	(+-) Beneficial to the fishery as effort may be reduced. Ensures regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.	(+-) Negative short-term effects.

Table 2-69. Continued. Summary of effects under **Action 25**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 3 (Preferred). Establish a 20" FL minimum size limit off South Carolina.	(+-) Smallest benefit (would reduce the total harvest by 1.4%) among all alternatives.	(+-) Negative short-term economic effects for South Carolina.
Alternative 4. Establish a 20" FL minimum size limit from Florida through New England.	(+-) Smaller benefit (would reduce the harvest in South Carolina and North Carolina by about 5%). A minimum size limit of 21" FL would provide about a 14% reduction in harvest.	(+-) Negative effects for North Carolina and South Carolina.
Alternative 5. Increase the minimum size limit to 22" or 24" FL.	(+-) Higher benefit with the 24" FL size limit increase (35% reduction in harvest) compared with the 22" FL size limit increase (17% reduction in harvest), among all sectors off Florida and Georgia.	(+-) Most conservative and would therefore likely yield the largest positive long-term economic benefits in excess of the benefits expected under **Alternatives 3** and **4**. Largest short-term negative economic effects for Florida.
Alternative 6: Reduce the boat limit; only applies to charterboats and recreational vessels, not headboats. **Subalternative 6a.** Reduce the boat limit by 25%.	(+-) Lowest benefits of all subalternatives under **Alternative 6**. Would result in a maximum of 45 fish/vessel and provide a 6% reduction in harvest.	(+-) Smallest negative economic effects of all subalternatives under **Alternative 6**.
Subalternative 6b. Reduce the boat limit by 33%.	(+-) Slightly higher benefits than **Subalternative 6a** (would result in a maximum of 40 fish/vessel), lower benefits than **Subalternative 6c**.	(+-) Negative economic effects in-between **Subalternatives 6a** and **6c**.
Subalternative 6c. Reduce the boat limit by 50%.	(+-) Highest benefit (would result in a maximum of 30 fish/vessel) of the subalternatives under **Alternative 6**. Would provide an 18% reduction in harvest.	(+-) Greatest negative economic effects of all subalternatives under **Alternative 6**.
Alternative 7: Trip limits for commercial fishery **Subalternative 7a.** 3,000 lb trip limit N. of 31°N Latitude; 1,000 lb trip limit S. of 31° N Latitude.	(+-) Higher benefits than **Subalternatives 7b** and **7c**, similar to **Subalternatives 7d, 7e,** and **7f**.	(+-) Negative economic effects but less than **Subalternatives 7b, 7c,** and **7d**.
Subalternative 7b. 5,000 lb trip limit.	(+-) Lowest benefits of all subalternatives under **Alternative 7**.	(+-) Least restrictive of the trip limit alternatives but would result in highest ex-vessel revenue loss.

Table 2-69. Continued. Summary of effects under **Action 25**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 7c. **4,000 lb trip limit.**	(+-) Lower benefits than **Subalternatives 7d, 7e,** and **7f**.	(+-) Negative economic effects less than **Subalternative 7b**, but more than **Subalternatives 7d-7f**.
Subalternative 7d. 3,000 lb trip limit.	(+-) Benefits higher than **Subalternatives 7b** and **7c**, lower than **Subalternatives 7e** and **7f**.	(+-) Negative economic effects in-between **Subalternatives 7c** and **7e**.
Subalternative 7e. 2,000 lb trip limit.	(+-) Benefits higher than **Subalternatives 7b-7d**, lower than **Subalternative 7f**.	(+-) Ex-vessel revenue losses higher than **Subalternative 7f**, but likely lower than **Subalternatives 7b-7d**.
Subalternative 7f. 1,000 lb trip limit.	(+-) Benefits highest (26% reduction in harvest) among subalternatives under **Alternative 7**. This reduction in harvest would be for all fishing areas.	(+-) Most restrictive of the trip limit alternatives but least amount of ex-vessel revenue loss among the trip limit subalternatives.
Alternative 8. Reduce recreational bag limit to 9 fish/person.	(+-) Similar benefit to **Alternative 3** (would reduce harvest by 2%).	(+-) Negative short-term effects.

2.4.2 Wahoo

2.4.2.1 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo

The South Atlantic Council requested the SSC consider the Gulf of Mexico SSC's ABC control rule. During their March 2011 meeting, the South Atlantic Council approved the following motion: *For dolphin and wahoo, provide guidance to the SSC that is based on biology and productivity and not overfishing/overfished status, the Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.*

The South Atlantic Council's SSC met April 5-7, 2011 in Charleston, South Carolina and recommended the Gulf of Mexico Council's ABC control rule not be used for South Atlantic stocks. Instead they recommended use of their own ABC control rule for unassessed stocks. At their April 2011 meeting, the South Atlantic Council's SSC stated that OFL for wahoo is unknown since there is no stock assessment, current conditions are impacted by management, and there is no measure of stock biomass relative to landings. An ABC = 1,491,785 lbs whole weight was recommended based on the South Atlantic Council SSC's ABC control rule for unassessed species.

Alternative 1 (No Action). Do not establish an ABC control rule for wahoo.

Alternative 2. Establish an ABC control rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule. Note: The Gulf of Mexico Control Rule as applied to wahoo would likely be Tier 3a and would set the OFL = mean 10 years landings + 2 SD.

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for wahoo based on the South Atlantic Council SSC's ABC control rule described in **Table 2-14**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 2-16** and OFL = unknown (currently ABC is estimated to be 1,491,785 lbs ww).

Comparison of Alternatives

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act. **Alternatives 2-4 (Preferred)** would specify an ABC control rule for wahoo. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternative 3**. However, as the SSC indicated OFL is unknown at their April 2011, no value for ABC would be available under **Alternative 2**. In contrast to **Alternative 2**, the Gulf of Mexico Council SSC's ABC control identified in **Alternatives 3** would account for scientific uncertainty by providing a buffer between ABC and OFL. The South Atlantic Council's ABC control rule identified in **Alternative 4 (Preferred)** also accounts for scientific uncertainty in specification of the ABC; however, the South Atlantic Council's SSC has indicated OFL is unknown for wahoo.

Alternative 3, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species would result in values that are similar to the South Atlantic Council SSC's ABC control rule value **(Alternative 4 Preferred)**. Therefore, the biological effects of **Alternative 3** would be very similar to **Alternative 4 (Preferred)**.

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. **Alternative 2** sets the ABC equal to the OFL, which may lead to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated to be as much as $283,000 for the CL model and $573,000 for the NL model.

Alternative 3 is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e., increasing the ABC), potential economic gain to the recreational sector is expected to increase. The adoption of **Alternative 4 (Preferred)** may result in a potential gain of $894,000 in consumer surplus for the CL model and a potential gain of $1,812,000 in consumer surplus for the NL model.

Alternatives that are the most restrictive have the potential of negative social effects, both short term and long term, even though there may be long-term biological benefits. **Alternative 2** is not as risk averse as other alternatives. Using the Gulf of Mexico Council's Control rule in **Alternative 3** would be only slightly more restrictive than **Alternative 2**. However, the combined effect of any of the reductions in harvest levels is difficult to assess with other actions.

The establishment of an ABC Control Rule is a procedural exercise. The rule is established by the South Atlantic Council's SSC for consideration by the South Atlantic Council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much among the proposed alternatives.

Table 2-70. Summary of effects under **Action 26**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet MSA requirements.	(+-) No negative short-term effects on commercial fleet.
Alternative 2. ABC=OFL; OFL=1,202,939 lbs.	(+-) Least conservative of the alternatives, since there is no buffer between OFL and ABC, does not account for scientific and management uncertainty, like **Alternative** and **4**.	(+-) Negative short-term loss of $5,000.00 to commercial fleet.
Alternative 3. Gulf of Mexico Council SSC's ABC Control Rule; ABC=1.5 S.D. above mean landings 1999 to 2008.	(+-) Benefits similar to **Alternative 4 (Preferred)**.	(+-) No negative short-term effects on commercial fleet.

Table 2-70. Continued. Summary of effects under Action 26.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 4 (Preferred). South Atlantic Council SSC's ABC Control Rule; ABC=third highest landings during 1999 to 2008.	(+-) Benefits similar to **Alternative 3**.	(+-) No negative short-term effects on commercial fleet.

2.4.2.2 Action 27: Specify Allocations for Wahoo

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Do not define allocations for wahoo.

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 4% commercial and 96% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:

> Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial and 95.7% recreational.

Alternative 4. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

Comparison of Alternatives

Alternative 1 (No Action) would not establish allocations for wahoo, and it would not be possible to identify the ACL in the recreational sector. Alternatives that shift a greater proportion of landings from the commercial to the recreational sector would be expected to have a negative biological effect because there would be greater certainty of exceeding the recreational ACL. There is a slight difference in the allocations under **Alternatives 2-4** and very little difference in biological effects. The biological benefit of **Alternative 4** would be less than

under **Alternatives 2** and **3 (Preferred)** since allocating landings in the recreational sector could increase the uncertainty associated with the estimates, especially since such a small amount of the ABC would be allocated to the for-hire sector. The biological effects of **Alternatives 2** and **3 (Preferred)** would be almost identical.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue is predicted to total $118,000, which is the largest amount that the industry can earn based on historical data. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. **Alternative 2** would result in a predicted loss in gross revenue from landings of wahoo to the commercial sector of $1,000. **Alternative 3 (Preferred)** and **Alternative 4** would provide for an allocation of 4.3% to the commercial sector, which would not change the commercial gross revenue in the short-term if historical fishing patterns continue into the near future.

Under **Alternative 1 (No Action)**, in which no sector allocation is specified, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. The remaining alternatives would establish a recreational allocation of 96% (**Alternative 2**) and 95.7% (**Alternatives 3 (Preferred)** and **4**). **Alternative 4** allocates 30.4% of the recreational allowance to the for-hire sector and 69.6% to the private recreational sector.

The potential gain in aggregate economic value to the recreational sector due to **Alternative 3 (Preferred)** is $894,000 for the CL model and $1,812,000 for the NL model. Using the same willingness-to-pay estimates the allocation between the for-hire and private recreational sectors described in **Alternative 4** results in consumer surplus totals of $959,000 and $2,196,000, respectively, for the CL model and $1,945,000 and $4,451,000, respectively, for the NL model. An estimate of willingness-to-pay for one additional pound of coastal migratory pelagic (e.g., wahoo) caught and kept per for-hire trip in North Carolina is $6.73 (Dumas et al. 2009). Using this estimate total consumer surplus to the for-hire sector is estimated at $2,922,000 under the allocation rule in **Alternative 4**. The potential gain in aggregate economic value to the recreational sector due to **Alternative 2** is $904,000 for the CL model and $1,832,000 for the NL model. The relatively large potential gains in consumer surplus are due mainly to the relatively large value of the proposed ACL in **Alternative 2** of **Action 28** with respect to average recreational landings of wahoo for 2005-2009.

Alternative 1 (No Action) would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue for the recreational sector. With **Alternatives 2-4** there would be a similar commercial allocation between 4% or 4.3%. In **Alternative 4**, the recreational sector allocation is further divided into the private and for hire sectors, which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. **Alternative 3 (Preferred)** does not split the recreational sector. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one.

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2-4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. However, **Alternative 3 (Preferred)** would not increase administrative impacts more than the other action alternatives.

Table 2-71. Summary of effects under **Action 27**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Would not establish allocations for wahoo, would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for an accountability measure (AM) would be limited. Smallest benefits compared to **Alternatives 2-4**.	(+-) Maintains current caps on landings between commercial and recreational sectors.
Alternative 2. Commercial=4%; Recreational=96% Landings 2006-2008.	(+-) Benefits lower than **Alternative 3 (Preferred)**, possibly higher than **Alternative 4**.	(+-) Positive overall economic benefits.
Alternative 3 (Preferred). Commercial=4.3%; Recreational=95.7% Landings (50% 1999-2008 +50% 2006-2008).	(+-) Benefits higher than **Alternatives 1 (No Action) , 2, and 4**. Combines beneficial effects of older data (favoring commercial sector) and newer data (favoring recreational sector).	(+-) Positive overall economic benefits.
Alternative 4. Commercial=4.3%; For-hire=29.1%; Private recreational=66.6% Landings (50% 1999-2008 + 50% 2006-2008).	(+-) Benefits would be less than **Alternatives 2 and 3 (Preferred)**, uncertainty in recreational landings higher due to addition of another recreational sector.	(+-) Positive overall economic benefits.

2.4.2.3 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo

Alternative 1 (No Action). There is no ACL specified for wahoo. Currently OY for wahoo is the amount of harvest that can be taken by fishermen while not exceeding 100% of MSY (between 1.41 and 1.63 million lbs).

Alternative 2 (Preferred). ACL = OY = ABC (currently estimated to be 1,491,785 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1,268,017 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 1,118,839 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 969,660 lbs ww).

ACL values are shown in **Table 2-72**.

Table 2-72. ACL formula, ACL/OY values (lbs whole weight) for wahoo under **Alternatives 2-5**. Commercial and recreational ACL values are based on preferred allocation alternative (4.3% commercial/95.7% recreational) in **Action 26**.

Alternative	ACL Formula	ACL/OY	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**1,491,785**	**64,147**	**1,427,638**
Alternative 3	85% ABC	1,268,017	54,525	1,213,492
Alternative 4	75% ABC	1,118,839	48,110	1,070,729
Alternative 5	65% ABC	969,660	41,695	927,965

Comparison of Alternatives

Alternative 1 (No Action) would not specify an ACL for wahoo, and therefore, not meet the requirements of Magnuson-Stevens Act. **Alternatives 2 (Preferred)-5** are based on an ABC control that sets ABC below OFL and, therefore, take into consideration scientific uncertainty in the specification of OFL.

Alternative 2 (Preferred) would set the ACL = OY = ABC. The preferred alternative in **Action 26** is based on the South Atlantic Council SSC's ABC control where ABC = 1,491,785 lbs whole weight. Based on the preferred allocation alternatives in **Action 27**, 4.3% (64,147 lbs whole weight) of the ACL would be allocated to the recreational sector and 95.7% (1,427,638 lbs whole weight) of the ACL would be allocated to the recreational sector. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. **Alternative 2 (Preferred)** results in no short-term losses in gross revenues to commercial fishers landing wahoo. **Alternative 3** would result in foregone revenue of $4,000. **Alternatives 4** and **5** result in foregone commercial gross revenue of $9,000 and $15,000, respectively.

Establishing an ACL for wahoo will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternative 3** or **4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the **Alternatives 3** and **4** and likely have the fewest negative social effects in the short term.

Alternative 1 (No Action) would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an OY and ACL through **Alternatives 2- 5** are minimal and would not differ much among the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures, will increase.

Table 2-73. Summary of effects under **Action 28**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet the requirements of MSA to specify ACLs for all species in an FMU, and could lead to overfishing.	(+-) Smallest long-term, and greatest short-term benefits.
Alternative 2 (Preferred). ACL=OY=ABC	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC. Benefits may be lower than **Alternatives 3, 4,** and **5**.	(+-) No short-term economic losses to commercial sector.
Alternative 3. ACL=OY=85% ABC	(+-) Provides a buffer between ABC and ACL. Benefits could be higher than **Alternative 2 (Preferred)** and smaller than **Alternatives 4** and **5**.	(+-) Short-term economic losses greater than **Alternative 2 (Preferred)**, but smaller than **Alternatives 4** and **5**. Gains in recreational sector.
Alternative 4. ACL=OY=75% ABC	(+-) Benefits in-between **Alternatives 3** and **5**.	(+-) Short-term economic losses in-between **Alternatives 3** and **5**. Gains in recreational sector.
Alternative 5. ACL=OY=65% ABC	(+-) Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(+-) Greatest short-term economic losses of all alternatives. Gains in recreational sector.

2.4.2.4 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo

Alternative 1 (No Action). There is no hard quota for wahoo and there are no AMs in place for wahoo.

Alternative 2. Establish commercial sector ACT for wahoo.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Table 2-74. Commercial sector ACTs for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Commercial ACL	Commercial Sector ACT Subalternatives		
		2a - No ACL	2b -90%(ACL)	2c -80%(ACL)
Wahoo	64,147	N/A	57,732	51,318

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not establish commercial AMs for wahoo, and would not meet the requirements of the Magnuson-Stevens Act. The most biologically beneficial ACT alternative for the commercial sector would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL in order to trigger an AM to prevent ACL overages.

Alternative 3 (Preferred) would remove the incentive to target wahoo on commercial trips since all purchase and sale would be prohibited once the ACL is projected to be met. **Alternative 4** would provide protection to the wahoo stock in the form of an ACL reduction following the year in which an ACL overage occurred.

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. This figure corresponds to the amount of industry revenue predicted under the preferred alternatives in **Actions 27** and **28**. If

the Council had specified a commercial sector ACT, and management measures enforcing the ACT were implemented, then the commercial sector would forgo gross revenue ranging from $2,000 for **Subalternative 2b** to $5,000 for **Subalternative 2c**. **Alternative 3 (Preferred)** will likely generate marginally lower economic benefits in the short-run. **Alternative 4** calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL will be exceeded is unknown.

There would likely be few negative social effects from **Alternative 1 (No Action)** as no further reductions in harvest would be implemented either through a lower ACT threshold or accountability measures. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** could both impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season. Because wahoo are a fast growing fish, it may not be necessary to impose any payback as this species has a very short lifespan which means those fish that are not caught may not provide the additional payback to the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs (**Alternative 2** and associated subalternatives) alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternatives 3** and **4** would be expected to have similar administrative impacts.

Table 2-75. Summary of effects under **Action 29**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Commercial sector ACT **Subalternative 2a (Preferred)**. No commercial sector ACT	(+-) AMs would apply when the commercial ACL is exceeded, no buffer between ACT and ACL. Benefits may be lower than **Subalternatives 2b** and **2c**.	(+-) Same as **Alternative 1 (No Action)**.
Subalternative 2b. ACT = 90% commercial sector ACL	(+-) Provides a buffer between ACT and ACL. Benefits may be higher than **Subalternative 2a** and lower than **Subalternative 2c**.	(+-) Benefits in-between **Subalternatives 2a** and **2c**.
Subalternative 2c. ACT = 80% commercial sector ACL	(+-) Provides a bigger buffer between ACT and ACL. Benefits may be highest of all subalternatives under **Alternative 2**.	(-) Smaller short-term benefits compared with **Subalternative 2b**.
Alternative 3 (Preferred). Commercial sector AM: Harvest/possession limited to bag limit	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 4 (Preferred)**.	(+-) Greater short-term benefits compared to **Alternative 4**, but less than **Alternative 1 (No Action)**.
Alternative 4. Commercial sector AM: ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greater long-term benefits to the commercial fishery compared with **Alternatives 3 (Preferred)** and **1 (No Action)**.

2.4.2.5 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo

Alternative 1 (No Action). Do not specify new recreational AMs for wahoo.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 5-year (2005-2009) average (18.4).

Table 2-76. Percent Standard Errors (PSEs) for wahoo from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Wahoo	21.1	23.1	19.8	13.7	20.8	18.1	19.8	19.6	18.4

Note: The Council decided to use the 5-year average PSE because this better represented recent catches than the 3 year average.

Table 2-77. The recreational ACT for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT Subalternatives		
		5a - 85%(ACL)	5b - 75%(ACL)	5c - ACL(1-PSE) or ACL*0.5, whichever is greater
Wahoo	1,427,638	1,213,492	1,070,729	1,164,953

Average recreational landings from 2005, 2006, 2008, and 2009 from **Table 4-106** = 768,686 lbs ww. Note: 2007 landings were excluded based on them being so high.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.
Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.
Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]
Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. *Reduce bag limit and shorten season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit to 1

fish and reduce the season as necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Comparison of Alternatives

Alternative 1 (No Action) would not specify recreational AMs for wahoo and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 28**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL**.** **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the percent standard error from the recreational fishery, whichever is greater.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternatives 3d** is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after the end of a two-month wave. There would likely be considerable uncertainty in imposing in season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. **Subalternatives 5d (Preferred)** and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h** there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Under **Alternative 1 (No Action)** and **Subalternative 2a**, the baseline estimate of consumer surplus value for recreational wahoo trips is $3,155,000 using willingness-to-pay estimates from the conditional logit (CL) model and $6,396,000 using willingness-to-pay estimates from the nested logit (NL) model. If the South Atlantic Council specifies a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to the least loss in consumer surplus to the recreational sector relative to **Alternative 1 (No Action)**, estimated at $473,000 for the CL model and $959,000 for the NL model. The potential annual short-term loss to the recreational sector for **Subalternative 2c** was estimated at $789,000 for the CL model and $1,599,000 for the NL model. **Subalternative 2d (Preferred)** results in potential annual short-term loss of consumer surplus to the recreational sector of $439,000 for the CL model and $889,000 for the NL model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Subalternative 3a would not specify an AM trigger and thus would not generate any indirect economic effects. Expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Subalternative 4b would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**.

Subalternatives 5a and **5b** would not generate any indirect economic effects. The adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short-term. The expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred),** and **5e** in the short-term. The adverse indirect economic effects resulting from **Subalternative 5f** are expected to be greater than under **Subalternative 5g** in the short-term. There is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternatives 5f** or **5g**.

Alternative 1 (No Action) may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a,** which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** is the least restrictive of the alternatives.

Alternative 3 in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** could impose indirect effects as mentioned. **Subalternative 3b** (**Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c,** which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d,** which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e,** which could impose negative social effects as harvest levels are well below averages in most years. **Subalternative 4a (Preferred)** could have beneficial social effects as there would be no closure when the ACL is projected to be met in **Subalternative 4b**.

Subalternative 5a could have negative social effects if stocks status is affected by the lack of any AMs through post-season measures. **Subalternative 5b** would likely have fewer negative social effects than **Subalternative 5c**. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in

a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended. In **Subalternative 5h** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

Alternative 1 (No Action) would not produce near-term administrative impacts. **Alternative 2** and associated subalternatives would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives, like **Alternative 5** (and associated subalternatives) will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated sub-alternatives are not likely to differ much in their impacts.

Table 2-78. Summary of effects under **Action 30**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits.
Alternative 2: Specify a recreational sector ACT **Subalternative 2a.** No ACT	(+-) Would not provide a buffer between ACT and ACL.	(+-) Smaller long-term and greater short-term benefits.
Subalternative 2b. ACT = 85% recreational sector ACL	(+-) Provides a buffer between ACT and ACL.	(+-) Greater long-term and smaller short-term benefits.
Subalternative 2c. ACT = 75% recreational sector ACL	(+-) Provides a bigger buffer between ACT and ACL when compared with **Subalternative 2b**.	(-) Smaller short-term and long-term benefits.
Subalternative 2d (Preferred). ACT = recreational sector ACL (1-PSE) or ACL*0.5, whichever is greater	(+-) Provides the greatest benefit of the subalternatives under **Alternative 2**, by adjusting the ACL by 50% or one minus the percent standard error.	(+-) Smallest short-term and greatest long-term benefits when compared with **Subalternatives 2b** and **2c**.

Table 2-78. Continued. Summary of effects under **Action 30**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 3: Specify the AM trigger. **Subalternative 3a.** No AM trigger.	(+-) Same as **Alternative 1 (No Action)**.	(+-) No indirect economic effects.
Subalternative 3b (Preferred). Annual landings > ACL.	(+-) Does not address anomalous spikes in landings, only one year's data used to determine trigger.	(+-) Greatest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Subalternative 3c. Mean landings for past 3 years > ACL.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could trigger AMs when not necessary.	(+-) Positive long-term benefits higher than **Subalternatives 3d** and **3e**, but lower than **Subalternative 3b (Preferred)**.
Subalternative 3d. Modified mean (most recent 5 years landings data with the highest and lowest removed) > ACL.	(+-) Similar to **Subalternative 3c**, may have more benefits due to two additional years of data used to determine overage.	(+-) Positive long-term benefits higher than **Subalternatives 3e**, but lower than **Subalternatives 3b (Preferred)** and **3c**.
Subalternative 3e. Lower bound of 90% confidence interval estimate of the landings' mean > ACL.	(+-) More precautionary than **Subalternatives 3c and 3d**.	(+-) Smallest short-term negative, and positive long-term effects of all subalternatives under **Alternative 3**.
Alternative 4: Specify the in-season AM. **Subalternative 4a (Preferred).** No in-season AM.	(+-) May have negligible effects due to the selection of current ACT (**Subalternative 2d, Preferred**).	(+-) No indirect economic effects.
Subalternative 4b. Recreational fishery closed.	(+-) Requires in-season monitoring of the recreational fishery, which has time lags in reporting and uncertainty in landings data. Possible unnecessary negative benefits.	(+-) Greater short-term negative effects compared with **Subalternative 4a (Preferred)**.
Alternative 5. Specify the post-season AM. **Subalternative 5a.** No post-season AM.	(+-) May have negative effects since there would be no penalty for going over the ACL.	(+-) No indirect economic effects.
Subalternative 5b. Compare ACL with 3-year running mean.	(+-) Addresses anomalous spikes in landings, but spikes would affect the average for three years and could prescribe AMs when not necessary.	(+-) No indirect economic effects.

Table 2-78. Continued. Summary of effects under **Action 30**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Subalternative 5c. Monitor following year.	(+) Ensures that AMs are employed when absolutely necessary.	(+-) Same indirect economic effects as **Subalternatives 5d (Preferred)** and **5e**.
Subalternative 5d (Preferred). Monitor following year and shorten season as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since the following fishing season and associated mortality is addressed.	(+-) Negative short-term indirect economic effects smaller than **Subalternative 5e**.
Subalternative 5e. Monitor following year and reduce bag limit as necessary.	(+-) Ensures that AMs are triggered when absolutely necessary, biologically beneficial since fewer fish can be taken.	(+-) Negative short-term indirect economic effects greater than **Subalternative 5d (Preferred)**.
Subalternative 5f . Shorten fishing season by amount necessary.	(+-) There is no monitoring component, not as beneficial as **Subalternatives 5c-5e**.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5e**.
Subalternative 5g. Reduce the bag limit following season.	(+-) Biologically beneficial due to reduced number of fish that can be taken the following season.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5c-5f**.
Subalternative 5h. Payback, reduce ACL by amount of overage in following season.	(+-) Biologically beneficial due to reduced ACL.	(+-) Negative short-term indirect economic effects greater than **Subalternatives 5f** and **5g**.

2.4.2.6 Action 31: Establish Management Measures for Wahoo

The South Atlantic Council's preferred recreational ACT (1,164,953 lb whole weight) does not require a reduction based on average recreational landings (2005-2009, excluding 2007); in fact, the average catch (768,686 lbs whole weight) is 34% below the ACT (**Table 2-77**). The commercial sector will be closed when the commercial ACL is met or projected to be met. Average commercial landings (42,004 lbs whole weight) during 2005-2009 (excluding 2007) are well below the South Atlantic Council's preferred alternative for a commercial ACL (64,147 lbs whole weight).

Alternative 1 (No Action) (Preferred). Retain current management measures for wahoo.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught wahoo in or from the Atlantic EEZ is prohibited.
- 500-pound commercial trip limit for wahoo (landed head and tail intact) with no transfer at sea allowed.
- Recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.
- For a commercial permitted vessel fishing north of 39°N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2. Establish a boat limit of 2-12 wahoo per boat/**v**essel per day in the recreational fishery.

Subalternative 2a. Establish a boat limit of 12 wahoo per boat/vessel per day.
Subalternative 2b. Establish a boat limit of 11 wahoo per boat/vessel per day.
Subalternative 2c. Establish a boat limit of 10 wahoo per boat/vessel per day.
Subalternative 2d. Establish a boat limit of 9 wahoo per boat/vessel per day.
Subalternative 2e. Establish a boat limit of 8 wahoo per boat/vessel per day.
Subalternative 2f. Establish a boat limit of 7 wahoo per boat/vessel per day.
Subalternative 2g. Establish a boat limit of 6 wahoo per boat/vessel per day.
Subalternative 2h. Establish a boat limit of 5 wahoo per boat/vessel per day.
Subalternative 2i. Establish a boat limit of 4 wahoo per boat/vessel per day.
Subalternative 2j. Establish a boat limit of 3 wahoo per boat/vessel per day.
Subalternative 2k. Establish a boat limit of 2 wahoo per boat/vessel per day.

Table 2-79. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

							%Recreational Reduction from various time periods			
Wahoo	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL (4.3%)**	**Rec ACL (95.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**	**05, 06, 08, 09**
SSC ABC Control Rule	Unknown	1,491,785	1,491,785	64,147	1,427,638	1,164,953	-12%	-8.5%	-11%	-34%
GMFMC Tier 3a*	1,994,417	1,788,691	1,788,691	76,914	1,711,777	1,473,840	-31%	-28%	-30%	-48%
Mean + 1.0 Std.Dev.		1,582,965	1,582,965	68,067	1,514,898	1,304,327	-22%	-18%	-21%	-41%
Mean + 0.5 Std.Dev.		1,377,239	1,377,239	59,221	1,318,018	1,134,814	-10%	-6%	-9%	-32%
Mean		1,171,513	1,171,513	50,375	1,121,138	965,300	6%	10%	7%	-20%
							1,023,180	1,065,807	1,036,106	768,686

Note: The South Atlantic Council decided to calculate reductions in harvest for wahoo using average landings for years 2005-2009 excluding 2007. The bag limit specified for wahoo was first implemented in 2004 and the reduction is reflected in the 2005 landings after full implementation. Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented, and the South Atlantic Council concluded this was more of a sampling factor than actual catches.

Comparison of Alternatives

Alternative 1 (Preferred) (No Action) would retain the management measures currently in place. The South Atlantic Council's preferred recreational ACT (1,164,953 lbs) does not require a reduction based on average recreational landings (2005-2009, excluding 2007 (**Table 2-79**)). Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented in 2004, and the South Atlantic Council concluded this was more of a sampling factor than actual catches.

Alternative 2 would establish a boat limit for private, charter, and headboat fishermen ranging from 2 to 12. Proposed reductions in the vessel limit would reduce harvest of wahoo in the private and recreational sectors range from 0.75% for a 12 vessel limit to 26% for a 2-fish per vessel limit. Restricting the vessel limit to 2-fish per vessel (**Subalternative 2k**) would have the greatest biological effect and would provide the greatest assurance the ACL would not be exceeded. However, based on 2005-2009 landings data (excluding 2007) no reduction in recreational landings is needed to prevent the ACT from being exceeded. **Alternative 2** and its subalternatives would establish a boat limit between 2 and 12 wahoo per boat/**v**essel per day in the recreational sector. The reduction in consumer surplus to the recreational sector predicted with this alternative are documented in **Tables 4-119** through **4-129**. A summary of the changes in economic value to the recreational sector across all alternatives under **Action 31** is presented in **Table 4-130**.

The social effects from **Alternative 1, Preferred, No Action)** would be minimal, as it would require no changes in regulation. **Alternative 2** and its subalternatives would impose varying degrees of reduction in catch depending upon which boat limit was chosen with the most restrictive being **Subalternative 2k** (identical to **Alternative 1, Preferred, No Action)** with a 2 fish limit which would impose a 26% reduction and may impose substantial negative social effects.

Table 2-80. Summary of effects under **Action 31**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (Preferred) (No Action)	(+-) No additional management measures are needed to prevent ACT from being exceeded. The commercial sector would be closed when the commercial ACL is projected to be met. Most conservative of the recreational bag limits considered, would reduce harvest of wahoo in the private and recreational sectors by 26%.	(+-) No economic impacts in the short-term, negative impacts in the long-term.

Table 2-80. Continued. Summary of effects under **Action 31**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 2. Recreational boat limit of 2-12 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors from 26% (2 fish per vessel) to 0.75% (12 fish per vessel.	(+-) Negative short-term and positive long-term impacts.
Subalternative 2a. Recreational boat limit of 12 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 0.75%.	(+-) Greatest short-term positive economic effects of all subalternatives under **Alternative 2**.
Subalternative 2b. Recreational boat limit of 11 wahoo/vessel/day	(+-) Benefits between **Subalternatives 2a** and **2c**.	(+-) Positive short-term economic effects.
Subalternative 2c. Recreational boat limit of 10 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 1.09%.	(+-) Positive short-term economic effects.
Subalternative 2d. Recreational boat limit of 9 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 1.42%.	(+-) Positive short-term economic effects.
Subalternative 2e. Recreational boat limit of 8 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 2.10%.	(+-) Positive short-term economic effects.
Subalternative 2f. Recreational boat limit of 7 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 3.27%.	(+-) Positive short-term economic effects.
Subalternative 2g. Recreational boat limit of 6 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 5.20%.	(+-) Positive short-term economic effects.
Subalternative 2h. Recreational boat limit of 5 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 7.71%.	(+-) Positive short-term economic effects.
Subalternative 2i. Recreational boat limit of 4 wahoo/vessel/day	(+-) Would reduce harvest of wahoo in the private and recreational sectors by 10.98%.	(+-) Positive short-term economic effects.
Subalternative 2j. Recreational boat limit of 3 wahoo/vessel/day	(+-)Would reduce harvest of wahoo in the private and recreational sectors by 15.84%.	(+-) Positive short-term economic effects.
Subalternative 2k. Recreational boat limit of 2 wahoo/vessel/day	(+-) Would reduce recreational harvest by 26%.	(+-) Smallest short-term positive economic effects of all subalternatives under **Alternative 2**.

2.5 Sargassum Fishery Management Plan

2.5.1 Acceptable Biological Catch Control Rule and ABC for Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. It is a critical component of the ecosystem providing essential habitat to numerous fish species and protected resources. Because of its ecological importance, the Council's SSC believes *Sargassum* should be labeled and treated as an "ecosystem component species."

Since *Sargassum* has a fishery management plan (FMP), an ABC is required. The Sargassum FMP includes an estimate of the MSY that could be used in determination of an ABC, but the Council's SSC stated that the MSY was not developed through a traditional stock assessment method but was instead based on informal methods involving aerial photography and estimates of doubling time. As a result, the SSC considered the MSY value to be extremely uncertain and unreliable. Based upon the recommendation of its stock assessment experts, the SSC chose not to use the MSY value previously reported for ABC calculations.

At the Second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based on the status of the stock relative to its fishery. The framework includes one category that labels a catch as "nil," where the stock is not caught in any significant amounts and can be treated as ecosystem component stocks. The framework also includes a category that categorizes a catch as "small," where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, the framework allows for setting the ABC greater than or equal to the historical average catch.

Historically the *Sargassum* fishery can be classified as "small," where overfishing has not been a concern. The average catch from 1976 to 2009 equaled 12,800 lbs wet weight. The SSC therefore recommended an ABC for *Sargassum* of 12,800 lbs wet weight. Furthermore, the previous OY set by the Council in the FMP was 5,000 lbs. The SSC understood that the OY was set at that level out of concern for the ecosystem services provided by *Sargassum*. For this reason, the SSC recommended that the Council establish an ACL/ACT equal to the previous OY value of 5,000 lbs.

However, given that there have been no landings over the past twelve years, the *Sargassum* fishery would be placed in the "nil" category using Methot's framework adopted by the SSC. Under this framework, *Sargassum* would be labeled an "ecosystem component species" and would not require an ABC. As stated at the beginning of this section, the SSC recommended that the Council take the actions necessary to reclassify *Sargassum* as such.

The following restrictions are in place for *Sargassum* in the South Atlantic: (1) harvest and possession of Sargassum is prohibited south of the latitude line representing the North Carolina/South Carolina border (34 degrees North latitude), (2) all harvest is prohibited within 100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border, (3) harvest is limited to the months of November through June, (4)

official observers are required on any harvesting trip, (5) an annual quota of 5,000 lbs landed wet weight, and (6) nets used to harvest *Sargassum* must be constructed of 4" stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to overfishing limit (OFL), ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Therefore, an ACL is in place for *Sargassum* in the form of a 5,000 pound commercial quota, which is also considered equivalent to the OY for the species. In addition to the current restrictions, the commercial AM for *Sargassum* restricts all harvest of the species after the quota is met or is projected to be met.

2.6 Golden Crab Fishery Management Plan

2.6.1 Acceptable Biological Catch Control Rule and ABC for Golden Crab

It is widely argued that the golden crab is an underutilized resource and that the fishery exploits only a portion of the species' range. The SSC recommended an ABC for golden crab in April 2010 based on the control rule derived at that meeting. At their June 2010 meeting the Council rejected that control rule and removed the ABC recommendations based on that control rule. The South Atlantic Council agreed with the SSC comments from April 2010 that there was likely additional information that could be compiled for golden crab that could better support fishing level recommendations. One of the concerns was that there was a wide range of prior estimates of productivity and acceptable yield. At their August 2010 meeting, the SSC considered additional information on golden crab. These data included additional landings, catch per unit effort, mean sizes, and history and background of past MSY values.

At the Second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based the status of the stock relative to its fishery. The "small" category applies to situations where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, Methot suggests setting the ABC greater than or equal to the historical average catch. Therefore, the SSC discussed comments provided by industry representatives regarding the fishery, and how this fishery might fit into Methot's range of unassessed stock categories. The SSC concluded that the golden crab fishery is small; the catch is large enough to warrant including it in the fishery but not enough to be of concern. Based on the rationale from earlier discussions, it was suggested that ABC and ACL could be set above historical catch levels.

The SSC recommended that ABC be set at 2 million lbs with a precautionary note that more data are needed. Issues such as an updated, possibly a benchmark assessment, with other models including the surplus production model were suggested, along with improvements in data collection.

2.6.2 Action 32: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Golden Crab

Alternative 1 (No Action). Do not specify an ACL for Golden Crab.

Alternative 2 (Preferred). ACL= OY=ABC (currently estimated to be 2 million lbs).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1.7 million lbs).

Alternative 4. ACL = OY =75% of the ABC (currently estimated to be 1.5 million lbs).

Alternative 5. ACL = OY =65% of the ABC (currently estimated to be 1.3 million lbs).

Comparison of Alternatives

Alternative 1 (No Action) is the least biologically beneficial ACL alternative for golden crab, and is not legally sufficient since no ACL would be established for the species as required under the Magnuson-Stevens Act. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing.

Alternatives 2 (Preferred) to **5** would yield greater long-run economic benefits than **Alternative 1 (No Action)**. **Alternative 2 (Preferred)** provides the greatest long-term economic benefits while **Alternative 5** provides the smallest long-term economic benefits when making a comparison between **Alternatives 2 (Preferred)-5**, with **Alternatives 3** and **4** falling in between. **Alternative 2 (Preferred)** seems economically optimal given the relatively small amount of landings (and low risk of overfishing) compared to the recommended ABC of 2 million pounds and allows for the golden crab fishery to expand.

Alternative 1 (No Action) would likely have few direct social effects depending upon how other actions would affect the biological thresholds and the implications for stock status. Choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternatives 2 (Preferred), 3, or 4**.

The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. Other administrative burdens that may result from all of action alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

Table 2-81. Summary of effects under **Action 32**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(+-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) No net economic benefits.
Alternative 2 (Preferred). AC=OY=ABC.	(+-) Least conservative of the alternatives, since there is no buffer between ACL and ABC. Benefits may be lower than **Alternatives 3, 4,** and **5**.	(+) Greatest long-term benefits when compared with **Alternatives 3, 4,** and **5**.
Alternative 3. ACL=OY=85% ABC.	(+-) Provides a buffer between ABC and ACL. Benefits could be higher than **Alternative 2 (Preferred)** and smaller than **Alternatives 4** and **5**.	(+-) Long-term benefits in-between **Alternatives 2 (Preferred), 4**, and **5**.

Table 2-81. Continued. Summary of effects under **Action 32**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 4. ACL=OY=75% ABC.	(+-) Benefits in-between **Alternatives 3** and **5**.	(+-) Benefits in-between **Alternatives 3** and **5**.
Alternative 5. ACL=OY=65% ABC.	(+-) Most conservative of the alternatives. Provides a greater buffer between ABC and ACL, and therefore, greater benefits.	(-) Smallest long-term benefits.

2.6.3 Action 33: Establish Accountability Measures for Golden Crab

Alternative 1 (No Action). Do not establish accountability measures for Golden Crab.

Alternative 2 (Preferred). After the ACL is met or projected to be met, all harvest, purchase, and sale of golden crab is prohibited.

Alternative 3 (Preferred). If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

Comparison of Alternatives

Alternative 1 (No Action) is the least biologically beneficial AM alternative for golden crab, and is not legally sufficient since no AM would be established for the species as required under the Magnuson-Stevens Act. The most biologically beneficial of the alternatives would be **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** combined. These alternatives together would close the entire golden crab fishery when the ACL is projected to be met, and also correct for any overages through a post-season AM. **Alternative 2 (Preferred)** would require in-season monitoring. In the case of golden crab all landings are reported through dealer reports; therefore, in-season monitoring would likely project, with a reasonable level of accuracy, when the ACL would be met. The more accurate this projection is the lower the risk of closing the fishery too soon or too early would be.

Alternative 3 (Preferred) would provide protection to the golden crab fishery if it is declared overfished in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL would be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. If the ACL is repeatedly exceeded and subsequent year's seasons are repeatedly shortened, a derby fishery for golden crab could develop. Currently, the South Atlantic Council is developing a catch share program for golden crab that would address the potential development of a derby fishery.

Alternative 2 (Preferred) and **Alternative 3 (Preferred)** would likely generate greater adverse economic effects in the short-term but greater long-term economic benefits relative to **Alternative 1 (No Action)** since they provide a hedge against overfishing. Since **Action 33** is

administrative in nature, and thus does not directly affect participants in the golden crab fishery, the effects under **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** are indirect.

While **Alternative 2 (Preferred)** would have fewer negative short term social effects, **Alternative 3 (Preferred)** may have more long term positive social effects, but could have very negative short term effects that affect market viability.

Table 2-82. Summary of effects under **Action 33**.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)	(-) Would not meet NS 1 guidelines and comply with the requirements under MSA. No positive benefits.	(+-) Greatest short-term and smallest long-term benefits (indirect).
Alternative 2 (Preferred). Fishery closed after ACL is projected to be met.	(+-) Requires in-season monitoring of the fishery, benefits higher when combined with **Alternative 3 (Preferred)**.	(+-) Smaller short-term indirect benefits when compared with **Alternative 3 (Preferred)**.
Alternative 3 (Preferred). ACL reduced in the following season by amount of overage.	(+-) A form of post-season AM, possible positive benefits, especially when combined with **Alternative 3 (Preferred)**.	(+-) Greater long-term indirect benefits when compared with **Alternative 2 (Preferred)**.

3.0 Affected Environment

3.1 Habitat

3.1.1 Habitat for Snapper Grouper Species

Information on the habitat utilized by species in the Snapper Grouper Complex is included in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) and incorporated here by reference. The FEP can be found at:
http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.1.1.1 Essential Fish Habitat

Essential fish habitat (EFH) is defined in the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally-managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: Estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: Live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 183 meters [600 feet (but to at least 2,000 feet for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and near shore snapper grouper species, EFH includes areas inshore of the 30-meter (100-foot) contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom habitats.

3.1.1.2 Habitat Areas of Particular Concern

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

Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, postlarval, juvenile, and adult stages).

In addition to protecting habitat from fishing related degradation though FMP regulations, the Council, in cooperation with NOAA Fisheries, actively comments on non-fishing projects or policies that may impact essential fish habitat. The Council adopted a habitat policy and procedure document that established a four-state Habitat Advisory Panel and adopted a comment and policy development process. With guidance from the Advisory Panel, the Council has developed and approved habitat policies on: energy exploration, development, transportation and hydropower re-licensing; beach dredging and filling and large-scale coastal engineering; protection and enhancement of submerged aquatic vegetation; and alterations to riverine, estuarine and near shore flows, offshore aquaculture, invasive estuarine species, and invasive marine species (available at www.safmc.net).

3.1.2 Habitat for Dolphin and Wahoo

Information on the habitat utilized by dolphin and wahoo is included in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) and incorporated here by reference. The FEP can be found at: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.1.2.1 Essential Fish Habitat

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum.*

Note: This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999, as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC, 1998c) (dolphin was included within the Coastal Migratory Pelagics FMP). This definition does not apply to extra-jurisdictional areas.

3.1.2.2 Habitat Areas of Particular Concern

EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic Sargassum.

Note: This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP).

3.1.3 Habitat for Golden Crab

Information on the habitat utilized by golden crab is included in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) and incorporated here by reference. The FEP can be found at: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.1.3.1 Essential Fish Habitat

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided above and in Wenner et al. (1987).

Refer to Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

3.1.3.2 Habitat Areas of Particular Concern

There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate.

3.1.4 Habitat for Sargassum

The Council, through the Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; under review), is proposing to designate the top 10 meters of the water column in the South Atlantic EEZ bounded by the Gulf Stream, as EFH for pelagic *Sargassum*. **Appendix C** contains more detail.

No EFH-HAPCs are proposed at this time.

3.2 Biological and Ecological Environment

3.2.1 Species Most Impacted by this FMP Amendment

Species most likely to be impacted by actions in the Comprehensive ACL Amendment include species in the Snapper Grouper Complex, dolphin (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), *Sargassum* (*Sargassum fluitans* and *Sargassum natans*), and golden crab (*Chaeceon fenneri*) (**Table 1-1)**. A complete description of the life history characteristics of these species can be found in Volume II of the Fishery Ecosystem Plan, (SAFMC, 2009b) available at http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.3 Science Underlying the Management of Species Most Impacted by this FMP Amendment

Table 1-1 in **Section 1** outlines the species most impacted by this amendment. The species are covered by the FMPs for Snapper Grouper, Dolphin Wahoo, and Golden crab. Many of the species in the South Atlantic region are assessed through the Southeast Data, Assessment, and Review (SEDAR) process.

The SEDAR process consists of a series of workshops aimed at ensuring that each assessment is based on the best available scientific information. First, representatives from NOAA Fisheries Service, state agencies, and the South Atlantic Council, as well as fishermen and experts from non-governmental organizations and academia, participate in a data workshop. The purpose of a data workshop is to assemble and review available fishery-dependent and fishery-independent data and information on a stock, and to develop consensus about what constitutes the best available scientific information on the stock, how that information should be used in an assessment, and what type of stock assessment model should be employed.

Second, assessment biologists from these agencies and organizations participate in a stock assessment workshop, where data from the data workshop are input into one or more stock assessment models (e.g., production, age-structured, length-structured, etc.) to generate estimates of stock status and fishery status. Generally, multiple runs of each model are conducted: base runs and a number of additional runs to examine sensitivity of results to various assumptions (e.g., different natural mortality rates, different data sets/catch periods, etc.).

Finally, a stock assessment review workshop is convened to provide representatives from the Center for Independent Experts (CIE) the opportunity to peer review the results of the stock assessment workshop. Representatives from NOAA Fisheries Service, the South Atlantic Council, and constituent groups may attend and observe the review but the actual review is conducted by the CIE. The Council's SSC then reviews the report of the stock assessment review workshop.

The review portion of the SEDAR process has helped improve the acceptance of stock assessments. However, continued lack of basic fishery data has resulted in uncertainty in the assessment results.

Detailed information on species assessed by the SEDAR process (red snapper, golden tilefish, snowy grouper, gag, red grouper, black grouper, greater amberjack, yellowtail snapper, mutton snapper, vermilion snapper, red porgy, goliath grouper, black sea bass, and hogfish) can be found at: http://www.sefsc.noaa.gov/sedar/, and is hereby incorporated by reference.

Many of the species do not have stock assessments, scientific data for these can be found in the literature and Stock Assessment and Fishery Evaluation (SAFE) Reports, which can be found at: http://sero.nmfs.noaa.gov/sf/safereports/safe.htm, and are hereby incorporated by reference.

3.4 Other Affected Council-Managed Species

Descriptions of other Council-managed species may be found in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) or at the following web address: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx

3.5 Protected Species

There are 31 different species of marine mammals that may occur in the exclusive economic zone (EEZ) of the South Atlantic region. All 31 species are protected under the Marine Mammal Protection Act of 1972 (MMPA) and six are also listed as endangered under the ESA (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). Other species protected under the ESA occurring in the South Atlantic include five species of sea turtle (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]). Designated critical habitat for the *Acropora* corals also occurs within the South Atlantic region. The species potentially affected by the fishery are discussed below.

3.5.1 ESA-Listed Marine Mammals

In the southeast U.S. Atlantic region, sperm, fin, sei, and blue whales are predominantly found seaward of the continental shelf. Sightings of sperm whales are almost exclusively in the continental shelf edge and continental slope areas (Scott and Sadove 1997). Fin whales are generally found along the 100 m isobath with sightings also spread over deeper water including canyons along the shelf break (NMFS 1998). Sei and blue whales also typically occur in deeper waters but neither are commonly observed in the east coast U.S. waters (CeTAP 1982; Wenzel et al. 1988; NMFS 1998; NMFS 1998a).

Conversely, northern right, and humpback whales are coastal animals and are regularly sighted in the near shore area along the southeast U.S. Atlantic, November through March. North Atlantic right whales generally occur west of the Gulf Stream; from the southeast U.S. to Canada (Waring et al. 2004). Calving occurs during the winter months in the coastal waters off Georgia and Florida (Knowlton et al. 1994; Kraus et al. 2001). Mid-Atlantic waters are believed to serve

primarily as a migratory pathway between the spring and summer feeding/nursery areas and the winter calving grounds. Sightings from aerial surveys throughout the southeast Atlantic region have reported right whales off the Carolinas from December through March including mother calf pairs.

3.5.2 ESA-Listed Sea Turtles

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and travel widely throughout the South Atlantic. The following sections are a brief overview of the general life history characteristics of the sea turtles found in the South Atlantic region. Several volumes exist that cover the biology and ecology of these species more thoroughly (i.e., Lutz and Musick (eds.) 1997, Lutz et al. (eds.) 2002).

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976, Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

The **hawksbill's** pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988, Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally. Hawksbills show fidelity to their foraging areas over several years (van Dam and Diéz 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcareous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely, dives last about 56 minutes (Hughes 1974).

Kemp's ridley hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987, Ogren 1989). Once the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50m) benthic foraging habitat over unconsolidated substrates (Márquez-M. 1994). They have also been observed transiting long distances between foraging habitats (Ogren 1989). Kemp's ridleys feeding in these nearshore areas primarily prey on crabs, though they are also known to ingest mollusks, fish, marine vegetation, and shrimp

(Shaver 1991). The fish and shrimp Kemp's ridleys ingest are not thought to be a primary prey item but instead may be scavenged opportunistically from bycatch discards or from discarded bait (Shaver 1991). Given their predilection for shallower water, Kemp's ridleys most routinely make dives of 50 m or less (Soma 1985, Byles 1988). Their maximum diving range is unknown. Depending on the life stage a Kemp's ridleys may be able to stay submerged anywhere from 167 minutes to 300 minutes, though dives of 12.7 minutes to 16.7 minutes are much more common (Soma 1985, Mendonca and Pritchard 1986, Byles 1988). Kemp's ridleys may also spend as much as 96% of their time underwater (Soma 1985, Byles 1988).

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert et al. 1989) but more frequently dive to depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora et al. 1984, Eckert et al. 1986, Eckert et al. 1989, Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

Loggerhead hatchlings forage in the open ocean and are often associated with Sargassum rafts (Hughes 1974, Carr 1987, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles are known to eat a wide range of things including salps, jellyfish, amphipods, crabs, syngnathid fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the South Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke et al. 1993). Estimates of the maximum diving depths of loggerheads range from 211 m to 233 m (692-764ft.) (Thayer et al. 1984, Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer et al. 1984, Limpus and Nichols 1988, Limpus and Nichols 1994, Lanyan et al. 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994, Lanyan et al. 1989).

3.5.3 ESA-Listed Marine Fish

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963 [the first was captured off North Carolina in 1963 and the other off Georgia in 2002 (National Smalltooth Sawfish Database, Florida Museum of Natural History)]. Historical accounts and recent encounter data suggest that immature individuals are most

common in shallow coastal waters less than 25 meters (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer pers. comm. 2006). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food resources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938, Bigelow and Schroeder 1953).

3.5.4 ESA-Listed Marine Invertebrates

Elkhorn (*Acropora palmata)* and staghorn (*A. cervicornis*) coral were listed as threatened under the ESA on May 9, 2006. The Atlantic *Acropora* Status Review (*Acropora* Biological Review Team 2005) presents a summary of published literature and other currently available scientific information regarding the biology and status of both these species.

Elkhorn and **staghorn** corals are two of the major reef-building corals in the wider Caribbean. In the South Atlantic region, they are found most commonly in the Florida Keys; staghorn coral occurs the furthest north with colonies documented off Palm Beach, Florida (26º3'N). The depth range for these species ranges from <1 meter (3.2 feet) to 60 meters (197 feet). The optimal depth range for elkhorn is considered to be 1 to 5 meters (3.2-16 feet) depth (Goreau and Wells 1967), while staghorn corals are found slightly deeper, 5 to 15 meters (16-49 feet) (Goreau and Goreau 1973).

All Atlantic *Acropora* species (including elkhorn and staghorn coral) are considered to be environmentally sensitive, requiring relatively clear, well-circulated water (Jaap et al. 1989). Optimal water temperatures for elkhorn and staghorn coral range from 25° to 29°C (77 to 84° F) (Ghiold and Smith 1990, Williams and Bunkley-Williams 1990). Both species are almost entirely dependent upon sunlight for nourishment, contrasting the massive, boulder-shaped species in the region (Porter 1976, Lewis 1977) that are more dependent on zooplankton. Thus, Atlantic *Acropora* species are much more susceptible to increases in water turbidity than some other coral species.

Fertilization and development of elkhorn and staghorn corals is exclusively external. Embryonic development culminates with the development of planktonic larvae called planulae (Bak et al. 1977, Sammarco 1980, Rylaarsdam 1983). Unlike most other coral larvae, elkhorn and staghorn planulae appear to prefer to settle on upper, exposed surfaces, rather than in dark or cryptic ones (Szmant and Miller 2006), at least in a laboratory setting. Studies of elkhorn and staghorn corals indicated that larger colonies of both species had higher fertility rates than smaller colonies (Soong and Lang 1992).

3.5.5 South Atlantic Fisheries Interactions with ESA-Listed Species

Sea turtles and smalltooth sawfish are the ESA-listed species most vulnerable to capture in the gear types (i.e., handline, rod and reel, longline, trawl, and golden crab traps) used in the snapper grouper, dolphin/wahoo, *Sargassum*, and golden crab fisheries in the South Atlantic. The frequency and severity of interactions between these species and fishing gear varies greatly from fishery to fishery. The impacts of all these fisheries on ESA-listed species have been evaluated in previous ESA section 7 consultations (NMFS 2003a & b, NMFS 2006) and no fishery is

expected to jeopardize the continued existence of any listed species. **Table 3-1** illustrates the number of interactions estimated for each fishery and the type of interaction anticipated (i.e., lethal or non-lethal). The snapper grouper fishery by far has the greatest number of interactions with protected species. Entanglement in the hook-and-line gear is the primary route of effect to sea turtles and smalltooth sawfish from this fishery. Entanglement in hook-and-line gear is also the primary route of effect between the dolphin/wahoo fishery and sea turtles and smalltooth sawfish. The capture of sea turtle hatchlings in trawl gear used to collect *Sargassum* was the anticipated route of effect between this fishery and sea turtles. However, since the fishery is not in operation the potential impacts to sea turtles are unlikely to be occurring. The golden crab fishery operates in deep water (800 ft or more) and does not use buoys or trap lines. These characteristics mean sea turtles and marine mammals are the only ESA-listed species that may be affected by the fishery. A trap could theoretically, hit these species as it is deployed. However, because these species are highly mobile the likelihood of injury occurring is extremely low. To date, no interactions between this fishery and ESA-listed sea turtles or marine mammals have ever been documented.

Table 3-1. Annual anticipated takes of ESA-listed species for Comprehensive ACL Amendment fisheries.

Fishery	Sea Turtle Species				
	Loggerhead	**Leatherback**	**Kemp's Ridley**	**Green**	**Hawksbill**
South Atlantic Snapper Grouper	68-No more than 23 lethal	9-No more than 5 lethal	7-No more than 3 lethal	13-No more than 5 lethal	2-No more than 1 lethal
Dolphin Wahoo	12-No more than 2 lethal	12-No more than 1 lethal	3 for all species in combination-no more than 1 lethal take		
Golden Crab	No takes anticipated				
Sargassum	3 Hatchlings-All Lethal	1 Hatchling (all species in combination) - Lethal			
Fishery	**Smalltooth Sawfish**				
South Atlantic Snapper Grouper	3-All non-lethal				
Dolphin Wahoo	No takes anticipated				
Sargassum	No takes anticipated				
Golden Crab	No takes anticipated				

3.5.6. Designated Critical Habitat for ESA-Listed Species in the South Atlantic

In the South Atlantic, critical habitat has been designated for elkhorn and staghorn corals, and the North Atlantic right whale.

Four areas of critical habitat were designated in for **elkhorn and staghorn coral** in Florida, Puerto Rico, St. Thomas/St. John, U.S.V.I, and St. Croix, U.S.V.I. Only the Florida area

overlaps with the SAFMC's jurisdiction. The Florida unit contains three sub-areas: (1) The shoreward boundary for Florida sub-area A begins at the 6-ft (1.8 m) contour at the south side of Boynton Inlet, Palm Beach County at 26°32'42.5"N; then runs due east to the point of intersection with the 98-ft (30 m) contour; then follows the 98-ft (30 m) contour to the point of intersection with latitude 25°45'55"N, Government Cut, Miami-Dade County; then runs due west to the point of intersection with the 6-ft (1.8 m) contour, then follows the 6-ft (1.8 m) contour to the beginning point; (2) The shoreward boundary of Florida sub-area B begins at the MLW line at 25°45'55"N, Government Cut, Miami-Dade County; then runs due east to the point of intersection with the 98-ft (30 m) contour; then follows the 98-ft (30 m) contour to the point of intersection with longitude 82°W; then runs due north to the point of intersection with the South Atlantic Fishery Management Council (SAFMC) boundary at 24°31'35.75" N; then follows the SAFMC boundary to a point of intersection with the MLW line at Key West, Monroe County; then follows the MLW line, the SAFMC boundary (see 50 CFR 600.105(c)), and the COLREGS line (see 33 CFR 80.727. 730, 735, and 740) to the beginning point; and (3) The seaward boundary of Florida sub-area C (the Dry Tortugas) begins at the northern intersection of the 98-ft (30 m) contour and longitude 82°45'W; then follows the 98-ft (30 m) contour west around the Dry Tortugas, to the southern point of intersection with longitude 82°45'W; then runs due north to the beginning point.

The physical or biological feature of elkhorn and staghorn coral critical habitat essential to their conservation is substrate of suitable quality and availability to support larval settlement and recruitment, and reattachment and recruitment of asexual fragments. Substrate of suitable quality and availability is defined as consolidated hardbottom or dead coral skeleton that is free from fleshy macroalgae cover and sediment cover, occurring in water depths from the mean high water (MHW) line to 30 meters (98 feet).

Critical habitat for the **North Atlantic right whale** has been designated off coastal Florida and Georgia; a small portion of which occurs overlaps SAFMC's jurisdiction. The unit is defined from the mouth of the Altamaha River, Georgia, to Jacksonville, Florida, out 15 nautical miles and from Jacksonville, Florida, to Sebastian Inlet, Florida, out five nautical miles. The area was designated because of its importance as a calving area. The physical or biological feature of the critical habitat essential to the conservation of North Atlantic right whales are related to water depth, water temperature, and bathymetry.

3.6 Administrative Environment

3.6.1 The Federal Fishery Management and Applicable Laws

3.6.1.1 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 U.S. EEZ, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce 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 of Commerce (Secretary) is responsible for collecting and providing the data necessary for the councils to prepare FMPs and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in **Appendix I.** In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

The South Atlantic Fishery Management Council (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 miles offshore from the seaward boundary of the States of North Carolina, South Carolina, Georgia, and east Florida to Key West. The South Atlantic Council has thirteen voting members: one from NOAA Fisheries Service; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the South Atlantic Council, there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard, State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The South Atlantic Council has adopted procedures whereby the non-voting members serving on the South Atlantic Council Committees have full voting rights at the Committee level but not at the full 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.

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

Mississippi (44 miles). The Gulf Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NOAA Fisheries Service.

The Mid-Atlantic Fishery Management Council (Mid-Atlantic Council) is responsible for management of fisheries in federal waters off the mid-Atlantic coast. Member states include New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. The Mid-Atlantic Council consists of 25 members (21 voting, 4 non-voting), representing state and federal agencies and the public. The voting members are the Regional Administrator of NOAA Fisheries Service, a fisheries official from each state, and 13 public members nominated by the State Governors and selected by the Secretary of Commerce.

The New England Fishery Management Council (New England Council) manages fishery resources within the federal 200-mile limit off the coasts of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. The New England Council consists of 22 members (18 voting, 4 non-voting), representing state and federal agencies and the public. The voting members are the Regional Administrator of NOAA Fisheries Service, a fisheries official from each state, and 12 public members nominated by the State Governors and selected by the Secretary of Commerce.

Public interests also are involved in the fishery management process for all four Councils through participation on advisory panels and through Council meetings, which, with few exceptions for discussing personnel matters, are open to the public. The Councils use a Scientific and Statistical Committee to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking.

3.6.1.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environment and Natural Resources. The Marine Resources Division of the South Carolina Department of Natural Resources regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the Council level is to ensure state participation in Federal fishery management decision-making and to promote the development of compatible regulations in state and Federal waters.

The South Atlantic States are also involved through the ASMFC in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel

adoption of consistent state regulations to conserve coastal species. The ASFMC also is represented at the Council level, but does not have voting authority at the Council level.

NOAA Fisheries Service' State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.7 Enforcement

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

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

NOAA General Counsel issued a revised Southeast Region Magnuson-Stevens Act Penalty Schedule in June 2003, which addresses all Magnuson-Stevens Act violations in the Southeast Region. In general, this Penalty Schedule increases the amount of civil administrative penalties that a violator may be subject to up to the current statutory maximum of $120,000 per violation. NOAA General Counsel requested public comment through December 20 2010, on a new draft policy.

3.8 Human Environment

3.8.1 Economic Description of the Commercial Fishery

The major sources of data summarized in this description include the Federal Logbook System (FLS) and Accumulated Landings System (ALS) for the commercial fishery, with price indices taken from the Bureau of Labor Statistics. Inflation adjusted revenues and prices are reported in 2009 constant dollars. Average prices are calculated from ALS data. The average price for a species/complex for a given year was calculated as the average of all the daily prices on which that species/complex was landed that year. Golden crab prices are an exception; golden crab prices are based on direct communication from crab harvesters. The prices were not weighted by landings. In the prices presented for a particular state/region, only the prices from that state/region were used to calculate averages. Consequently, landings totals in this section will be underestimated because official landings statistics are derived from the ALS.

Confidentiality issues were a concern for several species, particularly when data were broken down by state and gear group. When a confidentiality issue arose, that data was combined with other state or gear data or data were averaged across years. In all cases, landings made to states outside Florida, Georgia, North Carolina, and South Carolina, were eliminated due to confidentiality issues.

Snapper Grouper and Wreckfish
Additional information on the commercial snapper grouper fishery is contained in previous amendments [Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Amendment 17A (SAFMC 2010a), and Amendment 17B (SAFMC 2010b)] and is incorporated herein by reference. Additional information on the commercial wreckfish fishery is contained in Amendment 5 (1992) and is incorporated herein by reference.

Dolphin Wahoo
Additional information on the commercial dolphin-wahoo fishery is contained in the Dolphin Wahoo Fishery Management Plan (SAFMC 2003a) and is incorporated herein by reference.

Golden Crab
Additional information on the commercial golden crab fishery is contained in previous amendments [Comprehensive Ecosystem-Based Amendment 1 (SAFMC 2010c)] and is incorporated herein by reference.

Sargassum
There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. In the past there was one vessel that was harvesting *Sargassum* for the purposes of utilizing it in the manufacturing of pharmaceuticals. Today, it is likely that there are no vessels harvesting *Sargassum*. Additional information on the commercial *Sargassum* fishery is contained in Fishery Management Plan for Pelagic *Sargassum* Habitat of the South Atlantic (SAFMC 2002) and is incorporated herein by reference.

3.8.1.1 Permits

The count of limited access permits (Golden Crab and Snapper Grouper) that were valid or renewable/transferable for at least one day per year for each year 2005-2010 is shown in **Table 3-2**. For open access permits (Atlantic Dolphin Wahoo), the data represents the count of permits per year that were valid for at least one day. The wreckfish fishery requires a Snapper Grouper unlimited permit to participate in fishing activities. Purchase of snapper grouper unlimited permits requires an individual to buy two permits and retire one. This is referred to as the "2 for 1" program and was implemented in late 1998 to decrease capacity in the fishery. The golden crab permits are zone specific.

Table 3-2. Unique Numbers of Permits by Fishery, 2005-2010.

Fishery	2005	2006	2007	2008	2009	2010
Atlantic Dolphin Wahoo	1,815	2,218	2,597	2,764	2,863	2,144
Golden Crab	11	12	12	11	11	11
Snapper Grouper (unlimited, transferable)	748	722	695	665	640	598
Snapper Grouper (limited, non-transferable)	198	183	165	151	144	136

3.8.1.2 Gear and Fishing Behavior

Snapper Grouper

The commercial snapper grouper fishery utilizes vertical lines, longlines, black sea bass pots/traps, spears, and powerheads (i.e., spears with spring-loaded firearms). Vertical lines are used from the North Carolina/Virginia border to the Atlantic side of Key West, Florida. The majority of hook-and-line fishermen use either electric or hydraulic reels (bandit gear) and generally have 2-4 bandit reels per boat. Historically, the majority of the bandit fleet fished year round for snapper grouper with the only seasonal differences in catch associated with the regulatory spawning season closures in March and April for gag. Recently, Snapper Grouper FMP Amendment 16 (SAFMC 2009a) implemented a closed season from January through April for shallow water grouper and a commercial quota for vermilion snapper that could result in closures if the spring and/or fall sub-quotas are filled. Snapper Grouper FMP Amendment 17B SAFMC 2010b) implemented a ban on possession of several deep-water species in depths of 240 feet and greater. Most fluctuations in fishing effort during the open seasons in this fishery are a result of the weather. Trips can be limited during hurricane season and during the winter months from December through March. Some fishermen stop bandit fishing to target king mackerel when they are running.

The Council allows the use of bottom longlines north of St. Lucie Inlet, Florida, in depths greater than 50 fathoms. Bottom longline gear is used to target golden tilefish primarily. Longline boats

are typically bigger than bandit boats, their trips are longer, and they cost more to operate because they operate farther offshore. A longline spool generally holds about 15 miles of cable. Longlines are fished from daylight to dark because sea lice eat the flesh of hooked fish at night. Historically, the fishery is operated year long with little or no seasonal fluctuation barring hurricane disruption. However, recent increases in participation have resulted in shorter seasons that close the fishery before summer.

Spears or powerheads are most commonly used off Florida and are illegal for killing snapper grouper species off South Carolina and in Special Management Zones.

Black sea bass pots are used exclusively to target black sea bass, though bycatch of other snapper grouper species is allowed. The pots have mesh size, material, and construction restrictions to facilitate bycatch reduction. All sea bass pots must have a valid identification tag attached and more than 87% of tags in April 2003 were for vessels with homeports in North Carolina. Fishing practices vary by buoy practices, setting/pulling strategies, number of pots set, and length of set, with seasonal variations. The South Carolina pot fishery is mainly a winter fishery with short soak times (in some cases about an hour) and relatively few pots per boat. Most trips are day trips with pots being retrieved before heading to port. The North Carolina pot fishery also is primarily a winter fishery with some fishermen continuing to pot through the summer. North Carolina fishermen tend to use more pots than those in South Carolina. Although most North Carolina trips with sea bass pots last one day, more pots are left to soak for several days than in South Carolina. Many participants in the black sea bass fishery are active in other fisheries, including the recreational charter fishery during the summer months. Many snapper grouper permit holders maintain pot endorsements but are not active in the pot fishery.

Wreckfish

The wreckfish fishery is prosecuted primarily off of South Carolina and Georgia on the Blake Plateau. However, some fishing occurs in the Florida Keys. The Wreckfish Individual Transferable Quota (ITQ) System was implemented in 1991 and Snapper Grouper Amendment 5 (SAFMC 1992a) provides a complete description of the management program. The small number of fishermen participating in the wreckfish fishery fish with rod-and-reel and harvest only a small portion of the 2 million pound total allowable catch (TAC). The number of shareholders has decreased from a high of 49 entities in 1991 to 25 entities in 2009. The Wreckfish ITQ Program Review (SAFMC unpublished report) contains additional information regarding participation in the wreckfish fishery over time.

Dolphin Wahoo

In the Atlantic, commercial fisheries for dolphin use primarily longline and hook and line (which includes hand line, troll, rod and reel and electric reel). The hook and line portion of the commercial fishery is conducted similarly to the recreational hook and line segment, which is described under the recreational fisheries section. The longline component of the fishery consists of longliners that primarily target highly migratory species but may also catch dolphin and longliners that target dolphin directly.

The Dolphin Wahoo FMP (SAFMC 2003a) states that the directed commercial longline fishery for dolphin in the Atlantic consists of approximately 3 or 4 longline vessels that direct effort on

dolphin on a regular basis off the coasts of North and South Carolina and longliners who catch dolphin and wahoo but primarily target highly migratory species, mainly swordfish and shark.

The directed fishery begins the last part of April and continues for about 3 weeks initially off the coast of South Carolina then north to Morehead City, North Carolina, where dolphin become more scattered and difficult to catch near the middle of July. Most fishing occurs on either side of the Gulf Stream where eddies spin-off with early concentrations on the western side.

Vessels in the directed longline fishery make sets during the daytime using gear that is from 2 to 6 miles in length. The mainline is often 700 pound monofilament with leaders of 400 pound monofilament. There are ordinarily a total of 75 to 80 hooks per mile with a maximum of 480 hooks total. The standard No. 5 circle hooks that are used for dolphin are smaller than those normally used for conventional longline fishing. Leaders of around 18 inches are also shorter than normal with one hook per leader. No drop lines are used in this fishery and haul back is immediate. Fish are located using hook-and-line gear along weed lines or temperature breaks. Gear may be set in a circular pattern to facilitate haulback and as many as six sets may be made daily. Trips may average 2 days in length (SAFMC 2003a).

The commercial fishery for wahoo is incidental to fishing for dolphin or other pelagic species.

Golden Crab

Participation in the golden crab fishery takes place exclusively off Florida in the Golden Crab Allowable Fishing Area defined in the Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1; SAFMC 2010c). This small fishery consists of 11 permit holders that hold permits in one of three fishing zones. Harvest takes place primarily in the Middle Zone. However, harvest has increased in recent years in the Northern Zone. The fishery is prosecuted exclusively with traps ranging from a maximum of 48-64 cubic feet depending on the fishing zone. Twenty to one hundred traps are strung together on lines, called trawls. Fishermen may fish 4 trawls in one week pulling 100 traps one day and 100 on a separate day. In 2008, the average vessel length was about 57 feet. Fishermen typically fish for about a week at a time, although, at least one vessel conducts shorter trips.

Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. Only one company, Aqua-10 Laboratories, has harvested pelagic *Sargassum* offshore of North Carolina from 1976 to 1997. Pelagic *Sargassum* was originally collected with unweighted shrimp trawls or 3’ x 4’ and 4’ x 8’ beam trawls constructed of iron pipe with 1.5 inch and 2 inch mesh bags that were 6’- 8’ deep. The average capacity of the beam trawl is 200 pounds of Sargassum. Initially, harvest was conducted during the months of June and September by Aqua-10 contracting with a shrimp, snapper grouper, or longline vessel to harvest pelagic *Sargassum* in conjunction with their regular fishing trip. Current regulations require that nets used to harvest *Sargassum* must be constructed of 4” stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

3.8.1.3 Landings, Revenue, and Economic Activity

For the tables in this section, the following notes apply: (1) Data Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System database as of September 17, 2008. NOAA Fisheries Service, Southeast Regional Office permits database. (2) CPI Data Source: The BLS Consumer Price Index (CPI) for urban dwellers was used to adjust for the effects of overall price inflation in the U.S. economy at the consumer level. Dollar values were adjusted to 2009 year-equivalent dollars. (3) Within all tables, "---" within a cell indicates zero landings, effort, etc., for that cell. (4) In order to maintain individual vessel and dealer confidentiality, in some cases, state specific data has been combined with other states. In all cases, landings from other states outside of North Carolina, South Carolina, Georgia, and Florida have been removed for confidentiality reasons.

3.8.1.4 Economic Activity

Estimates of the average annual economic activity (impacts) associated with the commercial harvest of the species or species groups addressed in this proposed amendment were derived using the model developed for and applied in NMFS (2009c) and are provided in **Table 3-3**. Business activity for the commercial sector is characterized in the form of full-time equivalent 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.

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 commercial ex-vessel (dockside) revenues for individual species or species groups that generated an annual average of approximately $300,000 (2008 dollars) or more per year in ex-vessel revenues during 2005-2009. All dollar values are in 2008 dollars in order to be consistent with the economic impact model. As a result, the estimates of average annual ex-vessel revenues may be slightly different than those provided in previous tables depicting commercial revenues, which are in 2009 dollars. Row values should not be added, with the exception of "All Snapper Grouper" and "Dolphin" because the group totals include the values of the appropriate individual snapper grouper species and "All Snapper Grouper" includes the smaller snapper grouper species groups.

Table 3-3. Average annual economic activity associated with the harvest of the respective species. All dollar values are in 2008 dollars.

Species	Average Ex-vessel Value (millions)	Total Jobs	Harvester Jobs	Output (Sales) Impacts (millions)[1]	Income Impacts (millions)[1]
All Snapper Grouper	$13.44	2,526	336	$176.91	$75.39
Shallow Water Groupers	$4.49	845	112	$59.15	$25.21
Snappers	$0.45	85	11	$5.95	$2.53
Deepwater Grouper & Tilefish	$0.40	75	10	$5.23	$2.23
Snowy Grouper	$0.32	61	8	$4.26	$1.82
Gag	$2.13	400	53	$28.01	$11.94
Red Grouper	$1.18	221	29	$15.51	$6.61
Scamp	$1.13	212	28	$14.87	$6.34
Black Sea Bass	$1.64	309	41	$21.64	$9.22
Yellowtail Snapper	$0.30	56	7	$3.91	$1.66
Red Snapper	$0.67	125	17	$8.78	$3.74
Vermilion Snapper	$2.90	546	73	$38.21	$16.28
Dolphin	$0.60	115	16	$7.91	$3.37

[1]2008 dollars.
NOTE: Information based on species in original FMU and does not reflect species being removed in **Action 1**.

3.8.1.5 Landings, Vessels, Dealers, Effort (Trips), Ex-vessel Price, and Ex-vessel Revenue, 2005-2009

Snapper Grouper
The number of boats fell from a high of 1,301 in 1998 to a low of 856 in 2006, but increased again to 929 by 2009. From 2005 to 2009 (**Table 3-4**), the average inflation-adjusted (2009 dollars) dockside (ex-vessel) price received per gutted pound of snapper grouper landings increased from $2.60 in 2005 to $2.84 in 2007 before returning to $2.61 by 2009, averaging $2.70 over the five year period. From 2005 to 2009, the inflation-adjusted (2009 dollars) annual dockside (ex-vessel) revenues received for snapper grouper landings increased from $12.1 million in 2005 to $15 million in 2007 before declining a bit to $14.8 million by 2009, averaging $13.8 million per year. Over the 2005-2009 period, vermilion snapper was the largest volume species in the fishery, followed by yellowtail snapper and greater amberjack. The recession of 2007-2008 does not appear to have stopped steady growth in snapper grouper landings or participating vessels, although it may have moderately reduced effort/trips for one year (2008) and likely contributed to lower ex-vessel prices and revenues in 2008 and 2009.

Table 3-4. Snapper grouper landings (not including wreckfish), vessels, dealers, effort (trips by species), price, and revenue, 2005-2009.

	Year Landed					Average 2005-2009
	2005	2006	2007	2008	2009	
Lbs (Gutted)	5,453,614	5,217,993	5,636,077	6,101,203	6,472,263	5,776,230
Vessels[1]	865	856	897	912	929	892
Dealers	263	306	323	304	309	301
Effort (Trips)[2]	12,809	12,317	13,937	13,881	14,702	13,529
Hook & Line (Trips)[3]	12,207	11,749	13,226	13,390	14,116	12,938
Longline (Trips)[3]	117	143	248	199	257	193
Trap (Trips)[3]	601	755	612	555	747	654
Other (Trips)[3]	1,668	1,570	1,658	1,557	1,747	1,640
Ex-Vessel Price (2009 $) per Pound Gutted	2.60	2.75	2.84	2.70	2.61	2.70
Ex-Vessel Revenue (2009 $)	12,125,282	12,581,212	15,008,354	14,567,472	14,803,406	13,817,145

[1] May include double-counting of vessels that land snapper grouper in more than one state in a given year.
[2] A single trip using multiple gears is counted only once.
[3] A single trip using multiple gears counted in multiple categories, once for each gear.

Wreckfish
The wreckfish fishery occurs primarily off the east coast of Florida and the coast of South Carolina. Average landings totaled almost 165,000 lbs and this was valued at almost $440,000 (2009 dollars). The number of participating vessels averaged a little more than five. Confidentiality concerns limit the amount of data that can be shown here (**Tables 3-5 to 3-8**).

Table 3-5. Numbers of wreckfish dealers and vessels landing wreckfish, 2005-2009.

Year	Dealers	Vessels
2005-09	2.6	5.2

Note: Less than three dealers or harvesters trigger confidentiality issues whereby landings, revenue, and other data cannot be shown.

Table 3-6. Number of trips landing wreckfish, 2005-2009.

	Average 2005-2009
Total	36

Table 3-7. Wreckfish landings (gutted weight), 2005-2009.

	Average 2005-2009
Landings (gutted weight)	164,991

Table 3-8. Ex-vessel prices and revenues for wreckfish, 2005-2009.

		Average 2005-2009
All States Combined	**Ex-Vessel Price (2009 $) per Pound Gutted**	2.65
	Ex-Vessel Revenue (2009 $)	439,837

Dolphin Wahoo
Dolphin landings increased more than four-fold from 98,000 lbs (gutted) in 2005 to over 430,000 lbs in 2009, averaging 237,000 lbs per year. The recession of 2008 could have slowed the rapid growth of landings and trips for one year, but rapid growth resumed in 2009. Effort increased by 57% from 1,825 trips in 2005 to 2,883 trips in 2009, averaging 2,321 trips per year. The number of vessels landing dolphinfish also increased over this period; for example, the number of vessels in the east coast Florida and Georgia region increased from 255 to 342. From 2005 to 2009, the average inflation-adjusted (2009 $s) dockside (ex-vessel) price received per gutted pound of dolphin landings fluctuated around $2.35 until 2009 when it decreased to $2.01, possibly due to

relatively large landings in 2009. From 2005 to 2009, the inflation-adjusted (2009 dollars) annual dockside (ex-vessel) revenues received for dolphin increased from $979,294 in 2005 to $1,904,708 in 2009, averaging $1,468,737 per year (**Tables 3-9 and 3-10**).

Table 3-9. Number of vessels, dealers, and trips landing dolphin, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	255	249	281	284	342	282
FL(west)	96	136	106	114	107	112
NC	103	133	176	184	204	160
SC	41	50	47	48	50	48
Other States	1	-	-	1	3	1
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	92	95	103	100	104	99
FL(west)	42	54	57	46	47	50
NC	48	61	79	87	93	73
SC	13	20	17	16	21	18
Other States	1	-	-	1	3	1
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	904	996	966	988	1250	1021
FL(west)	331	468	383	417	436	407
NC	433	498	713	710	941	659
SC	156	265	271	223	247	233
Other States	1	-	-	-	9	2
Total All States	1825	2227	2333	2339	2883	2322

Table 3-10. Annual landings (lbs whole weight) and value (dollars) of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction.

Year	Commercial	Value
1999	1,046,580	1,623,266
2000	987,623	1,369,594
2001	764,823	937,395
2002	670,415	894,039
2003	722,921	1,138,558
2004	856,517	1,432,820
2005	576,671	979,294
2006	650,004	1,161,832
2007	967,151	1,843,936
2008	780,818	1,453,914
2009	1,135,531	1,904,708

Source: SERO ACL landings database from data provided by SEFSC.

Annual wahoo landings increased from 15,765 lbs (gutted) per year in 2005 to 30,842 lbs in 2007, fell sharply to 18,756 lbs in 2008, likely due to the recession, only to recover to 24,770 lbs in 2009, with an average of 22,873 lbs per year. Numbers of trips and numbers of vessels landing wahoo followed similar patterns. Trips increased steadily from 2005 to 2007, fell sharply in 2008, and recovered in 2009. The number of vessels landing wahoo in North Carolina, for example, increased from 39 to 74 from 2005 to 2007, fell to 43 in 2008, and then recovered to 60 in 2009. From 2005 to 2009, the average inflation-adjusted (2009 dollars) dockside (ex-vessel) price received per gutted pound of wahoo landings fluctuated from a low of $2.50 in 2006 to a high of $2.71 in 2009, with an average of $2.59. From 2005 to 2009, the inflation-adjusted (2009 dollars) annual dockside (ex-vessel) revenues received for wahoo increased from $40,000 in 2005 to $79,000 in 2007, fell to $48,000 in 2008, and recovered to $67,000 in 2009 (**Tables 3-11 and 3-12**).

Table 3-11. Number of vessels, dealers, and trips landing wahoo, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL(east) and GA	96	92	121	93	130	107
FL(west)	36	37	49	28	39	38
NC	39	59	74	43	60	55
SC	21	31	27	21	20	24
Other States	1	-	-	-	1	0
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL(east) and GA	48	49	65	43	53	51
FL(west)	22	28	31	18	23	24
NC	27	38	45	36	38	37
SC	10	14	10	12	15	12
Other States	1	-	-	-	1	0
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2,009**	**2005-2009**
FL(east) and GA	150	155	217	154	216	178
FL(west)	50	69	83	66	71	68
NC	53	96	130	71	103	91
SC	51	84	98	60	73	74
Other States	1	-	-	-	2	1
Total All States	305	404	528	351	463	411

Table 3-12. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for wahoo, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	**Lbs Gutted Weight**	7,807	11,034	15,480	6,504	11,672	10,499
	Deflated Price (2009 $) per Gutted Pound	2.86	2.82	2.83	2.94	3.10	2.91
	Deflated Ex-Vessel Revenue (2009 $)	21,765	30,716	43,150	18,906	35,666	30,041
FL (west coast)	**Lbs Gutted Weight**	2,903	3,564	4,287	3,436	2,867	3,411
	Deflated Price (2009 $) per Gutted Pound	2.12	1.96	1.90	2.01	1.97	1.99
	Deflated Ex-Vessel Revenue (2009 $)	6,140	7,003	8,151	6,914	5,652	6,772
NC	**Lbs Gutted Weight**	2,289	6,148	7,109	6,142	6,990	5,736
	Deflated Price (2009 $) per Gutted Pound	2.50	2.55	2.46	2.41	2.47	2.48
	Deflated Ex-Vessel Revenue (2009 $)	5,724	15,684	17,516	14,784	17,290	14,200
SC	**Lbs Gutted Weight**	2,766	3,484	3,966	2,674	3,241	3,226
	Deflated Price (2009 $) per Gutted Pound	2.37	2.31	2.59	2.75	2.61	2.53
	Deflated Ex-Vessel Revenue (2009 $)	6,568	8,053	10,285	7,359	8,450	8,143
All States Combined	**Lbs Gutted Weight**	15,765	24,230	30,842	18,756	24,770	22,873
	Deflated Price (2009 $) per Gutted Pound	2.59	2.50	2.55	2.62	2.71	2.59
	Deflated Ex-Vessel Revenue (2009 $)	40,197	61,455	79,102	47,963	67,058	59,155

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System database as of September 17, 2008. NOAA Fisheries Service, Southeast Regional Office permits database.

Golden Crab
Golden crab landings averaged 572,000 lbs from 2005-09 with a dockside value of almost $1.1 million (2009 dollars). Almost 5 vessels participated in the fishery on average over the same time period. The average number of trips was about 400. Confidentiality concerns limit the amount of data that can be shown here (**Tables 3-13 to 3-16**).

Table 3-13. Number of vessels harvesting golden crab, 2005-2009.

	Average 2005-2009
Total	4.2

Table 3-14. Number of trips landing golden crab, 2005-2009.

	Average 2005-2009
Total	394

Table 3-15. Landings (lbs) of golden crab, 2005-2009.

	Average 2005-2009
Total	554,981

Table 3-16. Golden crab ex-vessel prices and revenue, 2005-2009.

	Average 2005-2009
Total Landings (lbs)	554,981
Nominal Prices ($) per Pound Whole	Range: $1.45-$3.00
Nominal Ex-Vessel Revenue ($)	1,054,400
Deflated Ex-Vessel Revenue (2009 $)	1,086,600

Sargassum
There has not been a fishery for *Sargassum* since 1998. In the past there was one vessel that was harvesting *Sargassum* for the purposes of utilizing it in the manufacturing of pharmaceuticals. Only one company, Aqua-10 Laboratories, has harvested pelagic *Sargassum* offshore of North Carolina from 1976 to 1997 when a total of approximately 448,000 pounds wet weight of pelagic Sargassum had been harvested to date (SAFMC 2002). Pelagic *Sargassum* was

originally collected with unweighted shrimp trawls or 3' x 4' and 4' x 8' beam trawls constructed of iron pipe with 1.5 inch and 2 inch mesh bags that were 6'- 8' deep. The average capacity of the beam trawl is 200 pounds of *Sargassum*. Initially, harvest was conducted during the months of June and September by Aqua-10 contracting with a shrimp, snapper grouper, or longline vessel to harvest pelagic Sargassum in conjunction with their regular fishing trip. No harvest occurred from 1991 through 1994 (SAFMC 2002).

3.8.1.6 Fisheries by State

A summarized description of the snapper grouper fishery spanning the period from 2005 to 2009 is provided below. Refer to **Tables 3-9 to 3-12** in **Section 3.8.1.5** for information on average landings by state for dolphin (South Atlantic only) and wahoo. The golden crab fishery takes place exclusively off the east coast of Florida (**Tables 3-13** to **3-16**).

Snapper Grouper

An average of 5.7 million lbs (gutted weight) of snapper grouper species worth $13.8 million (in 2009 dollars) was landed between 2005 and 2009 in the South Atlantic region, including the west coast of Florida, with the majority of the landings (1.7 million lbs) occurring in North Carolina (**Table 3-17**). The number of trips between 2005 and 2009 averaged approximately 13,500, with the majority taken off the east coast of Florida (**Table 3-18**). Vermilion snapper, yellowtail snapper, greater amberjack, gag, and black sea bass made up almost 57% of the landings (**Table 3-19**).

Table 3-17. Landings (gutted weight) of snapper grouper species (not including wreckfish) by state and year, 2005-2009.

	Year Landed					Average 2005-2009
State Landed:	**2005**	**2006**	**2007**	**2008**	**2009**	
FL (east coast) and GA	1,282,145	1,133,110	1,491,152	1,606,513	1,998,482	1,502,280
FL (west coast)	1,402,262	1,117,701	1,000,608	1,148,555	1,424,174	1,218,660
NC	1,444,859	1,595,626	1,709,500	2,118,081	1,941,698	1,761,953
SC	1,324,348	1,371,556	1,434,817	1,228,053	1,107,909	1,293,337
Total All States	5,453,614	5,217,993	5,636,077	6,101,203	6,472,263	5,776,230

Table 3-18. Number of trips landing snapper grouper species (not including) by state, 2005-2009.

State Landed:	Year Landed					Average 2005-2009
	2005	**2006**	**2007**	**2008**	**2009**	
FL (east coast) and GA	4,309	4,066	5,347	5,195	5,957	4,975
NC	2,288	2,550	2,749	2,886	2,938	2,682
SC	814	886	1,011	914	922	909
Total All States	12,809	12,317	13,937	13,881	14,702	13,529

Table 3-19. Average annual landings (gutted weight) of snapper grouper species (not including wreckfish, warsaw grouper, or speckled hind) by state and species, 2005-2009.

Species:	State Landed:				All States Combined
	FL (east coast) and GA	FL (west coast)	NC	SC	
Atlantic Spadefish	CONF	CONF	CONF	CONF	307
Black Grouper	17,370	37,687	34,099	37,407	126,564
Blue Runner	80,643	14,329	3,398		98,369
Black Sea Bass	15,529		284,685	116,540	416,753
Deepwater Grouper & Tilefish	9,058	14,536	197,772	19,745	241,170
Greater Amberjack	222,095	335,458	58,312	---	690,725
Gag	134,846	1,297	131,125	165,265	432,533
Gray Triggerfish	56,511	1,694	137,854	82,892	278,951
Golden Tilefish	254,257	1,497	2,310	45,892	303,956
Hogfish	5,893	5,116	5,514	16,123	32,646
Jacks	73,284	18,657	56,097	67,523	215,562
Mutton Snapper	15,640	27,314	1,436	4,060	48,449
Grunts & Hinds	7,950	7,703	59,284	63,993	138,929
Red Grouper	13,618	12,407	227,725	92,044	345,794
Red Porgy	18,687		45,682	31,944	96,313
Red Snapper	128,819	1,989	6,546	23,131	160,486
Scamp	32,712	752	67,736	166,559	267,759
Snowy Grouper	15,625	33,968	45,854	37,234	132,781
Snappers	3,722	2,457	237	1,614	8,030
Vermilion Snapper	305,899	3,868	393,127	242,823	945,717
Yellowtail Snapper	89,883	697,747	2,913	1,481	792,024

Note: "---" indicates zero landings.

Table 3-20. Average annual price and ex-vessel revenues of snapper grouper species (not including wreckfish) by state, 2005-2009.

State Landed:		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
FL (east coast) and GA	Deflated Price (2009 $) per Pound Gutted	2.39	2.40	2.50	2.32	2.32	2.39
	Deflated Ex-Vessel Revenue (2009 $)	2,362,648	2,383,784	3,751,787	3,406,498	4,189,472	3,218,838
FL (west coast)	Deflated Price (2009 $) per Pound Gutted	2.49	2.65	2.78	2.56	2.43	2.58
	Deflated Ex-Vessel Revenue (2009 $)	2,988,509	2,704,610	2,422,232	2,627,941	3,208,701	2,790,399
NC	Deflated Price (2009 $) per Pound Gutted	2.66	2.75	2.95	2.87	2.83	2.81
	Deflated Ex-Vessel Revenue (2009 $)	3,320,179	3,786,195	4,559,345	4,988,849	4,324,496	4,195,813
SC	Deflated Price (2009 $) per Pound Gutted	3.08	3.29	3.23	3.13	2.98	3.14
	Deflated Ex-Vessel Revenue (2009 $)	3,453,946	3,706,623	4,274,990	3,544,184	3,080,737	3,612,096
Total All States	Deflated Price (2009 $) per Pound Gutted	2.60	2.75	2.84	2.70	2.61	2.70
	Deflated Ex-Vessel Revenue (2009 $)	12,125,282	12,581,211	15,008,354	14,567,472	14,803,406	13,817,145

3.8.1.7 Fisheries by Gear

The following discussion provides annual averages from 2005 to 2009. To maintain the confidentiality of individual reporting units, summaries are provided for vertical lines, hook and line, longlines, black sea bass pots (traps), and all other gears combined. The all-other-gear category includes trolling lines, nets, and other gears. Most of the snapper grouper harvest, including vermilion snapper and gag, is taken by hook-and-line gear (**Tables 3-21** and **3-22**). Black sea bass are harvested primarily with black sea bass pots, while golden tilefish are harvested primarily with bottom longlines. The majority of the ex-vessel revenue generated between 2005 and 2009 was attributed to hook-and-line gear (**Table 3-23**).

Table 3-21. Average annual landings (gutted weight) of snapper grouper species (not including wreckfish) by major gear type, 2005-2009.

Gear Type:	Year Landed					Average 2005-2009
	2005	2006	2007	2008	2009	
Hook & Line	4,795,175	4,405,848	5,003,711	5,429,731	5,638,439	5,054,581
Longline	233,020	331,461	245,624	279,312	290,667	276,017
Trap	338,057	398,380	311,153	332,159	475,943	371,138
Other[1]	87,362	82,305	75,590	60,002	67,214	74,495
Total All Gears	5,453,614	5,217,994	5,636,078	6,101,204	6,472,263	5,776,230

[1]Powerheads are included in "Other" gear category

Table 3-22. Number of trips landing snapper grouper species (not including wreckfish) by gear, 2005-2009.

Gear Type:	Year Landed					Average 2005-2009
	2005	2006	2007	2008	2009	
Hook & Line[1]	12,207	11,749	13,226	13,390	14,116	12,938
Longline[1]	117	143	248	199	257	193
Trap[1]	601	755	612	555	747	654
Other[1]	1,668	1,570	1,658	1,557	1,747	1,640
All Gears[2]	12,809	12,317	13,937	13,881	14,702	13,529

[1] A single trip using multiple gears is counted in multiple categories, once for each gear. As a result, adding trips across the individual gears gives a value larger than the "All Gears" value for the year. Powerheads are included in "Other" gear category

[2] A single trip using multiple gears is counted only once in the "All Gears" results.

Table 3-23. Average annual price and ex-vessel revenue of snapper grouper species (not including wreckfish) by gear and year, 2005-2009.

Gear Type:		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
Hook & Line	Deflated Price (2009 $) per Pound Gutted	2.61	2.75	2.84	2.71	2.61	2.70
	Deflated Ex-Vessel Revenue (2009 $)	10,631,128	10,691,781	13,274,715	12,877,740	12,731,912	12,041,455
Longline	Deflated Price (2009 $) per Pound Gutted	2.72	2.69	2.83	2.58	2.49	2.66
	Deflated Ex-Vessel Revenue (2009 $)	477,042	607,076	626,441	675,840	666,470	610,574
Trap	Deflated Price (2009 $) per Pound Gutted	2.41	2.72	2.92	2.63	2.61	2.66
	Deflated Ex-Vessel Revenue (2009 $)	805,346	1,080,289	898,018	868,121	1,235,720	977,499
Other	Deflated Price (2009 $) per Pound Gutted	2.39	2.64	2.82	2.55	2.55	2.59
	Deflated Ex-Vessel Revenue (2009 $)	211,766	202,065	209,180	145,771	169,304	187,617
Total All Gears	Deflated Price (2009 $) per Pound Gutted	2.60	2.75	2.84	2.70	2.61	2.70
	Deflated Ex-Vessel Revenue (2009 $)	12,125,282	12,581,211	15,008,354	14,567,472	14,803,406	13,817,145

3.8.1.8 Commercial Fishery by Species

Updated descriptions of commercial fisheries for snapper grouper species covered under previous amendments can be found in **Appendix N**.

Atlantic Spadefish

Atlantic spadefish are landed sporadically in very small numbers in South Atlantic federal waters, averaging 308 pounds gutted weight landed annually from 2005 to 2009 (**Table 3-25**). On average from 2005 to 2009, five vessels landed Atlantic spadefish on 10 trips per year (**Table 3-24**). Ex-vessel price per gutted pound averaged $0.48 and ex-vessel revenues averaged $164 annually from 2005 to 2009 (**Table 3-25**). Other landings were made from state waters that are not recorded in the South Atlantic federal logbooks and therefore ALS landings are higher than logbook landings.

Table 3-24. Number of vessels, dealers, and trips landing spadefish, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
All States	7	4	2	6	9	6
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
All States	7	4	3	5	7	5
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
All States	10	4	3	9	22	10

Table 3-25. Landings (gutted lbs), average annual ex-vessel prices, and ex-vessel revenues for spadefish, 2005-2009.

			Average 2005-2009
All States Combined	**Lbs Gutted Weight**		308
	Deflated Price (2009 $) per Gutted Pound		0.48
	Deflated Ex-Vessel Revenue (2009 $)		164

Blue Runner

Blue runner fish are landed primarily in Florida and Georgia. Blue runner fish landings increased steadily from 81,000 pounds gutted weight in 2006 to over 131,000 pounds in 2009, averaging 98,000 gutted weight over the five-year period (**Table 3-27**). An average of 312 vessels landed blue runner on an average of 2,661 trips per year (**Table 3-26**). Ex-vessel price per gutted pound averaged $0.92 from 2005 to 2009 with no apparent trend (**Table 3-27**). Ex-vessel revenues increased from $73,000 in 2005 to $123,000 in 2009, reflecting increased landings.

Table 3-26. Number of vessels, dealers, and trips landing blue runner, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	194	211	206	224	243	216
FL(west)	83	71	55	66	75	70
NC & SC	21	24	26	34	22	26
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	45	48	50	40	39	44
FL(west)	19	27	20	24	25	23
NC & SC	10	11	9	17	13	12
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	1,604	1,951	2,364	2,506	2,576	2,200
FL(west)	470	479	249	312	536	409
NC & SC	52	54	38	65	47	51
Total All States	2,126	2,484	2,651	2,883	3,159	2,661

Table 3-27. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for blue runner, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		60,191	70,195	80,537	85,178	107,112	80,643
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	0.97	0.94	1.07	0.89	0.89	0.95
	Deflated Ex-Vessel Revenue (2009 $)	58,188	66,063	85,802	75,398	94,995	76,089
FL (west coast)	**Lbs Gutted Weight**	18,818	12,297	7,797	9,951	22,780	14,329
	Deflated Price (2009 $) per Gutted Pound	0.73	0.66	0.63	0.88	1.18	0.82
	Deflated Ex-Vessel Revenue (2009 $)	13,722	8,081	4,895	8,726	26,842	12,453
NC & SC	**Lbs Gutted Weight**	1,674	8,758	762	3,903	1,782	3,376
	Deflated Price (2009 $) per Gutted Pound	0.58	0.59	0.50	0.86	0.69	0.64
	Deflated Ex-Vessel Revenue (2009 $)	958	5,167	351	1,507	1,176	1,832
All States Combined	**Lbs Gutted Weight**	80,683	91,250	89,096	99,042	131,774	98,369
	Deflated Price (2009 $) per Gutted Pound	0.90	0.88	1.02	0.88	0.93	0.92
	Deflated Ex-Vessel Revenue (2009 $)	72,868	79,311	91,048	85,631	123,013	90,374

Yellowedge grouper, Blueline tilefish & Silk Snapper
These species are landed predominantly in North Carolina and South Carolina, but landings occur throughout the South Atlantic region. Landings vary substantially from year to year but increased from 92,000 in 2005 to 462,000 in 2009, averaging 241,000 per year over this five year period (**Table 3-29**). An average of 177 vessels landed these species from 2005 to 2009, landing these fish on an average of 952 trips per year (**Table 3-28**). Ex-vessel price per gutted pounds increased slightly from 2005 to 2009, averaging $2.05. Annual ex-vessel revenues varied substantially with landings from year to year but increased from $162,000 in 2005 to $853,000 in 2009, averaging $448,000 per year (**Table 3-29**).

Table 3-28. Number of vessels, dealers, and trips landing yellowedge grouper blueline tilefish and silk snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	50	49	55	44	48	49
FL(west)	53	50	35	27	31	39
NC	44	51	60	60	71	57
SC	28	30	34	32	34	32
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	27	20	31	30	24	26
FL(west)	28	23	24	20	25	24
NC	26	31	28	33	31	30
SC	9	11	14	9	14	11
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	137	112	123	145	114	126
FL(west)	286	251	257	247	224	253
NC	322	368	423	479	570	432
SC	132	174	121	114	165	141
Total All States	877	905	924	985	1,073	952

Table 3-29. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for yellowedge grouper blueline tilefish and silk snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		6,562	6,866	8,328	12,949	10,584	9,058
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	3.04	2.93	2.55	2.84	2.10	2.69
	Deflated Ex-Vessel Revenue (2009 $)	17,662	15,329	16,807	30,703	28,488	21,798
FL (west coast)	Lbs Gutted Weight	11,929	13,601	11,944	17,072	18,132	14,536
	Deflated Price (2009 $) per Gutted Pound	1.78	1.84	1.63	1.97	2.11	1.87
	Deflated Ex-Vessel Revenue (2009 $)	25,614	31,489	28,253	50,408	54,013	37,955
NC	Lbs Gutted Weight	41,150	119,626	50,869	352,787	424,429	197,772
	Deflated Price (2009 $) per Gutted Pound	1.74	1.88	1.98	2.00	1.99	1.92
	Deflated Ex-Vessel Revenue (2009 $)	67,311	200,874	93,240	649,106	748,606	351,827
SC	Lbs Gutted Weight	32,028	40,736	7,472	9,536	8,955	19,745
	Deflated Price (2009 $) per Gutted Pound	2.37	2.10	1.93	2.34	2.56	2.26
	Deflated Ex-Vessel Revenue (2009 $)	50,934	76,307	15,709	16,795	22,172	36,383
All States Combined	Lbs Gutted Weight	91,669	180,829	78,613	392,344	462,100	241,111
	Deflated Price (2009 $) per Gutted Pound	2.03	2.03	1.94	2.15	2.12	2.05
	Deflated Ex-Vessel Revenue (2009 $)	161,521	323,998	154,009	747,011	853,279	447,963

Greater Amberjack

Greater amberjack are landed throughout the South Atlantic region, with approximately 80% of landings occurring in Florida. Landings varied around an average of 691,000 pounds gutted weight per year from 2005 to 2009 (**Table 3-31**). An average of 333 vessels landed greater amberjack on an average of 2,000 trips per year (**Table 3-30**). The number of vessels landing amberjack increased by about 33% in Florida and almost doubled in North Carolina from 2005 to 2009. Ex-vessel price per gutted pound remained relatively stable around an average of $1.05 from 2005 to 2009 (**Table 3-31**). Annual ex-vessel revenues vary with landings, peaking at $725,000 in 2009 and averaging $628,000 over the five year period.

Table 3-30. Number of vessels, dealers, and trips landing greater amberjack, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	111	102	125	133	155	125
FL(west)	76	60	55	54	69	63
NC	69	78	105	118	124	99
SC	41	44	55	45	43	46
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	39	37	49	45	41	42
FL(west)	29	28	26	27	28	28
NC	34	30	37	41	50	38
SC	11	12	22	15	13	15
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	648	475	718	803	1,024	734
FL(west)	650	465	460	498	563	527
NC	310	299	393	541	558	420
SC	316	351	429	351	344	358
Total All States	1,924	1,590	2,000	2,193	2,489	2,039

Table 3-31. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for greater amberjack, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		176,410	121,991	197,301	250,691	364,080	222,095
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	0.98	1.05	1.02	1.03	0.98	1.01
	Deflated Ex-Vessel Revenue (2009 $)	148,359	117,521	202,622	238,330	337,055	208,777
FL (west coast)	**Lbs Gutted Weight**	480,243	317,352	292,039	286,850	300,807	335,458
	Deflated Price (2009 $) per Gutted Pound	1.04	1.20	1.18	1.12	1.07	1.12
	Deflated Ex-Vessel Revenue (2009 $)	497,304	382,243	345,067	322,360	322,350	373,865
NC	**Lbs Gutted Weight**	53,492	39,306	42,102	81,654	75,006	58,312
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
SC	**Lbs Gutted Weight**	73,440	70,489	79,702	74,009	76,662	74,860
	Deflated Price (2009 $) per Gutted Pound	---	---	0.98	1.12	0.85	0.98
	Deflated Ex-Vessel Revenue (2009 $)	---	---	77,712	82,806	65,395	75,304
All States Combined	**Lbs Gutted Weight**	783,586	549,138	611,144	693,205	816,554	690,725
	Deflated Price (2009 $) per Gutted Pound	1.01	1.13	1.06	1.08	0.99	1.05
	Deflated Ex-Vessel Revenue (2009 $)	645,663	499,764	625,401	643,495	724,800	627,825

Gray Triggerfish

Gray triggerfish are landed throughout the South Atlantic region. Landings varied around an average of 279,000 gutted pounds per year from 2005 to 2009, trending upward from 246,000 pounds in 2005 to 314,000 pounds in 2009 (**Table 3-33**). An average of 275 vessels landed gray triggerfish from 2005 to 2009, making an average of 2,116 trips per year (**Table 3-32**). Ex-vessel price and revenue data are not available for gray triggerfish (**Table 3-33**).

Table 3-32. Number of vessels, dealers, and trips landing gray triggerfish, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	99	81	111	95	117	101
FL(west)	18	17	23	19	24	20
NC	82	86	112	104	114	100
SC	48	55	62	54	52	54
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	36	33	51	36	42	40
FL(west)	12	10	15	11	16	13
NC	41	45	44	50	45	45
SC	13	18	25	23	23	20
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	614	481	615	561	695	593
FL(west)	60	27	33	32	49	40
NC	771	821	911	1,015	1,013	906
SC	522	552	667	598	545	577
Total All States	1,967	1,881	2,226	2,206	2,302	2,116

Table 3-33. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for gray triggerfish, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		57,215	47,527	73,604	46,169	58,041	56,512
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
FL (west coast)	**Lbs Gutted Weight**	1,392	646	3,576	1,415	1,441	1,694
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
NC	**Lbs Gutted Weight**	121,041	115,477	127,484	162,612	162,656	137,854
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
SC	**Lbs Gutted Weight**	66,485	72,391	110,263	73,688	91,632	82.892
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
All States Combined	**Lbs Gutted Weight**	246,133	236,040	314,927	283,884	313,771	278,951
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---

Hogfish

Hogfish are landed throughout the South Atlantic region, with approximately 50% of landings occurring in South Carolina. Landings trended upward from 25,000 gutted pounds in 2005 to 39,000 pounds in 2009, averaging 33,000 pounds (**Table 3-35**). An average of 165 vessels landed hogfish from 2005 to 2009, making an average of 749 trips per year. Ex-vessel price per gutted pound trended upward from $2.68 in 2005 to $3.08 in 2009, averaging $2.84 over the five year period (**Table 3-34**). Ex-vessel revenues increased from $69,000 in 2005 to $124,000 in 2009, reflecting both increasing landings and increasing ex-vessel prices (**Table 3-35**).

Table 3-34. Number of vessels, dealers, and trips landing hogfish, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	33	30	39	33	37	34
FL(west)	65	50	65	52	51	57
NC	42	39	44	42	40	41
SC	28	36	37	34	32	33
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	30	19	26	25	29	26
FL(west)	22	28	34	29	31	29
NC	17	16	17	19	17	17
SC	7	11	12	12	14	11
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	95	73	109	85	111	95
FL(west)	333	224	332	233	188	262
NC	204	171	148	216	150	178
SC	161	219	241	274	179	215
Total All States	793	687	830	808	628	749

Table 3-35. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for hogfish, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		3,762	5,709	6,788	3,549	9,658	5,893
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	3.06	2.98	3.07	2.92	3.57	3.12
	Deflated Ex-Vessel Revenue (2009 $)	11,423	17,015	20,793	10,319	34,264	18,763
FL (west coast)	**Lbs Gutted Weight**	7,565	3,583	6,750	4,314	3,367	5,116
	Deflated Price (2009 $) per Gutted Pound	2.56	2.68	2.83	3.05	3.09	2.84
	Deflated Ex-Vessel Revenue (2009 $)	19,395	9,587	19,106	13,166	10,404	14,332
NC	**Lbs Gutted Weight**	5,361	4,207	3,271	8,775	5,958	5,514
	Deflated Price (2009 $) per Gutted Pound	2.52	2.44	2.48	2.65	2.62	2.54
	Deflated Ex-Vessel Revenue (2009 $)	13,526	10,247	8,116	23,270	15,639	14,160
SC	**Lbs Gutted Weight**	8,637	16,501	18,137	16,866	20,473	16,123
	Deflated Price (2009 $) per Gutted Pound	2.88	2.88	2.95	2.91	3.16	2.96
	Deflated Ex-Vessel Revenue (2009 $)	24,911	47,529	53,513	49,082	64,596	47,926
All States Combined	**Lbs Gutted Weight**	25,324	29,999	34,946	33,504	39,456	32,646
	Deflated Price (2009 $) per Gutted Pound	2.68	2.71	2.83	2.88	3.08	2.84
	Deflated Ex-Vessel Revenue (2009 $)	69,255	84,378	101,528	95,837	124,904	95,180

Almaco jack, Banded rudderfish & Lesser amberjack
These species are landed throughout the South Atlantic region. Landings trended upward from 2005 to 2009 around an average of 216,000 gutted pounds per year (**Table 3-37**). An average of 266 vessels landed these species on an average of 1,863 trips per year, with the number of vessels trending upward from 2005 to 2009 (**Table 3-36**). Ex-vessel price per gutted pound was relatively stable at $0.83, while annual ex-vessel revenue trended upward from $127,000 in 2005 to $186,000 in 2009 reflecting increasing landings (**Table 3-37**).

Table 3-36. Number of vessels, dealers, and trips landing almaco jack, banded rudderfish, and lesser amberjack, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	106	88	106	112	137	110
FL(west)	26	29	27	30	27	28
NC	67	69	99	98	95	86
SC	35	40	47	43	45	42
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	29	28	33	29	33	30
FL(west)	13	13	15	19	17	15
NC	32	28	37	36	41	35
SC	10	14	14	16	16	14
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	529	382	505	513	713	528
FL(west)	156	122	119	133	82	122
NC	526	641	846	892	698	721
SC	380	432	568	518	559	491
Total All States	1,591	1,577	2,038	2,056	2,052	1,863

Table 3-37. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for lesser amberjack, banded rudderfish, and almaco jack, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		73,327	38,740	79,481	68,719	106,154	73,284
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	0.80	0.94	0.91	0.95	0.98	0.92
	Deflated Ex-Vessel Revenue (2009 $)	41,787	28,724	55,072	56,564	78,416	52,113
FL (west coast)	**Lbs Gutted Weight**	18,908	16,308	22,561	24,501	11,007	18,657
	Deflated Price (2009 $) per Gutted Pound	1.03	1.22	1.14	1.12	1.14	1.13
	Deflated Ex-Vessel Revenue (2009 $)	19,259	19,920	25,649	26,928	12,357	20,823
NC	**Lbs Gutted Weight**	55,186	50,668	66,599	55,868	52,166	56,097
	Deflated Price (2009 $) per Gutted Pound	0.77	0.52	0.77	0.73	0.66	0.69
	Deflated Ex-Vessel Revenue (2009 $)	37,982	23,022	42,032	35,458	30,786	33,856
SC	**Lbs Gutted Weight**	43,188	64,373	74,579	75,451	80,026	67,523
	Deflated Price (2009 $) per Gutted Pound	0.79	0.87	0.90	0.94	0.80	0.86
	Deflated Ex-Vessel Revenue (2009 $)	28,144	51,231	60,589	65,607	64,149	53,944
All States Combined	**Lbs Gutted Weight**	190,609	170,089	243,221	224,540	249,352	215,562
	Deflated Price (2009 $) per Gutted Pound	0.81	0.77	0.86	0.87	0.83	0.83
	Deflated Ex-Vessel Revenue (2009 $)	127,173	122,897	183,342	184,557	185,708	160,735

Mutton Snapper

Mutton snapper landings occur primarily in Florida. From 2005 to 2009, annual landings were relatively stable around 48,000 pounds gutted weight (**Table 3-39**). An average of 347 vessels landed mutton snapper, making an average of 1,608 trips per year (**Table 3-38**). Ex-vessel price (2009 dollars) was relatively stable at an average of $2.70 per gutted pound from 2005 to 2009, and ex-vessel revenues were similarly stable around $125,000 per year (**Table 3-39**).

Table 3-38. Number of vessels, dealers, and trips landing mutton snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	135	114	115	117	133	123
FL(west)	194	173	180	166	147	172
NC	24	20	15	23	18	20
SC	30	35	37	33	26	32
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	57	61	53	49	55	55
FL(west)	42	45	52	50	58	49
NC	12	8	10	12	10	10
SC	8	10	11	7	9	9
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	687	463	523	487	715	575
FL(west)	958	792	858	812	759	836
NC	64	73	33	54	34	52
SC	151	159	205	115	98	146
Total All States	1,860	1,487	1,619	1,468	1,606	1,608

Table 3-39. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for mutton snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		23,948	13,776	14,305	10,926	15,243	15,640
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	3.03	3.16	2.88	3.15	3.16	3.08
	Deflated Ex-Vessel Revenue (2009 $)	61,846	38,009	36,377	32,771	46,373	43,075
FL (west coast)	**Lbs Gutted Weight**	27,494	21,822	27,955	29,414	29,883	27,314
	Deflated Price (2009 $) per Gutted Pound	2.31	2.45	2.46	2.44	2.46	2.42
	Deflated Ex-Vessel Revenue (2009 $)	63,484	53,410	68,799	71,821	73,603	66,223
NC	**Lbs Gutted Weight**	1,849	2,174	625	1,883	650	1,436
	Deflated Price (2009 $) per Gutted Pound	2.84	2.71	2.62	2.70	2.55	2.68
	Deflated Ex-Vessel Revenue (2009 $)	5,246	5,887	1,638	5,090	1,654	3,903
SC	**Lbs Gutted Weight**	3,555	6,115	5,379	2,658	2,592	4,060
	Deflated Price (2009 $) per Gutted Pound	2.89	2.78	3.10	2.88	2.89	2.91
	Deflated Ex-Vessel Revenue (2009 $)	10,271	17,003	16,693	7,644	7,489	11,820
All States Combined	**Lbs Gutted Weight**	56,846	43,887	48,264	44,881	48,368	48,449
	Deflated Price (2009 $) per Gutted Pound	2.63	2.70	2.68	2.71	2.80	2.70
	Deflated Ex-Vessel Revenue (2009 $)	140,847	114,309	123,507	117,326	129,120	125,022

Red hind, Rock hind, Tomtate & White grunt
Landings of these species peaked in 2006 at 156,000 gutted pounds and decreased thereafter to 118,000 pounds in 2009 (**Table 3-41**). The number of vessels landing these species averaged 273 from 2005 to 2009, with vessel numbers decreasing in Florida but increasing in North Carolina and South Carolina. Trips landing these species averaged 3,493 annually from 2005 to 2009 (**Table 3-40**). Ex-vessel price per gutted pound (2009 dollars) peaked in 2007 at $2.91 and decreased thereafter to $2.42 in 2009, averaging $2.66 over the five year period (**Table 3-41**). Annual ex-vessel revenues peaked in 2007 at $166,000 and decreased thereafter to $106,000 reflecting decreasing landings and ex-vessel prices.

Table 3-40. Number of vessels, dealers, and trips landing red hind, rock hind, tomtate, and white grunt, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	81	68	62	68	55	67
FL(west)	57	44	47	53	52	51
NC	84	87	106	111	113	100
SC	48	55	62	57	54	55
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	37	35	31	27	27	31
FL(west)	22	20	22	17	23	21
NC	37	38	54	46	49	45
SC	13	20	26	21	22	20
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	644	461	386	327	322	428
FL(west)	408	204	194	292	279	275
NC	1,360	1,524	1,684	1,741	1,505	1,563
SC	909	1,134	1,401	1,379	1,313	1,227
Total All States	3,321	3,323	3,665	3,739	3,419	3,493

Table 3-41. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for red hind, rock hind, tomtate, and white grunt, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		11,318	8,152	5,885	7,082	7,312	7,950
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	1.91	2.00	2.58	2.19	2.04	2.14
	Deflated Ex-Vessel Revenue (2009 $)	3,543	2,138	2,234	1,224	2,125	2,253
FL (west coast)	**Lbs Gutted Weight**	10,684	5,687	4,839	9,740	7,565	7,703
	Deflated Price (2009 $) per Gutted Pound	1.20	1.44	1.57	1.11	1.34	1.33
	Deflated Ex-Vessel Revenue (2009 $)	3,624	2,620	1,513	2,571	2,435	2,553
NC	**Lbs Gutted Weight**	50,787	67,203	61,555	64,504	52,371	59,284
	Deflated Price (2009 $) per Gutted Pound	2.72	2.70	3.04	3.16	2.95	2.91
	Deflated Ex-Vessel Revenue (2009 $)	18,788	26,985	38,060	24,524	22,275	26,126
SC	**Lbs Gutted Weight**	46,366	75,401	81,993	64,963	51,240	63,993
	Deflated Price (2009 $) per Gutted Pound	3.02	3.07	2.96	2.54	2.36	2.79
	Deflated Ex-Vessel Revenue (2009 $)	67,093	126,310	123,712	102,663	79,602	99,876
All States Combined	**Lbs Gutted Weight**	119,155	156,444	154,272	146,288	118,487	138,929
	Deflated Price (2009 $) per Gutted Pound	2.57	2.80	2.91	2.62	2.42	2.66
	Deflated Ex-Vessel Revenue (2009 $)	93,049	158,053	165,519	130,982	106,436	130,808

Red Porgy

Red porgy are landed throughout the South Atlantic region. Landings increased three-fold from 2005 to 2009, peaking at 134,000 in 2008 (**Table 3-43**). The number of vessels landing red porgy increased by approximately 18% over the five year period, reaching 203 vessels in 2009. The number of trips landing red porgy trended upward, with an annual average of 1,565 trips from 2005 to 2009 (**Table 3-42**). Ex-vessel price per gutted pound was relatively stable at an average of $1.60 from 2005 to 2009. Ex-vessel revenues increased greatly from 2005 to 2009, peaking at $209,000 in 2008, reflecting increasing landings (**Table 3-43**).

Table 3-42. Number of vessels, dealers, and trips landing red porgy, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL and GA	45	41	58	53	49	49
NC	82	82	101	102	100	93
SC	42	55	57	49	54	51
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL and GA	25	18	24	22	18	22
NC	37	39	42	53	42	43
SC	12	16	20	16	20	17
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL and GA	178	191	279	263	230	229
NC	775	801	955	1,020	824	875
SC	365	484	527	463	471	462
Total All States	1,318	1,476	1,761	1,746	1,525	1,565

Table 3-43. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for red porgy, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL and GA	**Lbs Gutted Weight**	5,843	11,932	22,803	25,429	27,428	18,687
	Deflated Price (2009 $) per Gutted Pound	1.69	1.53	1.60	1.61	1.55	1.60
	Deflated Ex-Vessel Revenue (2009 $)	9,875	18,256	36,485	40,941	42,513	29,614
NC	**Lbs Gutted Weight**	20,875	27,385	54,958	65,402	59,790	45,682
	Deflated Price (2009 $) per Gutted Pound	1.36	1.41	1.34	1.37	1.32	1.36
	Deflated Ex-Vessel Revenue (2009 $)	28,313	38,722	73,622	89,376	78,838	61,774
SC	**Lbs Gutted Weight**	11,325	24,035	39,410	42,966	41,986	31,944
	Deflated Price (2009 $) per Gutted Pound	2.05	2.22	2.20	2.04	1.83	2.07
	Deflated Ex-Vessel Revenue (2009 $)	23,223	53,293	86,505	87,835	76,697	65,511
All States Combined	**Lbs Gutted Weight**	38,042	63,353	117,171	133,796	129,204	96,313
	Deflated Price (2009 $) per Gutted Pound	1.58	1.70	1.64	1.58	1.51	1.60
	Deflated Ex-Vessel Revenue (2009 $)	57,536	104,690	196,544	208,922	188,106	151,160

Scamp

Scamp are landed from North Carolina to Florida, with over 60% of landings occurring in South Carolina. After peaking in 2007 at 334,000 pounds gutted weight, scamp landings decreased to 241,000 pounds in 2009 (**Table 3-45**). Landings averaged 268,000 from 2005 to 2009. The number of vessels landing scamp averaged 223 with a slight upward trend. The number of trips landing scamp varied around an average of 1,990 (**Table 3-44**). Ex-vessel price per gutted pound (2009 dollars) ranged from $3.82 in 2005 to $4.32 in 2007 with an average of $4.15 from 2005 to 2009 (**Table 3-45**). Annual ex-vessel revenues ranged from $921,000 in 2005 to $1.54 million in 2007, with an average of $1.14 million per year from 2005 to 2009.

Table 3-44. Number of vessels, dealers, and trips landing scamp, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	63	60	68	61	60	62
FL(west)	16	9	6	11	10	10
NC	75	82	110	113	115	99
SC	44	54	59	54	48	52
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	26	31	29	26	22	27
FL(west)	8	5	5	9	8	7
NC	29	36	51	50	44	42
SC	13	17	24	22	19	19
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	344	332	440	401	398	383
FL(west)	25	12	6	16	12	14
NC	738	811	1,086	1,086	851	914
SC	586	676	790	696	646	679
Total All States	1,693	1,831	2,322	2,199	1,907	1,990

Table 3-45. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for scamp, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:							
FL (east coast) and GA	Lbs Gutted Weight	32,745	26,521	41,982	29,263	33,050	32,712
	Deflated Price (2009 $) per Gutted Pound	3.71	4.16	4.21	4.19	4.05	4.06
	Deflated Ex-Vessel Revenue (2009 $)	68,565	61,348	176,234	77,897	79,855	92,780
FL (west coast)	Lbs Gutted Weight	1,376	555	121	1,417	291	752
	Deflated Price (2009 $) per Gutted Pound	3.41	3.64	3.90	3.84	3.99	3.77
	Deflated Ex-Vessel Revenue (2009 $)	4,694	2,019	471	5,449	1,162	2,759
NC	Lbs Gutted Weight	62,361	76,312	84,778	62,355	52,872	67,736
	Deflated Price (2009 $) per Gutted Pound	3.47	3.63	3.89	3.92	3.85	3.75
	Deflated Ex-Vessel Revenue (2009 $)	216,095	277,343	329,401	244,489	203,389	254,143
SC	Lbs Gutted Weight	146,106	187,986	206,702	137,435	154,566	166,559
	Deflated Price (2009 $) per Gutted Pound	4.32	4.59	5.00	4.99	4.78	4.74
	Deflated Ex-Vessel Revenue (2009 $)	631,555	862,150	1,033,054	685,986	739,238	790,397
All States Combined	Lbs Gutted Weight	242,588	291,374	333,583	230,470	240,779	267,759
	Deflated Price (2009 $) per Gutted Pound	3.82	4.08	4.32	4.31	4.22	4.15
	Deflated Ex-Vessel Revenue (2009 $)	920,910	1,202,861	1,539,160	1,013,821	1,023,644	1,140,079

Gray snapper, Lane snapper & Cubera snapper
Landings of these species occur predominantly from South Carolina southward. Landings have trended downward from 12,126 gutted pounds in 2005 to 5,794 pounds in 2009 (**Table 3-47**). The number of vessels landing gray snapper, lane snapper, and cubera snapper varied around an average of 128 from 2005 to 2009 (**Table 3-46**). The number of trips landing these species has remained relatively stable at around 300 trips per year since 2006. Ex-vessel prices per gutted pound (2009 dollars) remained relatively stable from 2005 to 2009 at an average of $2.61 (**Table 3-47**). Ex-vessel revenues declined from $30,000 in 2005 to $12,000 in 2009 reflecting lower landings.

Table 3-46. Number of vessels, dealers, and trips landing gray snapper, lane snapper, and cubera snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	68	40	53	60	65	57
FL(west)	54	63	49	46	37	50
NC	4	7	8	13	4	7
SC	8	17	11	20	15	14
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	30	25	27	25	33	28
FL(west)	22	22	19	16	15	19
NC	4	8	7	9	4	6
SC	4	4	5	5	5	5
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	209	133	163	146	178	166
FL(west)	156	129	103	103	84	115
NC	5	8	10	17	4	9
SC	11	23	18	52	32	27
Total All States	381	293	294	318	298	317

Table 3-47. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for gray snapper, lane snapper, and cubera snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		6,080	2,537	4,353	2,425	3,216	3,722
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	2.85	3.02	2.83	2.72	2.71	2.83
	Deflated Ex-Vessel Revenue (2009 $)	17,003	7,388	11,822	5,307	6,849	9,674
FL (west coast)	**Lbs Gutted Weight**	5,325	2,288	1,606	2,212	856	2,457
	Deflated Price (2009 $) per Gutted Pound	2.27	2.19	2.39	2.42	2.44	2.34
	Deflated Ex-Vessel Revenue (2009 $)	12,124	5,004	3,839	4,628	2,087	5,536
NC	**Lbs Gutted Weight**	128	189	205	544	117	237
	Deflated Price (2009 $) per Gutted Pound	---	2.18	2.78	2.71	2.05	2.43
	Deflated Ex-Vessel Revenue (2009 $)	---	397	431	1,341	209	595
SC	**Lbs Gutted Weight**	593	1,399	1,827	2,648	1,605	1,614
	Deflated Price (2009 $) per Gutted Pound	2.21	2.32	2.81	2.56	2.56	2.49
	Deflated Ex-Vessel Revenue (2009 $)	1,311	3,117	4,793	5,898	3,079	3,640
All States Combined	**Lbs Gutted Weight**	12,126	6,413	7,991	7,829	5,794	8,031
	Deflated Price (2009 $) per Gutted Pound	2.59	2.58	2.67	2.60	2.62	2.61
	Deflated Ex-Vessel Revenue (2009 $)	30,439	15,905	20,886	17,174	12,224	19,326

Yellowtail Snapper

Yellowtail snapper are landed primarily in Florida, with a large proportion of these landings occurring on the west coast of Florida, even though the fish are caught in SAFMC region waters. Yellowtail snapper landings have varied substantially from a low of 609,000 pounds gutted weight in 2007 to a high of 1.11 million pounds in 2009 (**Table 3-49**). The numbers of vessels and trips landing yellowtail snapper have varied around 356 and 4,570, respectively, with a slight downward trend (**Table 3-48**). Ex-vessel price per gutted pound (2009 dollars) peaked in 2007 at $3.01 and declined thereafter to $2.67 in 2009 (**Table 3-49**). Ex-vessel revenue (2009 dollars) has ranged from $1.83 million in 2007 to $2.94 million in 2009 reflecting fluctuations in landings.

Table 3-48. Number of vessels, dealers, and trips landing yellowtail snapper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	127	111	116	116	118	118
FL(west)	236	223	207	202	198	213
NC	7	8	10	12	11	10
SC	14	10	13	19	20	15
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	68	60	67	59	63	63
FL(west)	52	69	62	63	68	63
NC	6	5	8	9	7	7
SC	5	3	5	5	6	5
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	924	678	883	626	714	765
FL(west)	3,944	3,751	3,500	3,726	3,810	3,746
NC	8	10	14	14	17	13
SC	48	24	32	58	70	46
Total All States	4,924	4,463	4,429	4,424	4,611	4,570

Table 3-49. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for yellowtail snapper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		89,599	60,703	88,389	81,875	128,849	89,883
FL (east coast) and GA	**Lbs Gutted Weight**						
	Deflated Price (2009 $) per Gutted Pound	2.89	3.10	3.05	3.02	2.95	3.00
	Deflated Ex-Vessel Revenue (2009 $)	259,188	187,737	268,682	246,208	371,546	266,672
FL (west coast)	**Lbs Gutted Weight**	672,583	618,305	515,942	701,530	980,374	697,747
	Deflated Price (2009 $) per Gutted Pound	2.79	2.99	2.99	2.75	2.60	2.82
	Deflated Ex-Vessel Revenue (2009 $)	1,876,872	1,848,640	1,544,689	1,925,796	2,549,395	1,949,078
NC	**Lbs Gutted Weight**	986	1,054	3,276	6,260	2,991	2,913
	Deflated Price (2009 $) per Gutted Pound	---	---	3.05	---	3.58	3.32
	Deflated Ex-Vessel Revenue (2009 $)	---	---	9,996	---	10,693	10,345
SC	**Lbs Gutted Weight**	1,078	382	1,390	3,373	1,181	1,481
	Deflated Price (2009 $) per Gutted Pound	3.10	---	3.32	3.43	3.21	3.27
	Deflated Ex-Vessel Revenue (2009 $)	3,338	---	4,608	11,584	3,794	5,831
All States Combined	**Lbs Gutted Weight**	764,246	680,444	608,996	793,038	1,113,396	792,024
	Deflated Price (2009 $) per Gutted Pound	2.81	3.01	3.01	2.79	2.67	2.86
	Deflated Ex-Vessel Revenue (2009 $)	2,139,398	2,036,377	1,827,976	2,183,588	2,935,428	2,224,553

Black Grouper

Black grouper landings are broadly distributed from North Carolina to Florida, including the west coast of Florida. From 2005 to 2009, black grouper landings averaged 127,000 gutted pounds per year but have been declining since 2007 (**Table 3-51**). Approximately 281 vessels landed black grouper, and effort averaged 1,283 trips per year (**Table 3-50**). From 2005 to 2009, the ex-vessel price (2009 dollars) per gutted pound of black grouper has been generally increasing, averaging $3.80 (**Table 3-51**). From 2005 to 2009, the ex-vessel revenues (2009 dollars) received for black grouper varied around an average value of $196,000 with higher prices in some years offset by lower landings.

Table 3-50. Number of vessels, dealers, and trips landing black grouper, by state, 2005-2009.

Vessels						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	72	68	68	53	55	63
FL(west)	186	163	162	151	115	155
NC	49	50	42	44	51	47
SC	10	12	19	16	21	16
Dealers						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	39	46	43	40	37	41
FL(west)	39	52	47	48	45	46
NC	28	34	26	25	35	30
SC	3	5	8	7	9	6
Trips						**Average**
	2005	**2006**	**2007**	**2008**	**2009**	**2005-2009**
FL(east) and GA	200	177	198	152	167	179
FL(west)	1,128	762	875	581	446	758
NC	327	282	206	217	195	245
SC	68	107	137	105	85	100
Total All States	1,723	1,328	1,416	1,055	893	1,283

Table 3-51. Landings (gutted weight), average annual ex-vessel prices, and ex-vessel revenues for black grouper, 2005-2009.

		Year Landed					Average 2005-2009
		2005	2006	2007	2008	2009	
State Landed:		20,089	14,516	26,301	14,260	11,684	17,370
FL (east coast) and GA	Lbs Gutted Weight						
	Deflated Price (2009 $) per Gutted Pound	3.70	3.87	4.18	4.24	4.30	4.06
	Deflated Ex-Vessel Revenue (2009 $)	37,406	34,797	47,564	42,297	33,339	39,081
FL (west coast)	Lbs Gutted Weight	70,163	35,434	45,898	21,374	15,568	37,687
	Deflated Price (2009 $) per Gutted Pound	3.39	3.65	3.89	3.78	3.89	3.72
	Deflated Ex-Vessel Revenue (2009 $)	237,558	129,426	178,499	80,899	60,575	137,391
NC	Lbs Gutted Weight	49,479	52,108	25,546	25,325	18,038	34,099
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	---	---
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	---	---
SC	Lbs Gutted Weight	26,190	41,799	63,278	35,525	20,244	37,407
	Deflated Price (2009 $) per Gutted Pound	---	---	---	---	4.78	4.78
	Deflated Ex-Vessel Revenue (2009 $)	---	---	---	---	96,833	96,833
All States Combined	Lbs Gutted Weight	165,921	143,857	161,023	96,484	65,533	126,563
	Deflated Price (2009 $) per Gutted Pound	3.43	3.69	3.94	3.86	4.09	3.80
	Deflated Ex-Vessel Revenue (2009 $)	274,964	164,223	226,063	123,197	190,747	195,839

3.8.1.9 Imports

Background
NOAA Fisheries Service purchases fisheries trade data from the Foreign Trade Division of the U.S. Census Bureau. Data are available for download at http://www.st.nmfs.noaa.gov/st1/trade/index.html. The list of product codes relevant to this data request includes fresh and frozen snappers, fresh and frozen groupers, frozen sea basses and frozen dolphin fillets. Wreckfish and golden crab do not appear in the list of product codes in the imports database (see the drop-down menu for products at http://www.st.nmfs.noaa.gov/st1/trade/build_a_database/TradeSelectDateProduct.html). Groupers are substitutes for wreckfish. Golden crab competes in the market for snow crab and Dungeness crab.

Data are summarized from 1991-2009. Imports are tabulated in thousands of lbs, product weight. Import values are tabulated in thousands of current year dollars and constant 2009 dollars.

Snapper Grouper
Imported products relevant to the Snapper Grouper FMP include fresh and frozen snappers, fresh and frozen groupers, and frozen sea basses. Data are available from 1991-present.

Imports of fresh snappers increased from approximately 10.8 million lbs (product weight) worth $16.0 million (current dollars) in 1991 to 21.5 million lbs worth $49.4 million in 2009 (**Figure 3-1**). Imports peaked at 29.0 million lbs worth $60.2 million in 2007 before declining in 2008 and 2009. The recent decline in imports probably is linked to the general slow-down of economic activity in the U.S. Imports of fresh snapper primarily originated in Mexico, Central America, or South America, and entered the U.S. through the port of Miami. On average from 2006-2009, imports were above average during the months of March, April and May, and below average in November, December and January.

Imports of frozen snappers were relatively minor from 1991 through 1999, and ranged from 1.4 million lbs (product weight) worth $1.9 million (current dollars) in 1995 to 2.9 million lbs worth $4.0 million in 1998 (**Figure 3-1**). However, imports doubled from 1999 to 2000 and increased to a peak of 12.7 million lbs worth $19.4 million in 2005. Imports remained relatively steady through 2007 and then declined to 8.1 million lbs worth $15.9 million in 2009. Imports of frozen snappers primarily originated in Brazil and entered the U.S. through the port of Miami, or originated from Indonesia and entered the U.S. through New York or Los Angeles. Imports of frozen snappers tend to be greatest during December and January and lowest in March, April and May.

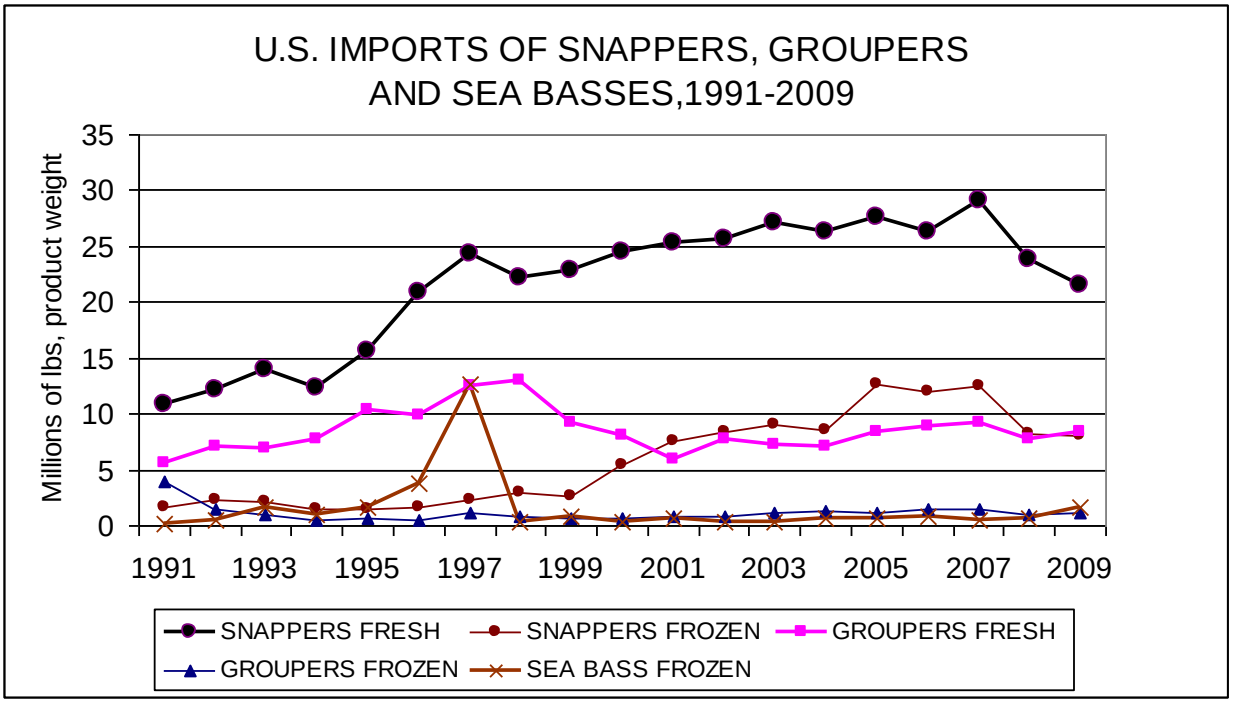

Figure 3-1. Imports relevant to the South Atlantic Snapper Grouper Fishery Management Plan.

Imports of fresh groupers increased from 5.6 million lbs (product weight) worth $6.1 million (current dollars) in 1991 to a peak of 12.9 million lbs worth $18.6 million in 1998 (**Figure 3-1**). Imports have remained relatively steady since 1999, with an annual average of 8.0 million lbs worth $18.1 million. Imports generally originated in Mexico, and in Panama to a much lesser extent, and entered the U.S. in Miami. Prior to 2006, imports of fresh groupers were above average in March and April and below average in October and November. However, imports in March have declined significantly since 2006.

Imports of frozen grouper were relatively minor, and averaged 1.0 million lbs worth $1.6 million since 2006 (**Figure 3-1**). Imports generally originated in Mexico or Asia, and entered the U.S. in Miami, Tampa or San Juan. On average from 2006-2009, imports of frozen groupers were above average from December through April and below average from June through August.

Imports of frozen sea basses were relatively minor except in 1997 with 12.6 million lbs (product weight) worth $28.7 million (current year dollars) (**Figure 3-1**). Imports averaged 0.6 million lbs worth $1.8 million from 1998-2008. However, imports of frozen sea bass increased to 1.7 million lbs worth $4.3 million in 2009, with nearly 0.8 million lbs imported in January 2009. Frozen sea bass most commonly were imported from Taiwan and entered the U.S. in Los Angeles. Since 2006, imports were greatest between January and March and lowest from August through December.

Dolphin Wahoo

Products relevant to the Dolphin Wahoo FMP include frozen dolphin fillets, with data about imports available since 1997. Imports of frozen dolphin fillets increased steadily from 15.7 million lbs (product weight) worth $20.2 million in 1997 to a peak in 2008 of 41.4 million lbs

worth $114.0 million, with brief declines in 1999 and 2006 to interrupt the trend (**Figure 3-2**). Imports declined in 2009 to 38.4 million lbs worth $101.7 million. The largest volume of imports originated in Taiwan, Ecuador and Peru, and entered the U.S. in Miami, Los Angeles and, to a lesser extent, Seattle. Imports at east coast ports, including the mid-west and Caribbean, were less than imports at west coast ports in every year except 2009, 2008 and 1997. Between 2006 and 2009, imports were above average from December through March and below average from July through November.

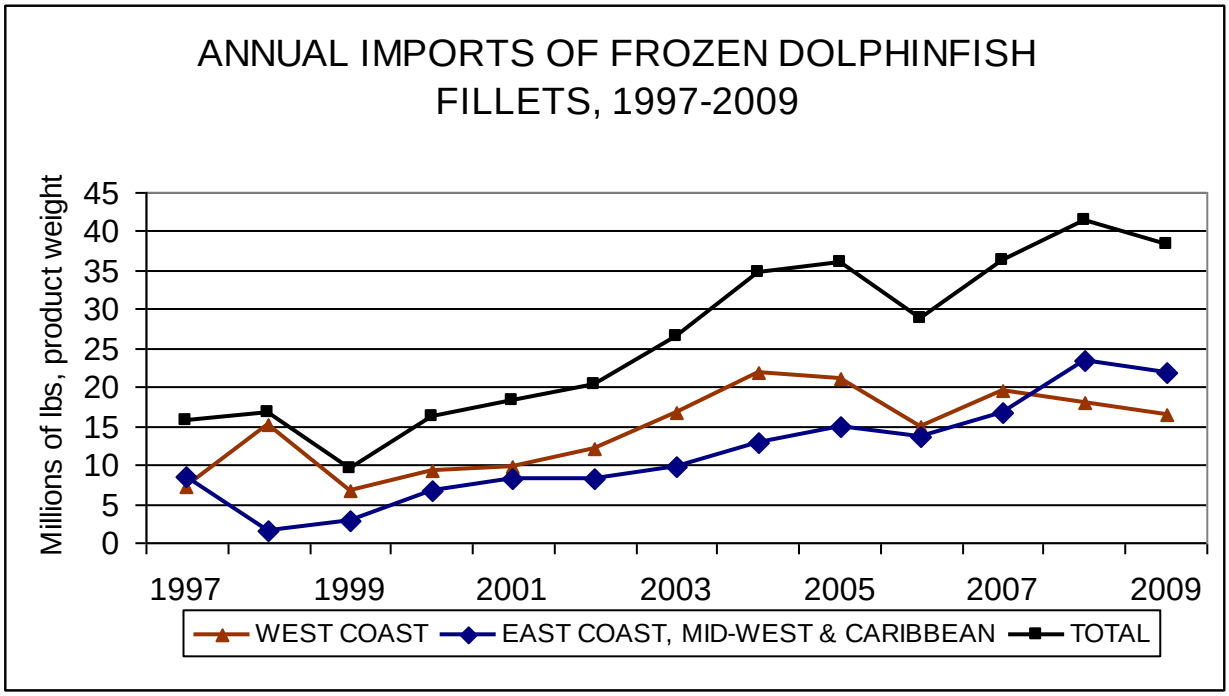

Figure 3-2. Imports relevant to the Dolphin Wahoo Fishery Management Plan.

Golden Crab FMP

Golden crab does not appear in the list of product codes in the imports database. Golden crab competes with snow crab and Dungeness crab when the markets for those products have difficulty meeting regional demand. For example, golden crab has been sold to U.S. west coast buyers when supplies of Dungeness crab were low. Golden crab also competes with snow crab in the buffet restaurant market. Recently a new international market opened for live golden crab where it competes directly with the Australian crystal crab for the high end customer segment.

Imports of frozen snow crab dominate the quantities imported of other crab products (**Figure 3-3**). In 1991, the U.S. imported 1.6 million lbs (product weight) of frozen snow crab worth $5.3 million (current year dollars), and by 2009 imports grew to nearly 113.9 million lbs worth $380.4 million (**Figure 3-3**). Imports doubled from 1993-to-1994, from 1996-to-1997, from 1998-to-1999, and doubled again between 1999 and 2009. The preponderance of imports originated in Canada and entered the U.S. at northeastern ports such as Portland, ME, and St. Albans, VT. From 2001-2009, imports were above average from May through August and below average from September through April.

Imports of snow crab crabmeat increased from 3.7 million lbs (product weight) worth $17.9 million (in current year dollars) in 1991 to a peak of 7.3 million lbs worth $44.8 million in 2001 (**Figure 3-3**). Imports of snow crab crabmeat averaged approximately 4.6 million lbs worth $22.6 million from 2003-2009. Canada is the largest supplier, with China and South Korea also exporting significant quantities of snow crab crabmeat to U.S. markets. Imports from Canada entered the U.S. at ports in the northeast and mid-west, while imports from Asia entered the U.S. at ports on the west coast and at ports in the northeast. Los Angeles was the primary port of entry. July, August and September were the primary months to import snow crab crabmeat.

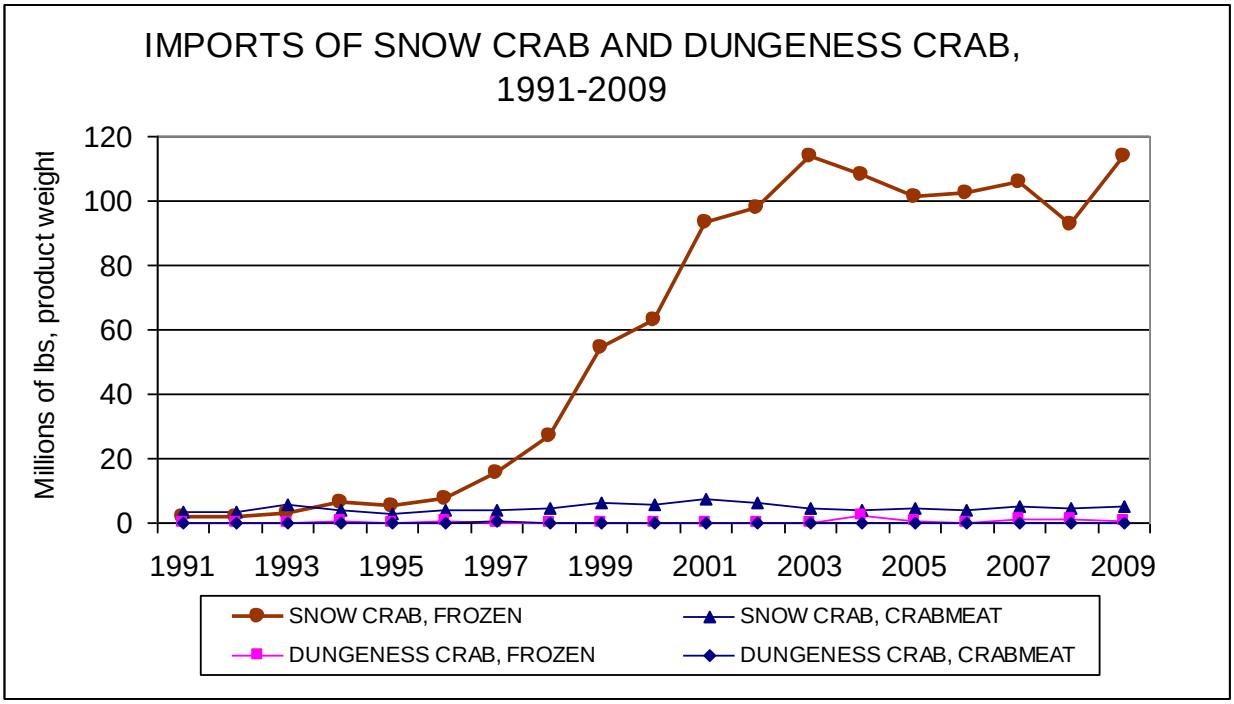

Figure 3-3. Imports relevant to the South Atlantic Golden Crab Fishery Management Plan.

Prior to 2004, imports of frozen Dungeness crab ranged from 0.007 million lbs (product weight) in 2002 to 0.4 million lbs worth $1.1 million in 1997 (**Figure 3-3**). Since then, imports exceeded 2.3 million lbs worth $3.9 million in 2004, and averaged 1.0 million lbs worth nearly $2.5 million from 2004-2009. Frozen Dungeness crab was imported from Canada, primarily into the port of Seattle during the months of July, August and September.

Dungeness crab crabmeat is a low-volume, high-valued product that averaged more than $12 per pound in 2008 and more than $10 per pound in 2009. Imports of Dungeness crab crabmeat peaked at 0.34 million lbs (product weight) worth $1.52 million (current year dollars) in 1997. Product value peaked in 2008 with imports of 0.18 million lbs worth $2.24 million. Imports declined to 0.12 million lbs worth $1.25 million in 2009. Dungeness crab crabmeat was exported to the U.S. from China and entered the U.S. in Los Angeles. Imports are not seasonal.

3.8.2 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 charterboat and headboat (also called partyboat) sectors. Charterboats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person.

3.8.2.1 Harvest

Recreational harvest information is provided in **Appendix N**.

3.8.2.2 Effort

Recreational effort derived from the MRFSS database can be characterized in terms of the number of trips as follows:

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

Estimates of average annual recreational effort, 2005-2009, for the snapper grouper species addressed in this amendment are provided in **Tables 3-52 to 3-59**. 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 snapper grouper species regardless of target intent or catch success.

As might be expected, Florida dominates the other South Atlantic states in terms of the number of target or catch trips for all of the individual or group snapper grouper species evaluations (**Tables 3-52** and **3-53**). The private mode is the dominant fishing mode for snapper grouper target or catch trips (**Tables 3-54** and **3-55**). For individual snapper grouper species, red snapper has been subject to the greatest amount of target effort, approximately 57,000 trips per year (**Table 3-52**), while black sea bass has been subject to the greatest amount of catch effort, approximately 640,000 trips per year (**Table 3-52**).

Table 3-52. Average annual snapper grouper recreational target effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
All Snapper Grouper	733,902	30,527	92,356	109,565	966,350	22,418,779
Red Snapper	52,112	2,433	0	2,787	57,331	
Vermilion Snapper	2,643	27	153	1,608	4,430	

Table 3-52. Continued. Average annual snapper grouper recreational target effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Red Porgy	209	0	0	0	209	
Goliath Grouper	1,667	0	0	0	1,667	
Black Sea Bass	10,076	4,744	8,532	24,832	48,184	
Wreckfish	0	0	0	0	0	
Gray Triggerfish	2,555	0	2,921	330	5,806	
Bar Jack	0	0	0	0	0	
Nassau Grouper	0	0	0	0	0	
Hogfish	16,821	0	0	0	16,821	
Yellowedge Grouper	182	0	0	0	182	
Blueline Tilefish	0	0	1,338	0	1,338	
Lesser Amberjack	0	0	0	0	0	
Cubera Snapper	0	0	0	0	0	
Atlantic Spadefish	2,436	1,159	1,934	5,875	11,404	
Blue Runner	23,155	0	0	1,646	24,801	
Warsaw Grouper	0	0	0	0	0	
Scamp	0	0	0	256	256	
Red Grouper	3,355	0	503	0	3,858	
Speckled Hind	0	0	51	0	51	

Source: MRFSS, NOAA Fisheries, NMFS, SERO. *

Table 3-53. Average annual snapper grouper recreational catch effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
All Snapper Grouper	3,152,035	123,122	461,860	221,684	3,958,701	22,418,779
Red Snapper	87,785	7,117	1,208	3,329	99,439	
Vermilion Snapper	63,920	6,124	12,275	13,235	95,554	
Red Porgy	4,678	1,128	15,888	4,412	26,106	
Goliath Grouper	16,277	0	0	0	16,277	
Black Sea Bass	205,909	48,938	230,900	154,526	640,273	
Wreckfish	0	0	0	0	0	
Gray Triggerfish	140,795	5,715	18,308	5,535	170,353	
Bar Jack	5,669	100	71	0	5,840	
Nassau Grouper	986	0	0	45	1,031	

Table 3-53. Continued. Average annual snapper grouper recreational catch effort in the South Atlantic, across all modes, 2005-2009.

	State					
Snapper grouper species*	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Hogfish	23,898	10	1,590	434	25,932	
Yellowedge Grouper	599	0	30	0	629	
Blueline Tilefish	375	0	14,247	0	14,622	
Lesser Amberjack	391	0	301	0	692	
Cubera Snapper	1,720	27	0	0	1,747	
Atlantic Spadefish	83,165	17,730	31,349	17,638	149,882	
Blue Runner	492,836	407	2,968	892	497,103	
Warsaw Grouper	656	0	0	0	656	
Scamp	4,551	666	7,526	2,753	15,496	
Red Grouper	58,740	5	19,355	1,108	79,207	
Speckled Hind	1,581	0	0	28	1,609	

Source: MRFSS, NOAA Fisheries, NMFS, SERO. *

Table 3-54. Average annual snapper grouper recreational target effort by mode in the South Atlantic, across all states, 2005-2009.

	Mode				
Snapper grouper species*	**Shore**	**Charter**	**Private**	**Total**	**All Trips**
All Snapper Grouper	269,576	39,122	657,652	966,350	22,418,779
Red Snapper	2,110	2,903	52,318	57,331	
Vermilion Snapper	0	1,186	3,244	4,430	
Red Porgy	0	0	209	209	
Goliath Grouper	645	25	997	1,667	
Black Sea Bass	1,438	3,812	42,934	48,184	
Wreckfish	0	0	0	0	
Gray Triggerfish	2,115	353	3,338	5,806	
Bar Jack	0	0	0	0	
Nassau Grouper	0	0	0	0	
Hogfish	891	0	15,930	16,821	
Yellowedge Grouper	0	0	182	182	
Blueline Tilefish	0	494	844	1,338	
Lesser Amberjack	0	0	0	0	
Cubera Snapper	0	0	0	0	
Atlantic Spadefish	3,330	88	7,986	11,404	
Blue Runner	20,185	0	4,616	24,801	

Table 3-54. Continued. Average annual snapper grouper recreational target effort by mode in the South Atlantic, across all states, 2005-2009.

	Mode				
Snapper grouper species*	**Shore**	**Charter**	**Private**	**Total**	**All Trips**
Warsaw Grouper	0	0	0	0	
Scamp	0	256	0	256	
Red Grouper	177	503	3,178	3,858	
Speckled Hind	0	0	51	51	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-55. Average annual snapper grouper recreational catch effort by mode in the South Atlantic, across all states, 2005-2009.

	Mode				
Snapper grouper species*	**Shore**	**Charter**	**Private**	**Total**	**All Trips**
All Snapper Grouper	1,231,647	134,665	2,592,389	3,958,701	22,418,779
Red Snapper	1,150	13,124	85,165	99,439	
Vermilion Snapper	872	28,300	66,382	95,554	
Red Porgy	0	10,314	15,792	26,106	
Goliath Grouper	6,473	287	9,517	16,277	
Black Sea Bass	90,607	36,130	513,537	640,273	
Wreckfish	0	0	0	0	
Gray Triggerfish	10,316	24,395	135,642	170,353	
Bar Jack	1,421	352	4,068	5,840	
Nassau Grouper	0	138	893	1,031	
Hogfish	1,650	122	24,160	25,932	
Yellowedge Grouper	0	94	535	629	
Blueline Tilefish	0	9,573	5,049	14,622	
Lesser Amberjack	0	291	401	692	
Cubera Snapper	311	82	1,354	1,747	
Atlantic Spadefish	120,340	378	29,164	149,882	
Blue Runner	260,006	18,029	219,067	497,103	
Warsaw Grouper	0	121	535	656	
Scamp	0	4,712	10,784	15,496	
Red Grouper	1,175	10,891	67,141	79,207	
Speckled Hind	203	84	1,323	1,609	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Tables 3-56 to **3-59** contain estimates of the average annual (2005-2009) target trips and catch trips, by snapper grouper species, for each state and mode.

Table 3-56. Average annual snapper grouper recreational effort, Florida, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	225,948	1,056,735	32,165	76,089	475,789	2,019,211	733,902	3,152,035
Red Snapper	2,110	1,150	2,334	8,019	47,668	78,617	52,112	87,785
Vermilion Snapper	0	872	234	11,372	2,409	51,676	2,643	63,920
Red Porgy	0	0	0	1,566	209	3,113	209	4,678
Goliath Grouper	645	6,473	25	287	997	9,517	1,667	16,277
Black Sea Bass	818	24,882	99	4,714	9,158	176,313	10,076	205,909
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	0	7,296	0	14,824	2,555	118,676	2,555	140,795
Bar Jack	0	1,421	0	252	0	3,997	0	5,669
Nassau Grouper	0	0	0	93	0	893	0	986
Hogfish	891	1,340	0	61	15,930	22,497	16,821	23,898
Yellowedge Grouper	0	0	0	64	182	535	182	599
Blueline Tilefish	0	0	0	375	0	0	0	375
Lesser Amberjack	0	0	0	86	0	305	0	391
Cubera Snapper	0	311	0	55	0	1,354	0	1,720
Atlantic Spadefish	2,348	71,524	88	111	0	11,529	2,436	83,165
Blue Runner	20,185	258,388	0	17,043	2,970	217,406	23,155	492,836
Warsaw Grouper	0	0	0	121	0	535	0	656
Scamp	0	0	0	1,503	0	3,048	0	4,551
Red Grouper	177	1,175	0	5,777	3,178	51,787	3,355	58,740
Speckled Hind	0	203	0	55	0	1,323	0	1,581

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-57. Average annual snapper grouper recreational effort, Georgia, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	7,361	33,213	920	8,746	22,246	81,163	30,527	123,122
Red Snapper	0	0	381	2,830	2,052	4,287	2,433	7,117
Vermilion Snapper	0	0	27	4,333	0	1,791	27	6,124
Red Porgy	0	0	0	572	0	556	0	1,128
Goliath Grouper	0	0	0	0	0	0	0	0
Black Sea Bass	0	9,265	368	6,140	4,376	33,532	4,744	48,938
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	0	0	0	2,783	0	2,932	0	5,715
Bar Jack	0	0	0	100	0	0	0	100
Nassau Grouper	0	0	0	0	0	0	0	0
Hogfish	0	0	0	10	0	0	0	10
Yellowedge Grouper	0	0	0	0	0	0	0	0
Blueline Tilefish	0	0	0	0	0	0	0	0
Lesser Amberjack	0	0	0	0	0	0	0	0
Cubera Snapper	0	0	0	27	0	0	0	27
Atlantic Spadefish	785	13,395	0	24	374	4,311	1,159	17,730
Blue Runner	0	0	0	86	0	321	0	407
Warsaw Grouper	0	0	0	0	0	0	0	0
Scamp	0	0	0	421	0	245	0	666
Red Grouper	0	0	0	5	0	0	0	5
Speckled Hind	0	0	0	0	0	0	0	0

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-58. Average annual snapper grouper recreational effort, North Carolina, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	25,429	114,539	1,660	32,234	65,266	315,087	92,356	461,860
Red Snapper	0	0	0	658	0	550	0	1,208
Vermilion Snapper	0	0	0	6,074	153	6,202	153	12,275
Red Porgy	0	0	0	6,166	0	9,722	0	15,888
Goliath Grouper	0	0	0	0	0	0	0	0
Black Sea Bass	620	48,018	110	10,588	7,803	172,294	8,532	230,900
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	2,115	3,020	353	5,531	453	9,757	2,921	18,308
Bar Jack	0	0	0	0	0	71	0	71
Nassau Grouper	0	0	0	0	0	0	0	0
Hogfish	0	310	0	24	0	1,256	0	1,590
Yellowedge Grouper	0	0	0	30	0	0	0	30
Blueline Tilefish	0	0	494	9,199	844	5,049	1,338	14,247
Lesser Amberjack	0	0	0	205	0	95	0	301
Cubera Snapper	0	0	0	0	0	0	0	0
Atlantic Spadefish	198	24,529	0	0	1,736	6,819	1,934	31,349
Blue Runner	0	1,619	0	759	0	590	0	2,968
Warsaw Grouper	0	0	0	0	0	0	0	0
Scamp	0	0	0	2,274	0	5,252	0	7,526
Red Grouper	0	0	503	5,035	0	14,320	503	19,355
Speckled Hind	0	0	0	0	51	0	51	0

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-59. Average annual snapper grouper recreational effort, South Carolina, 2005-2009.

	Shore		Charter		Private		Total	
Snapper grouper species*	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
All Snapper Grouper	10,837	27,160	4,377	17,596	94,351	176,928	109,565	221,684
Red Snapper	0	0	188	1,617	2,598	1,712	2,787	3,329
Vermilion Snapper	0	0	926	6,521	682	6,714	1,608	13,235
Red Porgy	0	0	0	2,010	0	2,401	0	4,412
Goliath Grouper	0	0	0	0	0	0	0	0
Black Sea Bass	0	8,441	3,236	14,688	21,596	131,397	24,832	154,526
Wreckfish	0	0	0	0	0	0	0	0
Gray Triggerfish	0	0	0	1,257	330	4,277	330	5,535
Bar Jack	0	0	0	0	0	0	0	0
Nassau Grouper	0	0	0	45	0	0	0	45
Hogfish	0	0	0	27	0	407	0	434
Yellowedge Grouper	0	0	0	0	0	0	0	0
Blueline Tilefish	0	0	0	0	0	0	0	0
Lesser Amberjack	0	0	0	0	0	0	0	0
Cubera Snapper	0	0	0	0	0	0	0	0
Atlantic Spadefish	0	10,891	0	242	5,875	6,505	5,875	17,638
Blue Runner	0	0	0	142	1,646	749	1,646	892
Warsaw Grouper	0	0	0	0	0	0	0	0
Scamp	0	0	256	513	0	2,240	256	2,753
Red Grouper	0	0	0	75	0	1,034	0	1,108
Speckled Hind	0	0	0	28	0	0	0	28

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Estimates of average annual recreational effort, 2005-2009, for dolphin and wahoo are provided in **Tables 3-60 to 3-67**. 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 regardless of target intent or catch success.

As might be expected, Florida dominates the other South Atlantic states in terms of the number of target or catch trips for dolphin and wahoo evaluations (**Tables 3-60** and **3-61**). At more than 887,000 trips per year (**Table 3-60**), target effort for dolphin is nearly as great as for all snapper grouper species combined. While target effort for wahoo is considerably less than for dolphin, at just more than 148,000 trips per year, it is still nearly three times greater than any individual snapper grouper species. Contrary to snapper grouper species, catch effort for dolphin and wahoo (**Table 3-61**) is considerably less than target effort (**Table 3-60**), at more than 540,000 and 44,000 days respectively.

The private mode is the dominant fishing mode for dolphin and wahoo target and catch trips (**Tables 3-62** and **3-63**). Accounting for approximately 95% of target effort and more than 70%

of catch effort, effort in the private mode far exceeds effort in the shore and charter modes combined for target and catch trips (**Tables 3-62** and **3-63**).

Table 3-60. Average annual dolphin and wahoo recreational target effort in the South Atlantic, across all modes, 2005-2009.

	State					
Species	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Dolphin	751,056	978	122,652	12,491	887,177	22,418,779
Wahoo	126,067	0	17,147	5,082	148,296	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-61. Average annual dolphin and wahoo recreational catch effort in the South Atlantic, across all modes, 2005-2009.

	State					
Species	**Florida**	**Georgia**	**North Carolina**	**South Carolina**	**Total**	**All Trips**
Dolphin	346,493	1,461	181,842	10,603	540,399	22,418,779
Wahoo	23,065	103	19,589	1,673	44,430	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-62. Average annual dolphin and wahoo recreational target effort in the South Atlantic, across all states, 2005-2009.

	Mode				
	Shore	**Charter**	**Private**	**Total**	**All Trips**
Dolphin	748	47,726	838,704	887,177	22,418,779
Wahoo	0	6,678	141,617	148,296	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-63. Average annual dolphin and wahoo recreational catch effort in the South Atlantic, across all states, 2005-2009.

	Mode				
	Shore	**Charter**	**Private**	**Total**	**All Trips**
Dolphin	210	124,581	415,609	540,399	22,418,779
Wahoo	0	12,597	31,833	44,430	

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Tables 3-64 to 3-67 contain estimates of the average annual (2005-2009) dolphin and wahoo target trips and catch trips for each state and mode.

Table 3-64. Average annual dolphin and wahoo recreational effort, Florida, 2005-2009.

	Shore		Charter		Private		Total	
	Target	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
Dolphin	612	0	17,296	24,748	733,148	321,744	751,056	346,493
Wahoo	0	0	2,242	1,764	123,825	21,301	126,067	23,065

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-65. Average annual dolphin and wahoo recreational effort, Georgia, 2005-2009.

	Shore		Charter		Private		Total	
	Target	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
Dolphin	0	0	0	338	978	1,123	978	1,461
Wahoo	0	0	0	5	0	98	0	103

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-66. Average annual dolphin and wahoo recreational effort, North Carolina, 2005-2009.

	Shore		Charter		Private		Total	
	Target	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
Dolphin	136	210	29,054	96,484	93,462	85,149	122,652	181,842
Wahoo	0	0	4,333	10,677	12,814	8,912	17,147	19,589

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Table 3-67. Average annual dolphin and wahoo recreational effort, South Carolina, 2005-2009.

	Shore		Charter		Private		Total	
	Target	**Catch**	**Target**	**Catch**	**Target**	**Catch**	**Target**	**Catch**
Dolphin	0	0	1,375	3,010	11,116	7,593	12,491	10,603
Wahoo	0	0	103	152	4,979	1,521	5,082	1,673

Source: MRFSS, NOAA Fisheries, NMFS, SERO.

Analysis of recreational effort at the individual species or species group level 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. The average annual (2005-2009) number of headboat angler days is presented in **Table 3-68**. Due to confidentiality issues, Georgia estimates are combined with those of Florida. As shown in **Table 3-68**, the total (across all states) average number of headboat angler days has been variable but generally declining since 2005.

Table 3-68. Southeast headboat angler days, 2005-2009.

	South Atlantic			
	Florida/ Georgia	**North Carolina**	**South Carolina**	**Total**
2005	171,078	31,573	34,036	236,687
2006	175,522	25,736	56,074	257,332
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
Average	152,858	24,552	47,809	225,219

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

3.8.2.3 Permits

For-hire vessels are required to have a for-hire snapper grouper permit to fish for or possess snapper grouper species in the South Atlantic EEZ. The number of vessels with for-hire snapper grouper permits for the period 2005-2009 is provided in **Table 3-69**. This sector operates as an open access fishery and not all permitted vessels are necessarily active in the fishery. Some vessel owners obtain open access permits as insurance for uncertainties in the fisheries in which they currently operate.

The number of for-hire permits issued for the South Atlantic snapper grouper fishery increased from 1,904 permits in 2005 to 2,104 permits in 2008, but decreased slightly to 2,091 in 2009. The majority of snapper grouper for-hire permitted vessels were home-ported in Florida; a relatively high proportion of these permitted vessels were also home-ported in North Carolina and South Carolina. Many vessels with South Atlantic for-hire snapper grouper permits were homeported in states outside of South Atlantic Council's area of jurisdiction, particularly in Alabama and Texas. Although the number of vessels with South Atlantic for-hire snapper grouper permits homeported in states outside of South Atlantic Council's area of jurisdiction increased from 2005 to 2009, they still account for approximately the same proportion (9-10%) of the total number of permits.

For-hire vessels are required to have a for-hire dolphin/wahoo permit to fish for or possess dolphin/wahoo species in the South Atlantic EEZ. The number of vessels with for-hire dolphin/wahoo permits for the period 2005-2009 is provided in **Table 3-70**. This sector operates as an open access fishery and not all permitted vessels are necessarily active in the fishery. Some vessel owners obtain open access permits as insurance for uncertainties in the fisheries in which they currently operate.

The number of for-hire permits issued for the South Atlantic dolphin/wahoo fishery increased from 1,453 permits in 2005 to 2,294 permits in 2009, or by nearly 58%. Most of the increase occurred in 2006 and 2007. The majority of dolphin/wahoo for-hire permitted vessels were home-ported in Florida; a relatively high proportion of these permitted vessels were also home-ported in North Carolina and South Carolina. The South Atlantic Council manages dolphin and wahoo throughout the Eastern seaboard (i.e., Maine to Florida). Since relatively few vessels

were homeported in states outside of South Atlantic Council's area of jurisdiction, the proportion of vessels with for-hire homeported outside the South Atlantic Council's area of jurisdiction is also relatively small (approximately 3%).

Table 3-69. Number of South Atlantic for-hire snapper grouper vessel permits

Homeport State	2005	2006	2007	2008	2009	Avg.
Florida	1,267	1,304	1,312	1,310	1,280	1,295
North Carolina	294	317	353	399	391	351
South Carolina	136	142	152	160	167	151
Alabama	52	42	37	39	42	42
Georgia	37	36	37	39	42	38
Texas	36	30	31	33	30	32
Other States	82	96	104	124	139	109
Total	1,904	1,967	2,026	2,104	2,091	2,018

Table 3-70. Number of South Atlantic for-hire dolphin/wahoo vessel permits

Homeport State	2005	2006	2007	2008	2009	Avg.
Florida	800	1,019	1,147	1,190	1,190	1,069
North Carolina	324	391	434	468	468	417
South Carolina	90	118	145	158	158	134
Maryland	48	70	88	107	107	84
Delaware	39	64	74	82	82	68
New Jersey	36	61	73	78	78	65
Georgia	23	28	33	42	42	34
Other States	93	123	152	169	169	141
Total	1,453	1,874	2,146	2,294	2,294	2,012

For-hire permits do not distinguish charterboats from headboats. Based on a 1997 survey, Holland *et al.* (1999) estimated that a total of 1,080 charter vessels and 96 headboats supplied for-hire services in all South Atlantic fisheries during 1997. By 2010, the estimated number of headboats supplying for-hire services in all South Atlantic fisheries had fallen to 85, indicating a decrease in fleet size of approximately 11% between 1997 and 2010 (K. Brennan, Beaufort Laboratory, SEFSC, personal communication, Feb. 2011).

3.8.2.4 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 (cs). 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.

Estimates of the economic value of a day of saltwater recreational fishing in the South Atlantic indicate that the mean value of access per marine recreational fishing trip is $109.31 for the South Atlantic (Haab *et al.* 2001). While this estimate is not specific to snapper grouper fishing trips, it may shed light on the magnitude of an angler's willingness to pay for this type of recreational experience.

Willingness to pay for an incremental increase in catch and keep rates per trip was also estimated to be $3.01 for bottom fish snapper grouper species by Haab *et al.* (2001). Whitehead *et al.* (2001) estimated the marginal willingness to pay to avoid a one fish red snapper bag limit decrease to be $1.06 to $2.20. Finally, Haab *et al.* (2001) provided a compensating variation (the amount of money a person would have to receive to be no worse off after a reduction of the bag limit) estimate of $2.49 per fish when calculated across all private boat anglers that targeted snapper grouper snapper grouper species in the South Atlantic.

In their study of the North Carolina for-hire fishery, Dumas *et al.* (2009) estimated several measures of consumer surplus for anglers fishing through the for-hire mode. Anglers were distinguished as to whether fishing was their primary or secondary purpose for taking the trip to the coasts. An additional snapper grouper caught and kept would generate consumer surplus of $93.51 per trip for primary purpose anglers and $60.79 per trip for secondary purpose anglers. Consumer surplus per site per trip for primary purpose anglers ranged from $4.88 to $27.03 in charter trips taken in federal waters, or from $0.35 to $9.55 in charter trips taken in state waters. The corresponding range of values for secondary purpose anglers was $0.24 to $16.62 for charter trips in federal waters, or $0.12 to $16.54 for charter trips in state waters. On headboat trips in both state and federal waters, consumer surplus per site per trip ranged from $0.59 to $4.12 for primary purpose anglers and from $0.48 to $4.76 for secondary purpose anglers. Consumer surplus for the opportunity to take a for-hire fishing trip was estimated at $624.02 per angler per trip on charterboats and $101.64 per anger per trip on headboats.

In addition to the above economic values, there are estimates of the economic value of a red snapper and a red snapper trip provided in the red snapper interim rule for the South Atlantic (NOAA 2008). Although these values are derived for the Gulf of Mexico recreational fishery, they can be used as proxy values for the South Atlantic fishery. However, red snapper is a significantly more important recreational target fishery in the Gulf of Mexico than in the South Atlantic. As a result, the estimates of economic value may overstate the true values for the South Atlantic. The estimated CS to a recreational angler of one red snapper is $6.04, while the estimated CS of a red snapper fishing trip is $53.53.

Most recently, the NMFS Southeast Fisheries Science Center (NMFS 2009b) developed estimates of consumer surplus per angler trip based on various studies and data in the last ten years. These estimates were culled from various studies – Haab *et al.* (2009), Dumas *et al.* (2009), and NOAA SEFSC SSRG (2009). The values/ranges of consumer surplus estimates are (in 2009 dollars) $112 to $128 for red snapper, $123 to $128 for grouper, $11 for other snappers, and $80 for snapper grouper. These values were deemed directly applicable in assessing the

changes in consumer surplus due to management measures in Amendment 17B (SAFMC 2010b). The range of consumer surplus estimates for dolphin (in 2009 dollars) is $40 to $412 (Haab, *et al*. 2009). Comparable estimates for wahoo are not currently available.

While anglers receive economic value as measured by the cs associated with fishing, for-hire businesses receive value from the services they provide. Producer surplus (PS) is the measure of the economic value these operations receive. PS 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 PS associated with for-hire trips are not available. However, proxy values in the form of net operating revenues are also provided in NMFS (2008). These values are not PS estimates because they are not net of crew costs and returns to the owner. The estimated net operating revenues per angler trip for the for-hire sector are $162 for a charterboat trip and $78 for a headboat trip.

The NOAA Fisheries Service Southeast Fisheries Science Center recently provided estimates of charterboat and headboat net operating revenues for various areas in the Southeast (NMFS 2009). 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 are $135 for east Florida, $146 for Louisiana through 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 $155-160 in North Carolina.

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

These valuation estimates should not be confused with angler expenditures or 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.

Estimates of the economic activity (impacts) associated with the recreational snapper grouper fishery were derived using average coefficients for recreational angling across all fisheries (snapper grouper species), as derived by an economic add-on to the MRFSS, and described and utilized in NMFS (2009a). 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 (2009a) and are incorporated herein by reference. Estimates of the average recreational effort (2005-2009) and associated economic impacts (2008 dollars) are provided in **Tables 3-61 to 3-63**. Target trips were used as the measure of recreational effort. As previously discussed, more trips may catch a snapper grouper species than target the snapper grouper 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 were three times the number of target trips for a particular state and mode, the estimate of the associated business activity would equal three times the estimate associated with target trips. **Tables 3-56 to 3-59** contain estimates of the average annual (2005-2009) target trips and catch trips, by snapper grouper species or snapper grouper species group, for each state and mode.

It should be noted that output impacts and value added impacts are not additive and the impacts for individual snapper grouper species should not be added because of possible duplication (some trips may target multiple snapper grouper 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, Florida into Georgia 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 snapper grouper 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. For example, as derived from **Table 3-71**, the average number of charter snapper grouper target trips in Florida (32,165 trips) was only approximately 7% of the number of private trips (475,789), whereas the estimated output (sales) impacts by the charter anglers (approximately $12.6 million) was approximately 70% of the output impacts of the private trips (approximately $18.0 million).

Table 3-71. Summary of snapper grouper target trips (2005-2009 average) and associated economic activity (2008 dollars) by state and mode.
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	Florida
	Shore Mode			
Target Trips	25,429	10,837	7,361	225,948
Output Impact	$6,369,109	$1,103,510	$118,570	$6,454,791
Value Added Impact	$3,546,665	$614,461	$71,098	$3,747,360
Jobs	77	14	1	68
	Private/Rental Mode			
Target Trips	65,266	94,351	22,246	475,789
Output Impact	$3,562,445	$4,151,262	$347,565	$17,992,032
Value Added Impact	$2,008,752	$2,422,205	$210,827	$10,751,195
Jobs	38	47	3	189
	Charter Mode			
Target Trips	1,660	4,377	920	32,165
Output Impact	$646,211	$1,476,045	$57,835	$12,605,516
Value Added Impact	$362,655	$833,905	$33,755	$7,421,221
Jobs	8	19	1	130
	All Modes			
Target Trips	92,355	109,565	30,527	733,902
Output Impact	$10,577,764	$6,730,817	$523,970	$37,052,338
Value Added Impact	$5,918,072	$3,870,571	$315,679	$21,919,776
Jobs	123	80	5	387

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

Table 3-72. Summary of SWG target trips (2005-2009 average) and associated economic activity (2008 dollars). SWG = gag, red grouper, scamp, black grouper, yellowfin grouper, and speckled hind.
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	Florida
	Shore Mode			
Target Trips	0	0	0	1,749
Output Impact	$0	$0	$0	$49,965
Value Added Impact	$0	$0	$0	$29,007
Jobs	0	0	0	1
	Private/Rental Mode			
Target Trips	1,261	1,436	0	36,742
Output Impact	$68,830	$63,181	$0	$1,389,404
Value Added Impact	$38,811	$36,865	$0	$830,243

Table 3-72. Continued. Summary of SWG target trips (2005-2009 average) and associated economic activity (2008 dollars).

	North Carolina	South Carolina	Georgia	Florida
Jobs	1	1	0	15
	Charter Mode			
Target Trips	0	358	0	875
Output Impact	$0	$120,727	$0	$342,914
Value Added Impact	$0	$68,206	$0	$201,883
Jobs	0	2	0	4
	All Modes			
Target Trips	1,261	1,794	0	39,366
Output Impact	$68,830	$183,909	$0	$1,782,283
Value Added Impact	$38,811	$105,071	$0	$1,061,133
Jobs	1	2	0	19

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

Table 3-73. Summary of SW snapper target trips (2005-2009 average) and associated economic activity (2008 dollars). SW snapper = yellowtail snapper, gray snapper, lane snapper, and mutton snapper.
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	Florida
	Shore Mode			
Target Trips	0	0	0	51,466
Output Impact	$0	$0	$0	$1,470,260
Value Added Impact	$0	$0	$0	$853,567
Jobs	0	0	0	16
	Private/Rental Mode			
Target Trips	0	0	0	112,291
Output Impact	$0	$0	$0	$4,246,301
Value Added Impact	$0	$0	$0	$2,537,390
Jobs	0	0	0	45
	Charter Mode			
Target Trips	0	0	0	2,555
Output Impact	$0	$0	$0	$1,001,309
Value Added Impact	$0	$0	$0	$589,499
Jobs	0	0	0	10

Table 3-73. Continued. Summary of SW snapper target trips (2005-2009 average) and associated economic activity (2008 dollars).

	North Carolina	South Carolina	Georgia	Florida
	All Modes			
Target Trips	0	0	0	166,312
Output Impact	$0	$0	$0	$6,717,869
Value Added Impact	$0	$0	$0	$3,980,455
Jobs	0	0	0	71

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

Table 3-74. Summary of dolphin target trips (2005-2009 average) and associated economic activity (2008 dollars).
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	East Florida
	Shore Mode			
Target Trips	136	0	0	612
Output Impact	$34,063	$0	$0	$17,483
Value Added Impact	$18,968	$0	$0	$10,150
Jobs	0	0	0	0
	Private/Rental Mode			
Target Trips	93,462	11,116	978	733,148
Output Impact	$5,101,480	$489,083	$15,280	$27,724,100
Value Added Impact	$2,876,567	$285,373	$9,269	$16,566,623
Jobs	55	6	0	291
	Charter Mode			
Target Trips	29,054	1,375	0	17,296
Output Impact	$11,310,242	$463,688	$0	$6,778,331
Value Added Impact	$6,347,330	$261,965	$0	$3,990,594
Jobs	144	6	0	70
	All Modes			
Target Trips	122,652	12,491	978	751,056
Output Impact	$16,445,786	$952,770	$15,280	$34,519,914
Value Added Impact	$9,242,865	$547,338	$9,269	$20,567,367
Jobs	199	11	0	361

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

Table 3-75. Summary of wahoo target trips (2005-2009 average) and associated economic activity (2008 dollars).
Output and value added impacts are not additive.

	North Carolina	South Carolina	Georgia	East Florida
	Shore Mode			
Target Trips	0	0	0	0
Output Impact	$0	$0	$0	$0
Value Added Impact	$0	$0	$0	$0
Jobs	0	0	0	0
	Private/Rental Mode			
Target Trips	12,814	4,979	0	123,825
Output Impact	$699,433	$219,066	$0	$4,682,461
Value Added Impact	$394,388	$127,822	$0	$2,798,019
Jobs	8	2	0	49
	Charter Mode			
Target Trips	4,333	103	0	2,242
Output Impact	$1,686,765	$34,734	$0	$878,643
Value Added Impact	$946,616	$19,624	$0	$517,282
Jobs	21	0	0	9
	All Modes			
Target Trips	17,147	5,082	0	126,067
Output Impact	$2,386,198	$253,801	$0	$5,561,104
Value Added Impact	$1,341,004	$147,446	$0	$3,315,301
Jobs	29	3	0	58

As previously noted, the values provided in **Tables 3-71 to 3-75** only reflect effort derived from the MRFSS. Because the headboat sector in the Southeast is not covered by the MRFSS, the results in **Tables 3-71 to 3-75** do not include estimates of the economic activity associated with headboat anglers. While estimates of headboat effort are available (see **Table 3-68**), 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 snapper grouper, dolphin, or wahoo species. Further, because the model developed for NMFS (2009a) was based on expenditure data collected through the MRFSS, 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.

3.8.3 Social and Cultural Environment

The demographic description of the social environment is presented primarily at the county level and will include a brief discussion of the communities within in those counties that are most reliant upon the various species, both commercially and recreationally. Utilizing demographic data at the county level will allow for updated statistics from the Census Bureau which produces

estimates for geographies (counties; minor civil divisions; census designated places, etc.) that are larger than 20,000 prior to the decennial census.[2] Estimates for smaller geographies are not available at this time. Because employment opportunities often occur within a wider geographic boundary than just the community level, a discussion of various demographics within the county is appropriate and will be used to address environmental justice concerns. A more detailed description of environmental justice concerns will be included at the end of this section. The county descriptions will correspond with recent research that was also conducted at the county level concerning social vulnerability and is described below.

The county-level description will focus primarily on the demographic character while fishing activity at the community level will be described where possible. The following is a brief discussion of coastal growth and development that seems to affect many coastal communities, especially those with either or both commercial and recreational working waterfronts that might be reflected in those demographic statistics. 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. This is especially true for Monroe County, which has very limited land area and has seen a steady rise in land values. Recent research on the Key's communities (Shivlani 2009) has described the problem of increasing land values and disappearance of working waterfronts, especially for communities like Key West. 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.

Although the most recent estimates of census data have been used here, many of the statistics related to the economic condition of counties or communities do not capture the recent downturn in the economy, which may have significant impacts on current employment opportunities and business operations. Therefore, in the descriptions of both counties and communities, it should be understood that in terms of unemployment, the current conditions could be worse than

[2] American Community Survey estimates are based on data collected over a three year time period. The estimates represent the average characteristics of population and housing between January 2006 and December 2008 and do not represent a single point in time. Because these data are collected over three years, they include estimates for geographic areas with populations of 20,000 or more.

indicated by the estimates used here. To be consistent, census data are used for the various demographic characteristics and as noted earlier are limited to the most recent estimates which are an average for 2006-2008. Other aspects of trade and market forces as a result of the economic downturn could also affect the business operations of vessels, dealers, wholesalers and retail seafood businesses for the commercial sector and charter services and other support services for the recreational fishery. These may not be reflected in the demographic profile provided here.

3.8.3.1 Marine Related Employment

Other county level tables provide summaries of marine related employment within the coastal counties of the South Atlantic states. These estimates provide the number of sole proprietors (# Prop) and the number of employed persons (# Emp) for various sectors associated with employment in the marine environment. These categories were chosen because the occupations that are represented within each sector often include fishing related activities or fishing related support activities. For instance, the sector entitled Scenic Water includes charter fishermen within its estimate. The sector Shipping includes various shipping containers that would be used by fish houses and others to handle seafood. While these estimates do not encompass all employment related to fishing and its support activities, they do provide some approximation of the amount of activity associated with employment related to both recreational and commercial fishing.

3.8.3.2 Social Vulnerability

Recent research has identified counties along the South Atlantic Coast that may be vulnerable to a variety of coastal hazards through the use of what has been called the Social Vulnerability Index (SoVI) (Cutter et al. 2003). The Index was created by the Hazards Research Lab at the University of South Carolina to understand how places that are susceptible to coastal hazards might also exhibit vulnerabilities to social change or disruptions (http://webra.cas.sc.edu/hvri/products/sovi.aspx#).

These vulnerabilities may come in the form of high unemployment, high poverty rates, low education and other demographic characteristics. In fact, the SoVI is an index that consists of 32 different variables combined into one comprehensive index to measure social vulnerability. Although the SoVI was created to understand social vulnerability to coastal environmental hazards, it can also be interpreted as a general measure of vulnerability to other social disruptions, such as adverse regulatory change or manmade hazards. This does not mean that there will be adverse effects, only that there may be a potential for adverse effects under the right circumstances. Fishing communities in these counties may have more difficulty adjusting to regulatory changes if those impacts affect employment or other critical social capital. At present, a social vulnerability index is being created for fishing communities in the Southeast region with more timely data (the SoVI uses 2000 census data). Until that index is completed, the SoVI will substitute at the county level for a measure of vulnerability for those communities that are within the boundaries of a particular coastal county. This concept is closely tied to environmental justice and the thresholds that are addressed with regard to that concept.

3.8.3.3 Fishing Communities

The communities listed in figures below represent a categorization of communities based upon their overall value of local commercial landings divided by the overall value of South Atlantic commercial landings. These data were assembled from the ALS, which includes all species from both state and federal waters landed in 2008. All communities were ranked on this "local quotient" and divided by those who were above the mean and those below. Those above the mean were then divided into thirds with the top tier classified as Primarily Involved in fishing; the second tier classified as Secondarily Involved; and the third classified as being Tangentially Involved. The communities included within each state map were only those communities that were categorized as Primarily or Secondarily Involved. This breakdown of fisheries involvement is similar to the how communities were categorized in the community profiling of South Atlantic fishing communities (Jepson et al. 2005). However, the categorization within the community profiles included other aspects associated with fishing such as infrastructure and other measures to determine a community's status with regard to reliance upon fishing.

In many cases, descriptions of fishing communities are including only if they have substantial landings of species relevant to this amendment. Many communities have been identified as being primarily or secondarily involved in fishing within each state, however, to conserve space all communities are not profiled within this document.

3.8.3.4 Florida Counties

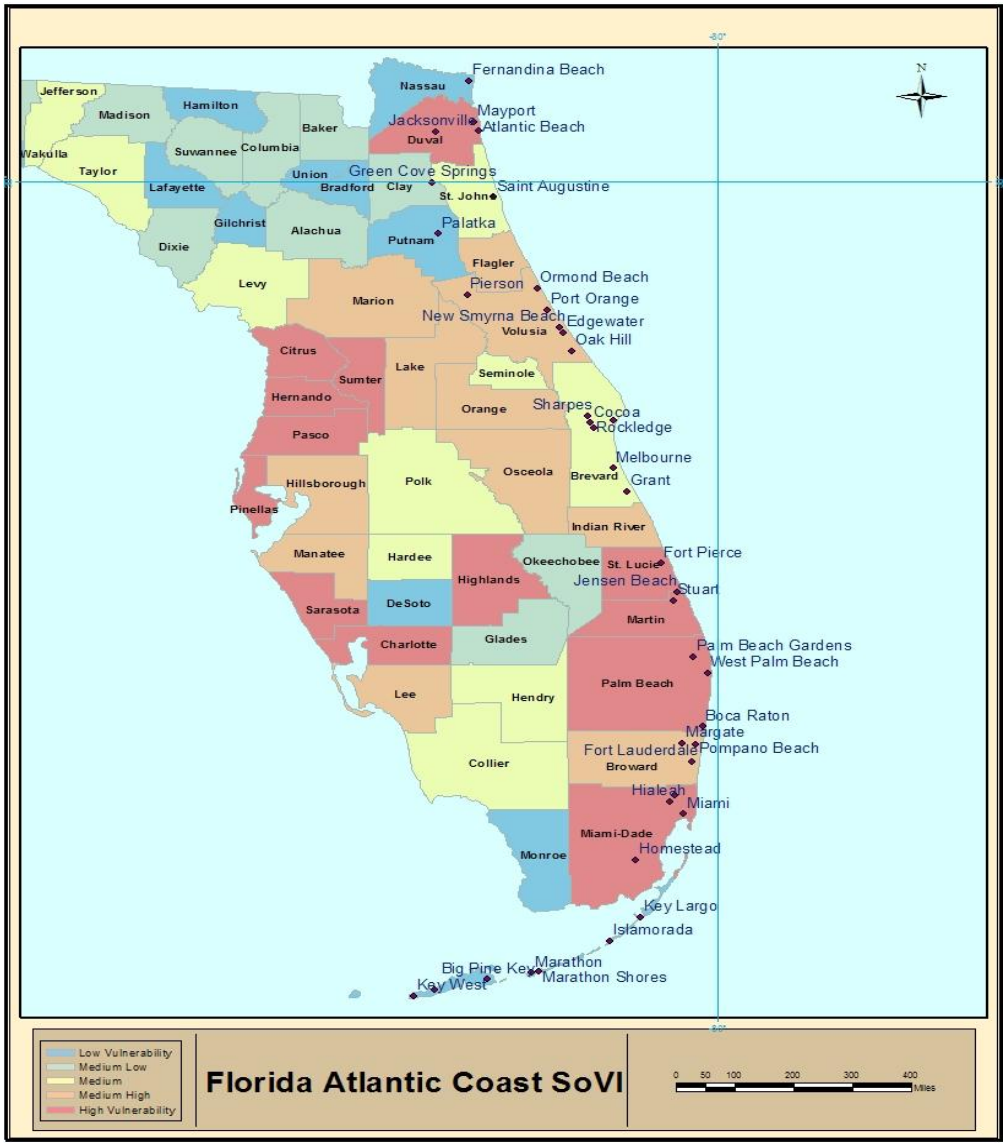

Figure 3-4. The Social Vulnerability Index applied to Florida Counties with Fishing Communities.
Source: http://webra.cas.sc.edu/hvri/products/sovi.aspx#

Those counties in the Florida that were categorized as having high social vulnerability using the SoVI are: Miami-Dade, Palm Beach, Martin, St. Lucie, and Duval; those counties with medium high social vulnerability are: Broward, Indian River, Volusia and Flagler. Much of the Florida eastern coast is classified as either medium high or high social vulnerability. This is likely due to the fact that there are a high number of retirees and a high number of minorities in these counties, especially in south Florida. In terms of environmental justice, which looks at the number of minorities and poverty in relation to the state, the only counties that exceed the

thresholds are Miami-Dade for both poverty and minority population while Broward exceeds the threshold for the latter only.

Marine related employment is an important part of the economy for Florida's east coast as harvesting and selling seafood, tourism, recreational fishing and boat building are all important and related sectors. **Table 3-76** provides the number of proprietors and employees for marine related employment for the Atlantic coastal counties in Florida.

Table 3-76. Marine Related Employment for 2007 in Florida East Coast Counties. Source: Census Bureau 2010.

Florida County	Nassau		Duval		St. Johns		Flagler		Volusia		Brevard	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	0	.	19	.	19	.	7	.	11	.	26	.
Seafood Dealers	.	14	.	92	.	6	.	14	.	16	.	75
Seafood Harvesters	59	.	199	.	103	.	17	.	183	.	282	.
Seafood Retail	.	4	20	60	0	5	0	2	.	.	0	7
Marinas	.	18	.	216	.	19	.	21	.	137	.	223
Processors	0	.	12	210	0	.	0	.	.	.	0	27
Scenic Water	.	8	.	27	.	6	.	1	.	50	.	22
Ship Boat Builders	.	.	.	827	.	333	.	692	.	758	.	846
Shipping Support	.	82	.	1598	.	6	.	1	.	38	.	193
Shipping		8	.	1522	.	.	.	1	.	15	.	137

Nassau County

Nassau County had a total population of 67,663 in 2000 that is estimated to have grown to 68,186 by 2007. Population density was 103 persons per square mile in 2000 and has grown to 105 persons in 2007. The majority of county residents were White (89.5) and the Hispanic population was 2.6 % in 2007. The percent of population that identified themselves as White alone was 87.0% and 8.3% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16% Black. The median age for residents of Nassau County was estimated to have been 41.2, so Nassau County's median age is slightly older than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $59,072, higher than that for the state which was $48,637. There was an estimated 6.0% of the population in the civilian force that was estimated to be unemployed in Nassau County, which was just below the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 7.9% which was lower than the 12.6% for the state as a whole during 2007. Nassau County had a higher owner occupied housing rate higher than the state with 77.7% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

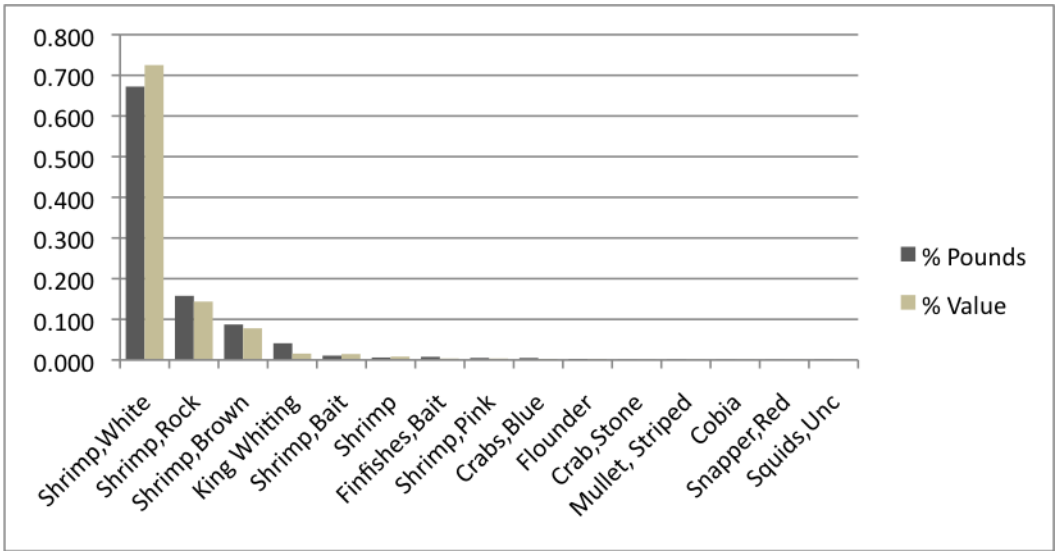

Figure 3-5. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fernandina Beach, Florida.

The only community identified in Nassau County as being either primarily or secondarily involved in fishing was Fernandina Beach. As shown in **Figure 3-5** the majority of landings and value are derived from shrimp with the other top species constituting less than 3%.

Duval County

Duval County had a total population of 778,866 in 2000 that is estimated to have grown to 846,237 by 2007. Population density was 1022 persons per square mile in 2000 and has grown to 1114 persons in 2007. The majority of county residents were White (65.0) and the Hispanic population was 6.1 % in 2007. The percent of population that identified themselves as White alone was 59.5% and 29.9% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16.0% Black in 2007. The median age for residents of Duval County was estimated to have been 36.3, so Duval County's median age is younger than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $50,301, higher than that for the state which was $48,637. There was an estimated 6.5 % of the population in the civilian force that was estimated to be unemployed in Duval County, which was slightly higher than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 12.7% which was almost equal to the 12.6% for the state as a whole during 2007. Duval County had a lower owner occupied housing rate higher than the state with 64.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

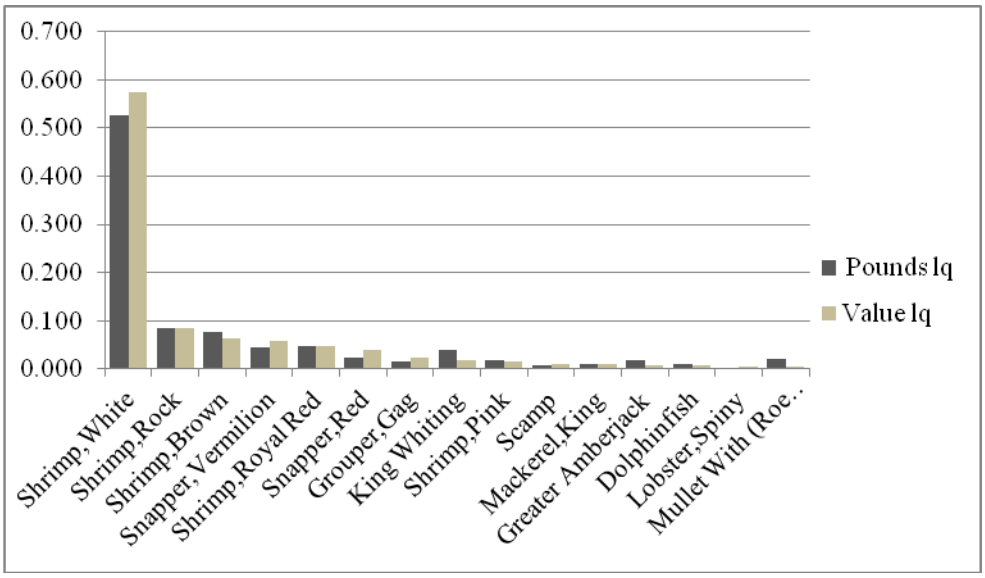

Figure 3-6. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Mayport, Florida.
Source: ALS 2008

The top species with a high local quotient landed in Mayport is white shrimp, other species like vermilion snapper and red snapper both have a local quotient of lbs and value that are over 3% for each of those species (**Figure 3-6**).

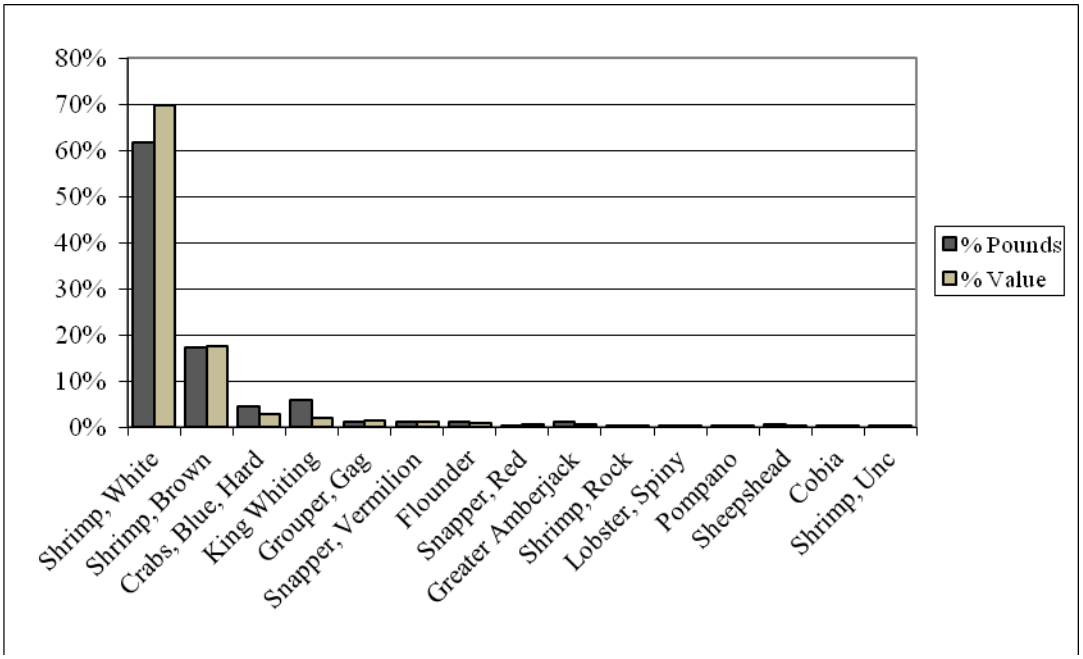

Figure 3-7. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Atlantic Beach, Florida.
Source: ALS 2008

The local quotient for landing and value for species other than shrimp as depicted in **Figure 3-7** are relatively low for Atlantic Beach. Gag grouper, vermilion snapper and red snapper make up less than 3% of the local quotient combined.

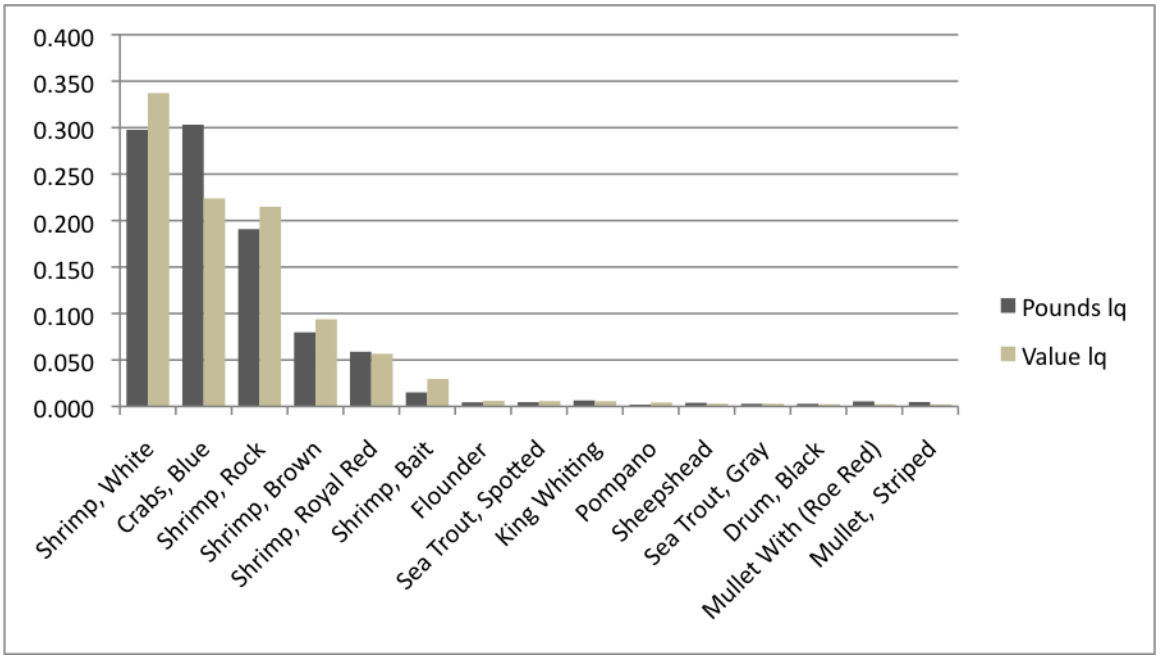

Figure 3-8. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Jacksonville, Florida.
Source: ALS 2008

Jacksonville much like the other communities in Duval County is heavily reliant upon shrimp as shown in **Figure 3-8.** Most other species makeup less than 2% individually in local quotient , out of total value for the community.

Duval County is classified as being highly vulnerable on the social vulnerability scale, however, it will depend upon whether or not communities within this county are affected by the alternatives within this amendment. Of those communities above, Mayport and Atlantic Beach are the only communities that have landings and value of snapper grouper species within the top fifteen.

St. Johns County

St. Johns County had a total population of 123,148 in 2000 that is estimated to have grown to 174,959 by 2007. Population density was 205 persons per square mile in 2000 and has grown to 292 persons in 2007. The majority of county residents were White (90.7) and the Hispanic population was 4.4 % in 2007. The percent of population that identified themselves as White alone was 86.2% and 6.7% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16.0% Black in 2007. The median age for residents of St. Johns County was estimated to have been 40.7, so St. Johns County's median age is almost equal to the state's 40.1 as a whole. Median household income for 2007 was estimated to be $63,927, much higher than that for the state which was $48,637. There was an estimated 5.6 % of the

population in the civilian force that was estimated to be unemployed in St. Johns County, which was below the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 7.4% which was much lower than the 12.6% for the state as a whole during 2007. St. Johns County had a higher owner occupied housing rate higher than the state with 76.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

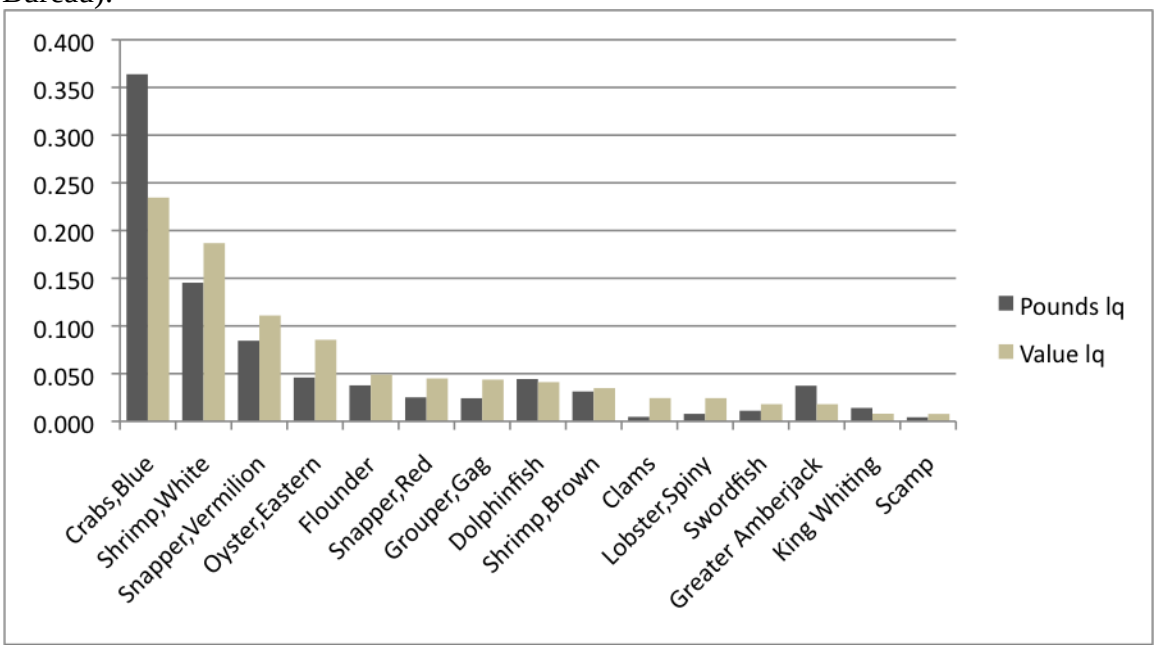

Figure 3-9. Proportion (lq) of landings and value for top fifteen species out of total landings and value for St. Augustine, Florida.
Source: ALS 2008

The community of St. Augustine has several snapper grouper species with a local quotient of landings and value of over 3%. Vermilion snapper, red snapper and gag grouper all contribute at least 4% of value lq each, with vermilion snapper contributing over 10% of value according to **Figure 3-9.**

Flagler County

Flagler County had a total population of 49,832 in 2000 that is estimated to have grown to 87,233 by 2007. Population density was 101 persons per square mile in 2000 and has grown to 182 persons in 2007. The majority of county residents were White (86.0) and the Hispanic population was 8.0 % in 2007. The percent of population that identified themselves as White alone was 78.2% and 11.2% Black. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% and 16.0% Black in 2007. The median age for residents of Flagler County was estimated to have been 43.9, so Flagler County's median age is higher than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $45,674, lower than that for the state which was $48,637. There was an estimated 5.0 % of the population in the civilian force that was estimated to be unemployed in Flagler County, which was below the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was just lower than the 12.6% for the state as a whole during 2007.

Flagler County had a higher owner occupied housing rate higher than the state with 77.0% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

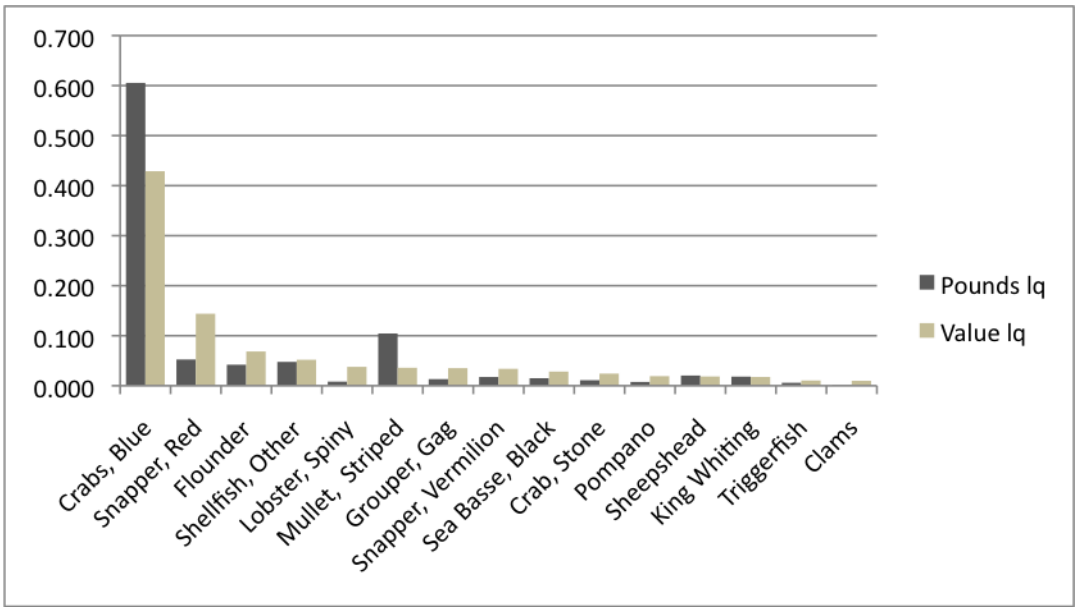

Figure 3-10. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Ormond Beach, Florida.
Source: ALS 2008

Red snapper contribute over 10% of landings value for the community of Ormond Beach with gag grouper and vermilion snapper close to 3% of landings value as depicted in **Figure 3-10.**

Volusia County

Volusia County had a total population of 443,343 in 2000 that is estimated to have grown to 497,597 by 2007. Population density was 402 persons per square mile in 2000 and has grown to 454 persons in 2007. The majority of county residents were White (85.6) and the Hispanic population was 10.2 % in 2007. The percent of population that identified themselves as White alone was 76.8%. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Volusia County was estimated to have been 42.5, so Volusia County's median age is slightly older than the state's 40.1 as a whole. Median household income for 2007 was estimated to be $44,304, lower than that for the state which was $48,637. There was an estimated 5.5 % of the population in the civilian force that was estimated to be unemployed in Volusia County, which was below the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 13.1% which was higher than the 12.6% for the state as a whole during 2007. Volusia County had a higher owner occupied housing rate higher than the state with 75.9% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

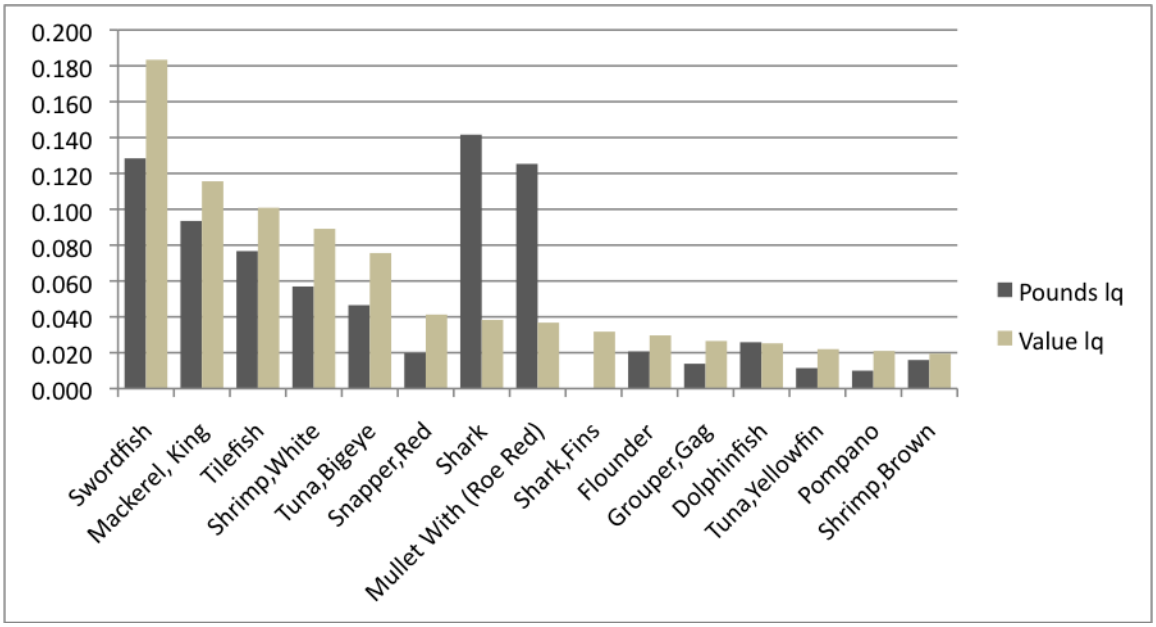

Figure 3-11. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Port Orange, Florida.
Source: ALS 2008

The community of Port Orange gets about 10% of its landed value of commercial harvest from tilefish according to **Figure 3-11**. The next closest snapper grouper species is red snapper with 4% and then gag grouper which contributes just over 2% of the landed value.

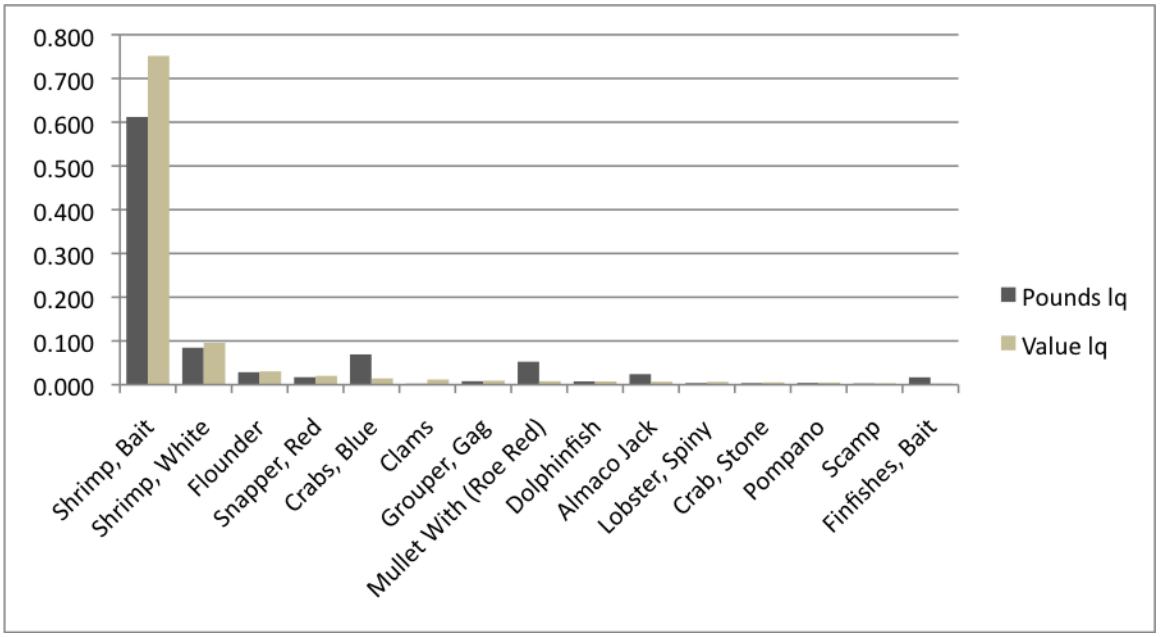

Figure 3-12. Proportion (lq) of landings and value for top fifteen species out of total landings and value for New Smyrna Beach, Florida.
Source: ALS 2008

Figure 3-12 shows the only snapper grouper species within the top fifteen for New Smyrna are red snapper, which contributes only 2% to landings value for the community and gag grouper which is less than 1% both in landings and value. Dolphinfish are also within the top fifteen, but constitutes less than 1% landings and value also.

Brevard County

Brevard County had a total population of 476,230 in 2000 that is estimated to have grown to 534,165 by 2007. Population density was 467 persons per square mile in 2000 and has grown to 527 persons in 2007. The majority of residents (86.0%) were identified a White in 2007 and the Hispanic population was 6.9% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for Brevard County was 79.5% with a Black population of 10.4%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of Brevard County was estimated to have been 43.6 while the median age for the state of Florida was 40.1 by 2007 so Brevard County's median age is older than the state as a whole. Median household income for 2007 was estimated to be $50,080, higher than that for the state which was $48,637. There was an estimated 6.3 % of the population in the civilian force that was estimated to be unemployed in Brevard County, which was almost equal to the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 9.6% which was below the 12.6% for the state as a whole during 2007. Brevard County had a higher owner occupied housing rate than the state with over 76.9% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

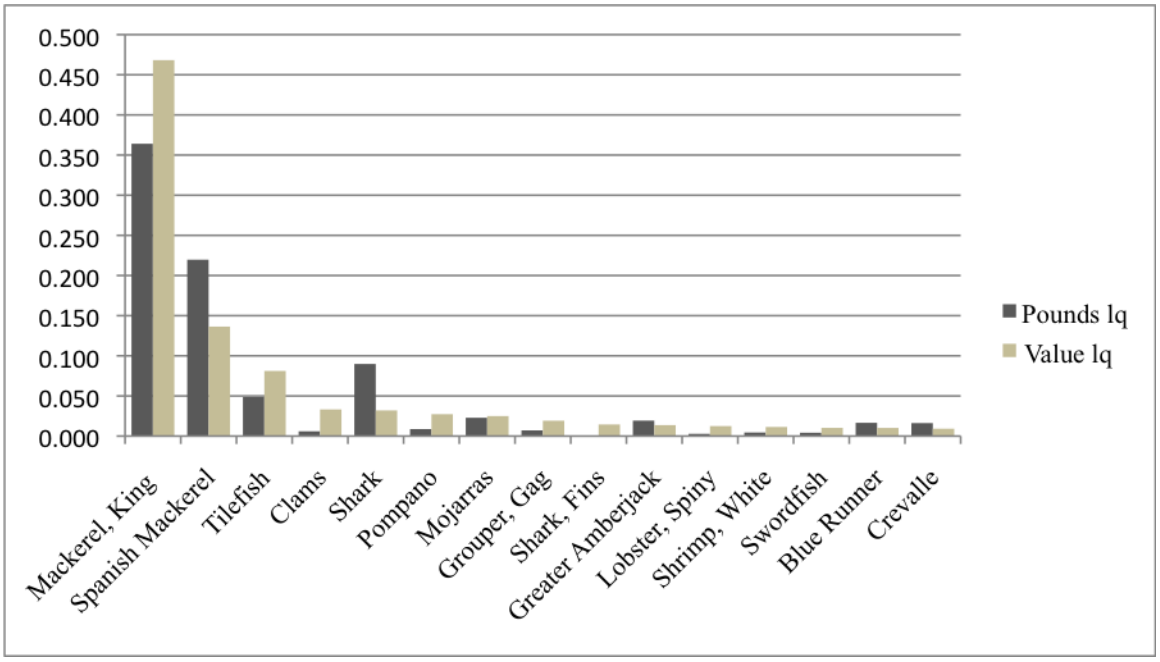

Figure 3-13. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Cocoa, Florida.
Source: ALS 2008

Gag grouper and generic tilefish are the only snapper grouper species within the top fifteen for the community of Cocoa as depicted in **Figure 3-13.** Tilefish make almost 8% of landed value for the community, while gag are less than 2% of landed value.

Table 3-77. Marine Related Employment for 2007 in Florida Southeast Coast Counties. Source: Census Bureau 2010.

Florida County	Indian River		St. Lucie		Martin		Palm Beach		Broward		Miami-Dade		Monroe	
Sector	Prop #	Emp #	Prop #	Emp #	Prop #	Emp #	Prop #	Emp #	Prop #	Emp #	Prop #	Emp #	Prop #	Emp #
Boat Dealers	11	.	16	.	60	.	108	.	253	.	108	.		
Seafood Dealers	.	1	136	.	.	9	.	46	.	406	.	.	.	112
Seafood Harvesters	70	.	0	.	128	.	287	.	228	.	287	.	934	.
Seafood Retail	0	.	.	2	0	93	18	57	28	291	18	.	7	7
Marinas	.	17	.	49	.	113	10	887	.	707	10	.	.	191
Processors	.	.	.	.	0	.	.	176	0	142	.	.	0	.
Scenic Water	.	13	.	9	.	42	.	94	.	313	.	.	.	315
Ship Boat Builders	.	76	.	502	.	340	.	100	.	776	.	.	.	17
Shipping Support	.	8	.	7	.	13	.	756	.	1557	.	.	.	67
Shipping	.	15	.	38	.	2		69		995	.	.	.	35

Indian River County

Indian River County had a total population of 112,947 in 2000 that is estimated to have grown to 131,020 by 2007. Population density was 224 persons per square mile in 2000 and has grown to 262 persons in 2007. The majority of residents (88.5%) were identified a White in 2007 and the Hispanic population was 9.7% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for Indian River County was 79.5% with a Black population of 8.9%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of Indian River County was estimated to have been 45.4 while the median age for the State of Florida was 40.1 by 2007 so Indian River County's median age is older than the state as a whole. Median household income for 2007 was estimated to be $47,069, lower than that for the state which was $48,637. There was an estimated 7.2 % of the population in the civilian force that was estimated to be unemployed in Indian River County, which was higher than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.4% which was below the 12.6% for the state as a whole during 2007. Indian River County had a higher owner occupied housing rate than the state with over 74.8% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

Sebastian is one of the communities within Indian River County that has landings from the ALS dataset but not included in the list of primarily or secondarily involved in fishing. In **Figure 3-14** the snapper grouper species that has the highest landings and value local quotient is gag grouper which makes up about 5% of landings value within the community.

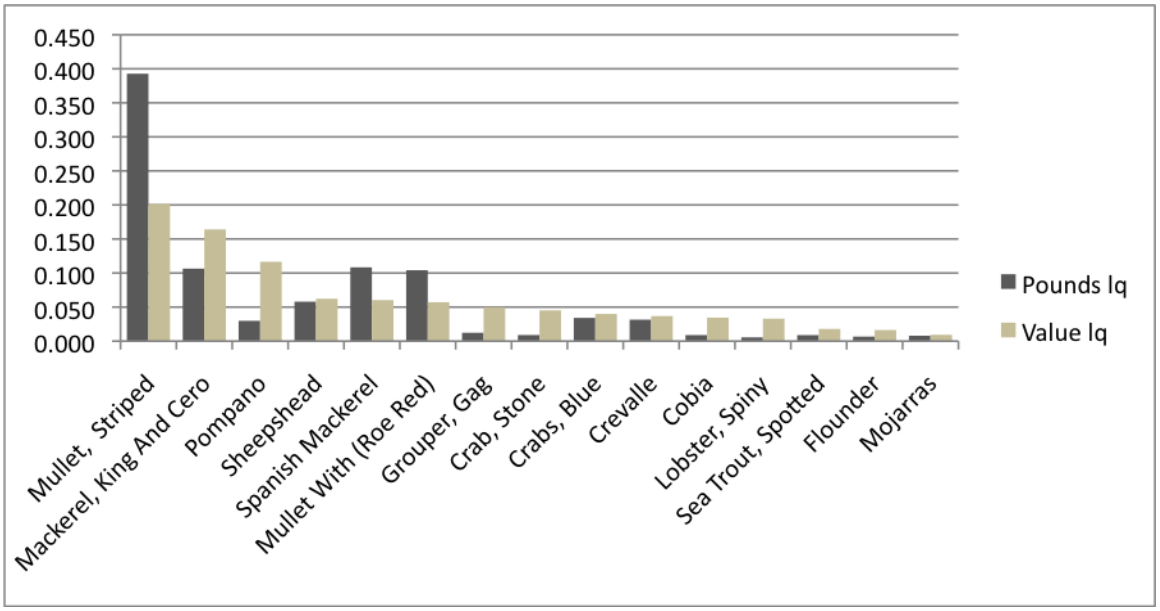

Figure 3-14. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Sebastian, Florida.
Source: ALS 2008

St. Lucie County

St. Lucie County had a total population of 192,695 in 2000 that is estimated to have grown to 258,272 by 2007. Population density was 336 persons per square mile in 2000 and has grown to 456 persons in 2007. The majority of residents (77.5%) were identified a White in 2007 and the Hispanic population was 14.9% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for St. Lucie County was 65.2% with a Black population of 18.1%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of St. Lucie County was estimated to have been 40.1 while the median age for the state of Florida was 40.1 by 2007 so St. Lucie County's median age is equal to the state as a whole. Median household income for 2007 was estimated to be $46,829, lower than that for the state which was $48,637. There was an estimated 8.7 % of the population in the civilian force that was estimated to be unemployed in St. Lucie County, which was higher than the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.6% which was below the 12.6% for the state as a whole during 2007. St. Lucie County had a higher owner occupied housing rate than the state with over 76.0% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

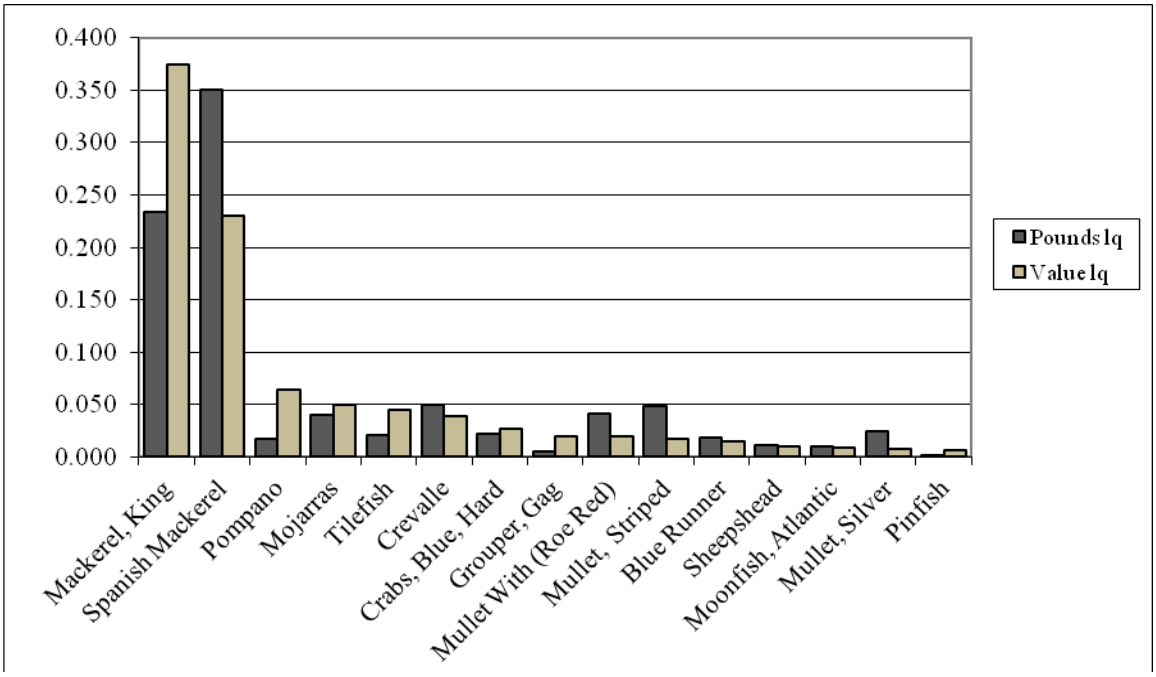

Figure 3-15. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fort Pierce, Florida.
Source: ALS 2008

While coastal pelagics make up the majority of landings and value for the community of Fort Pierce, tilefish and gag grouper contribute over 5% of value for landings combined according to **Figure 3-15.**

Martin County

Martin County had a total population of 126,731 in 2000 that is estimated to have grown to 138,495 by 2007. The majority of residents (88.2%) were identified a White in 2007 and the Hispanic population was 10.1% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for Martin County was 81.6% with a Black population of 6.8%, while the state was estimated to be 60.7% White alone with 16.0% of the population Black in 2007. The median age for residents of Martin County was estimated to have been 47.1 while the median age for the State of Florida was 40.1 by 2007 so Martin County's median age is higher than the state as a whole. Median household income for 2007 was estimated to be $54,182, higher than that for the state which was $48,637. There was an estimated 6.9 % of the population in the civilian force that was estimated to be unemployed in Martin County, which was slightly higher than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 9.3% which was below the 12.6% for the state as a whole during 2007. Martin County had a higher owner occupied housing rate than the state with over 79.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

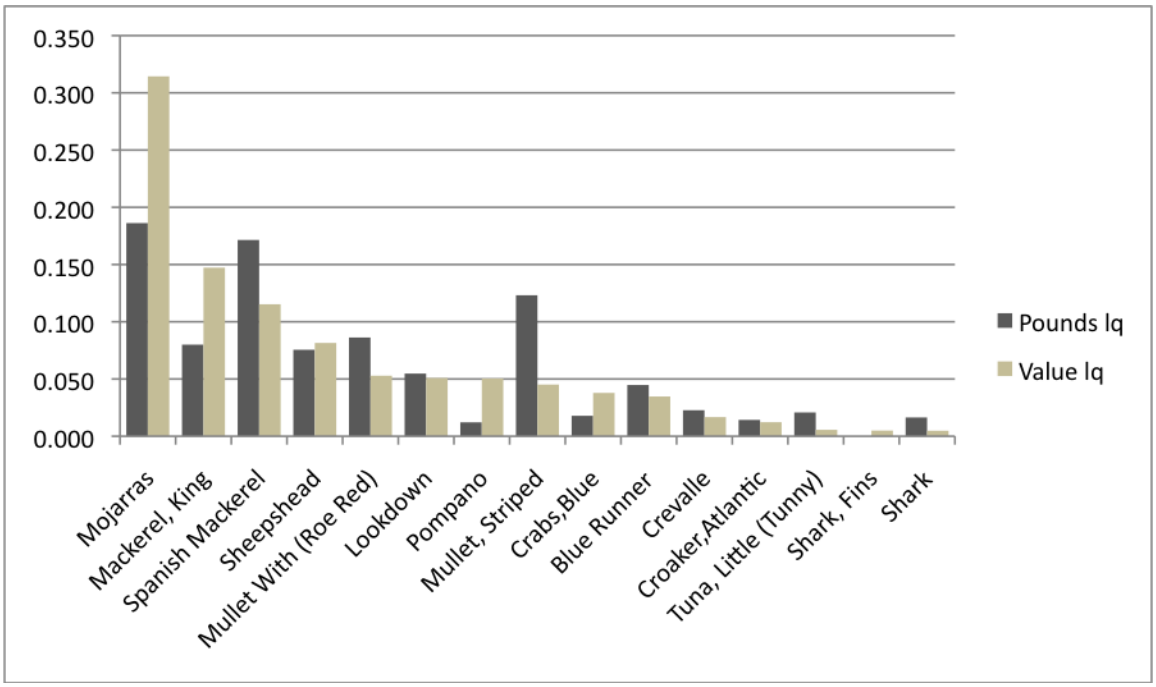

Figure 3-16. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Stuart, Florida.
Source: ALS 2008

Stuart is the only community in Martin County with substantial landings to be considered primarily or secondarily involved in fishing. Much of the landings and value for the community are derived from coastal pelagics as seen in **Figure 3-16.**

Palm Beach County

Palm Beach County had a total population of 1,131,191 in 2000 that is estimated to have grown to 1,754,846 by 2007. The majority of residents (75.6%) were identified a White in 2007 and the Hispanic population was 17.3% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Palm Beach County was estimated to have been 43.0 while the median age for the State of Florida was 40.1 by 2007 so Palm Beach County's median age is higher than the state as a whole. There was an estimated 6.3 % of the population in the civilian force that was estimated to be unemployed in Palm Beach County, which was almost the same as the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was below the 12.6% for the state as a whole during 2007. Palm Beach County had a higher owner occupied housing rate than the state with over 74.3% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

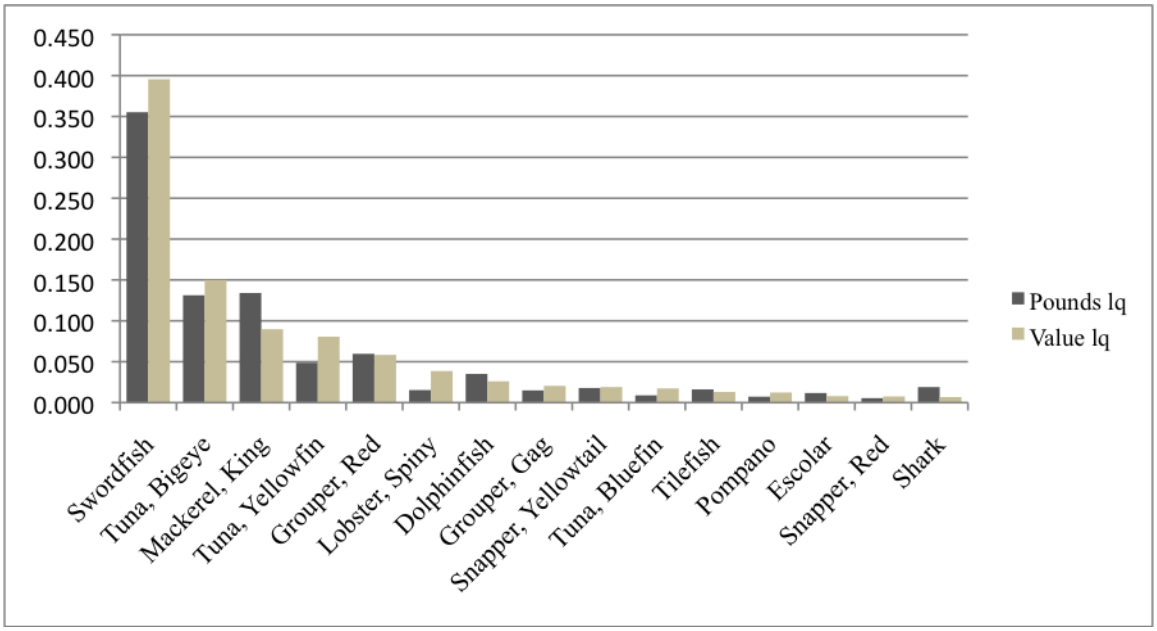

Figure 3-17. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Palm Beach Gardens, Florida.
Source: ALS 2008

The community of Palm Beach Gardens derives over 5% of landings value from red grouper with dolphinfish, yellowtail snapper and gag grouper contributing a little less than 3% each from **Figure 3-17.** Tilefish and red snapper are other snapper grouper species that are found in the top fifteen species for local quotient of landings and value.

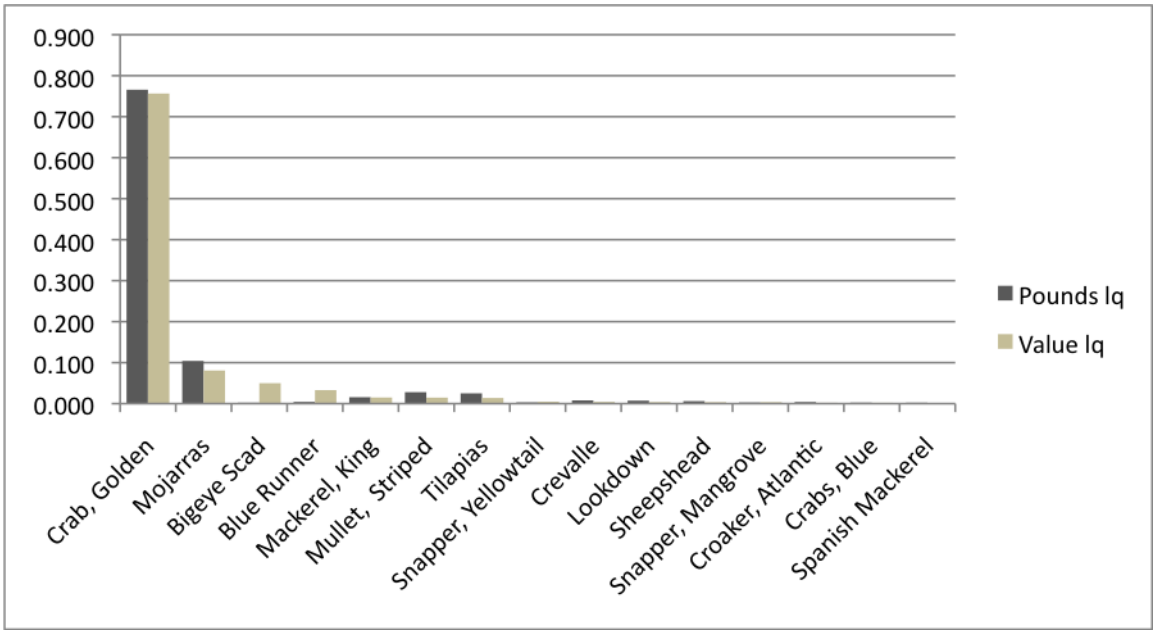

Figure 3-18. Proportion (lq) of landings and value for top fifteen species out of total landings and value for West Palm Beach, Florida.
Source: ALS 2008

Golden crab is by far the most important species in terms of landings and value for the community of West Palm Beach. Over 70% of landings and value are derived from this species according to **Figure 3-18.**

Broward County

Broward County had a total population of 1,623,018 in 2000 that is estimated to have grown to 1,754,846 by 2007. The majority of residents were identified a White (92.0%) in 2000 and was estimated to have dropped slightly to 67.8% in 2007. The Hispanic population was 23.3% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Broward County was estimated to have been 39.6 while the median age for the State of Florida was 40.1 by 2007 so Broward County's median age is close to the state as a whole. There was an estimated 6.3 % of the population in the civilian force that was estimated to be unemployed in Broward County, which was almost the same as the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was below the 12.6% for the state as a whole during 2007. Broward County had a slightly higher owner occupied housing rate than the state with slightly over 71.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

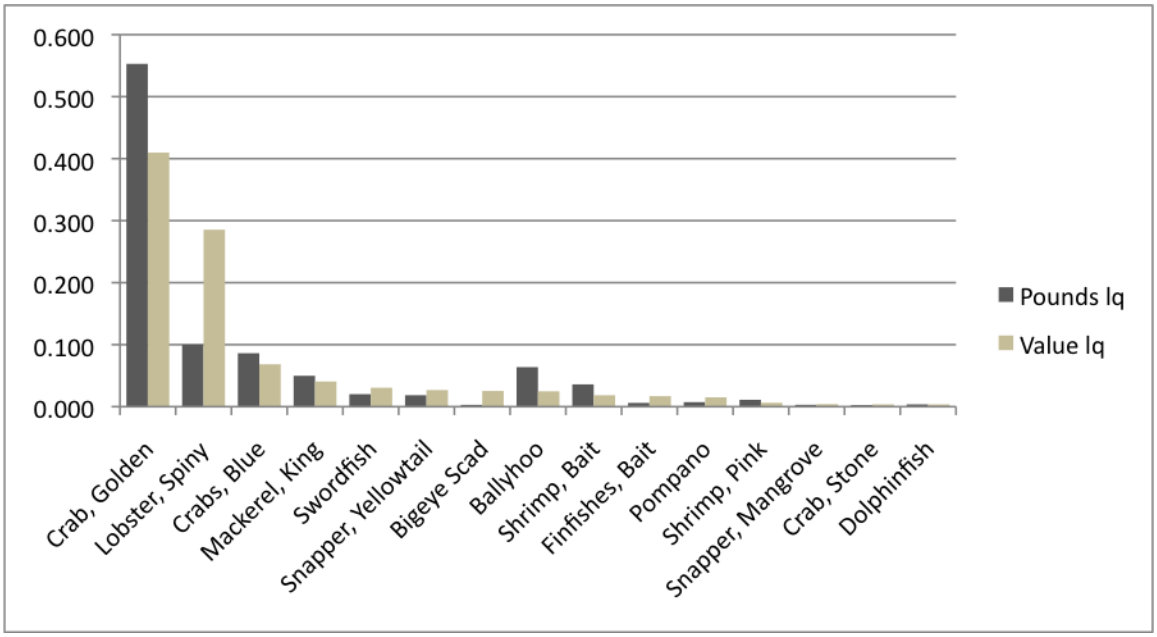

Figure 3-19. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Fort Lauderdale, Florida**.**
Source: ALS 2008

In Broward County, the community of Ft. Lauderdale derives a considerable amount of its landings and value from golden crab. Over 50% of landings and 40% of value come from that species as depicted in **Figure 3-19**. Yellowtail snapper contributes around 2% of value and landings. Other managed species addressed in this amendment are included in the top fifteen species but contribute much less.

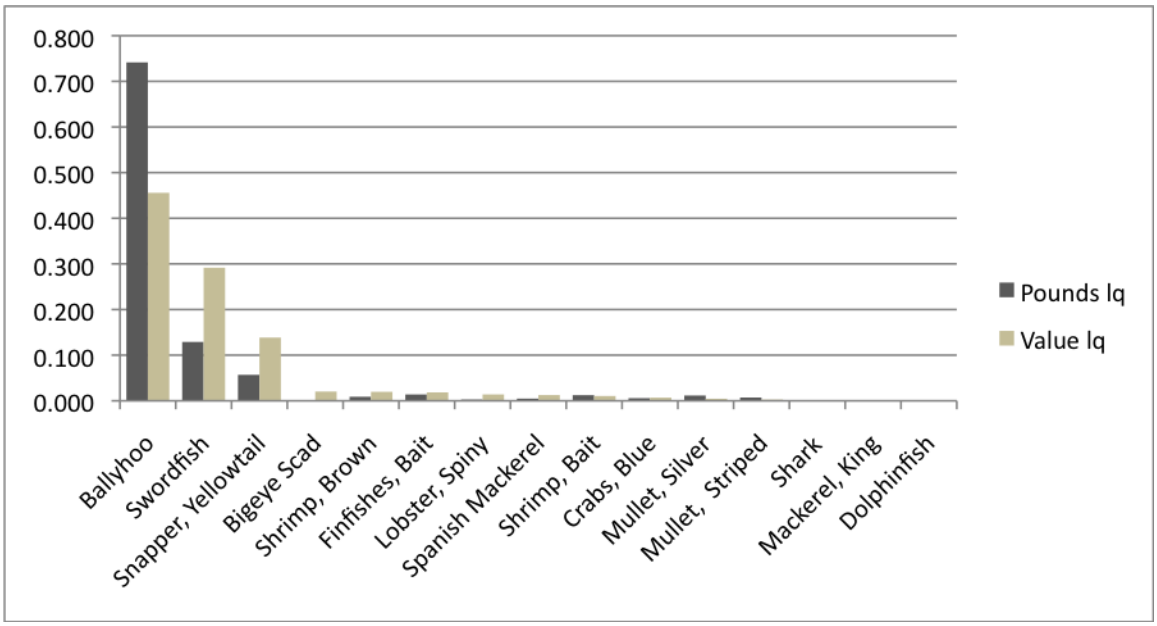

Figure 3-20. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Pompano Beach, Florida.
Source: ALS 2008

According to **Figure 3-20** yellowtail snapper contribute over 10% of value for the community of Pompano Beach. No other snapper grouper species was in the top fifteen in terms of landings and value for the community.

Miami-Dade County

Miami-Dade County had a total population of 2,253,779 in 2000 that is estimated to have grown to 2,387,170 by 2007. The majority of residents were identified a White (74.4%) in 2007 and the Hispanic population was 61.7%, the largest in the state. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Miami-Dade County was estimated to have been 38.7 while the median age for the State of Florida was 40 by 2007 so Miami-Dade County's median age is slightly younger than the state as a whole. There was an estimated 5.9 % of the population in the civilian force that was estimated to be unemployed in Miami-Dade County, which was somewhat lower than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 16.1% which was above the 12.6% for the state as a whole during 2007. Miami-Dade County had a lower owner occupied housing rate than the state with over 60.1% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

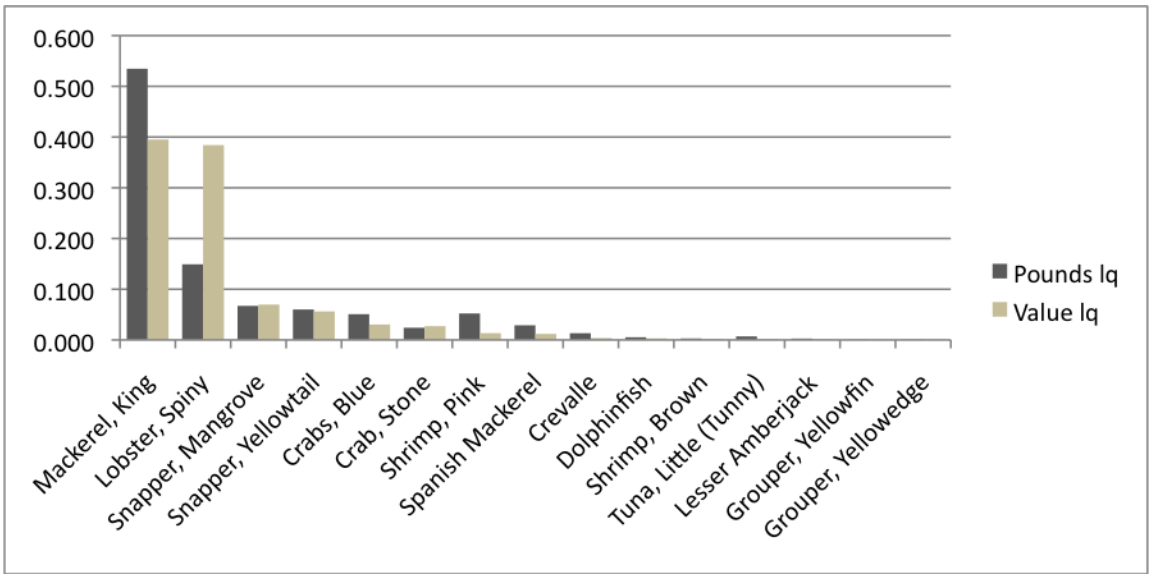

Figure 3-21. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Hialeah, Florida.
Source: ALS 2008

While there are a number of snapper grouper species within the top fifteen species landed in Hialeah (**Figure 3-21**), mangrove and yellowtail snappers are the only species that contribute over 5% each in terms of landings and value for the community overall. King mackerel leads in terms of value and landings with close to 40% of value and over 50% of landings

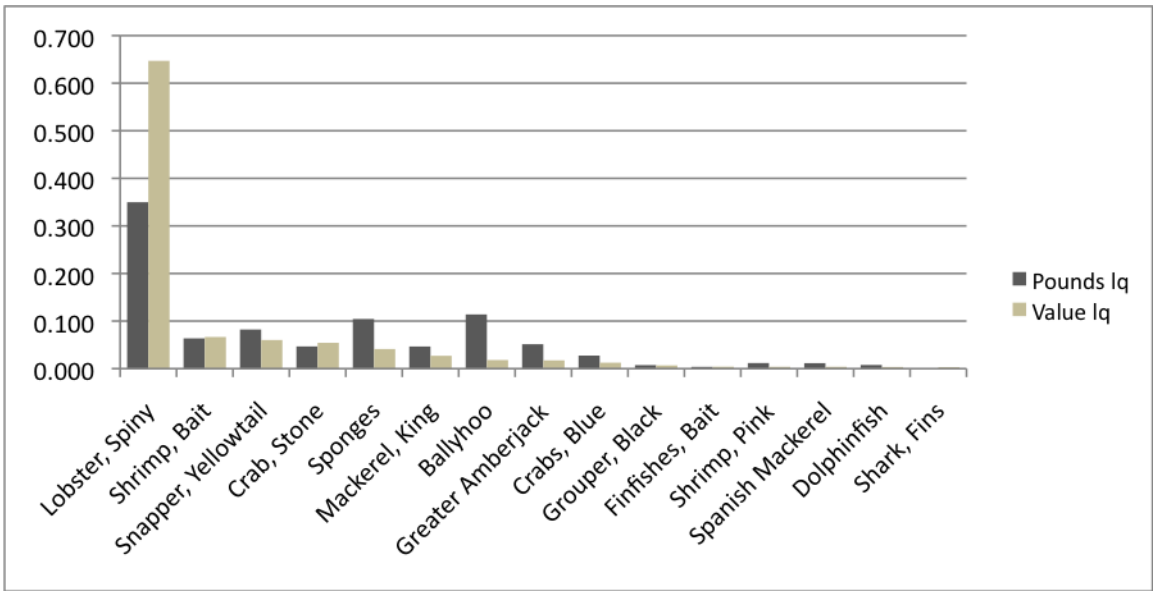

Figure 3-22. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Miami, Florida.
Source: ALS 2008

Spiny lobster makes up the substantial portion of value from landings for Miami in **Figure 3-22** with over 60%. Yellowtail snapper is the highest snapper grouper species with about 6% value

and 8% of landings. Greater amberjack is the next highest snapper grouper species with 5% of landings but less than 2% of value.

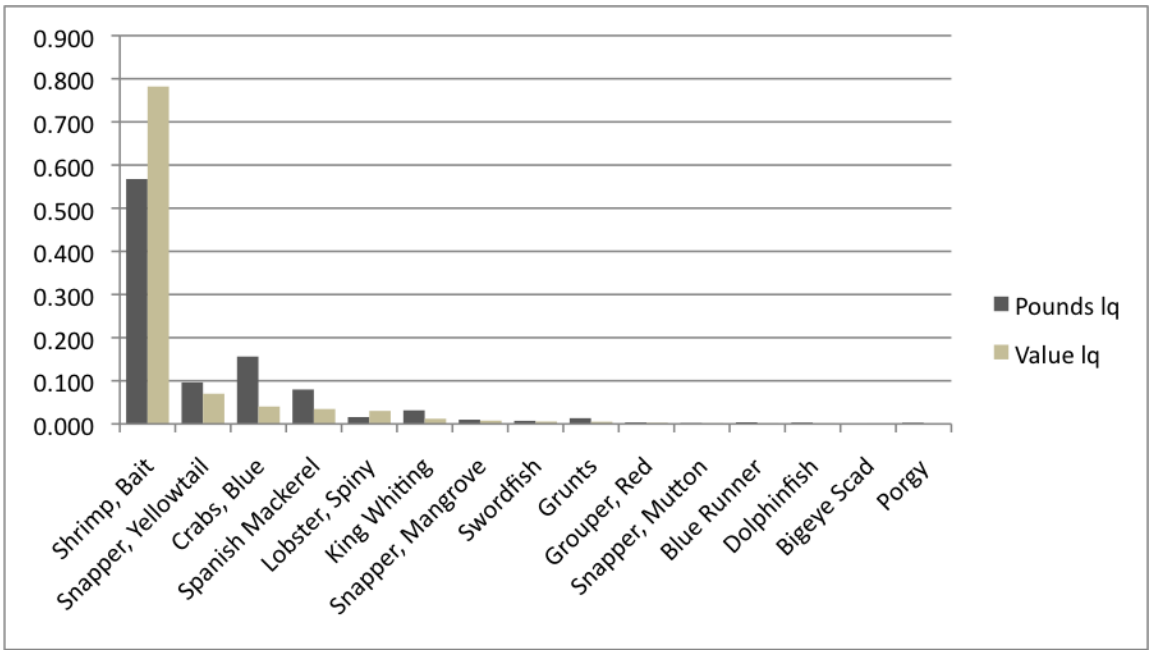

Figure 3-23. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Homestead, Florida.
Source: ALS 2008

Homestead derives a considerable amount of its landings and value from bait shrimp with yellowtail snapper the next closes species in **Figure 3-23**. Yellowtail contribute close to 10% in terms of landings 8% of value. Several snapper grouper species are included in the top fifteen species but only mangrove snapper contribute more than 1% of landings and less than 1% of value.

Monroe County

Monroe County had a total population of 79,589 in 2000 that is estimated to have fallen to 74,397 by 2007. The majority of residents were identified a White (92.0%) in 2000 and was estimated to have dropped slightly to 90.4% in 2007. The Hispanic population has grown from 16.0 % in 2000 to 18.0% in 2007. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Monroe County was estimated to have been 47.2, which is slightly higher than it was in 2000 when it was 43.0. The median age for the State of Florida was 38.7 in 2000 and was estimated to have increased to 40.1 by 2007 so Monroe County's median age is considerably older than the state as a whole. There was an estimated 2.8 % of the population in the civilian force that was estimated to be unemployed in Monroe County, which was quite a bit lower than the State's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 10.1% which was below the 12.6% for the state as a whole during 2007. Monroe County had a slightly higher owner occupied housing rate than the state with slightly over 71.2% of owner occupied housing to the State's 70.3% estimated for 2007 (U.S. Census Bureau).

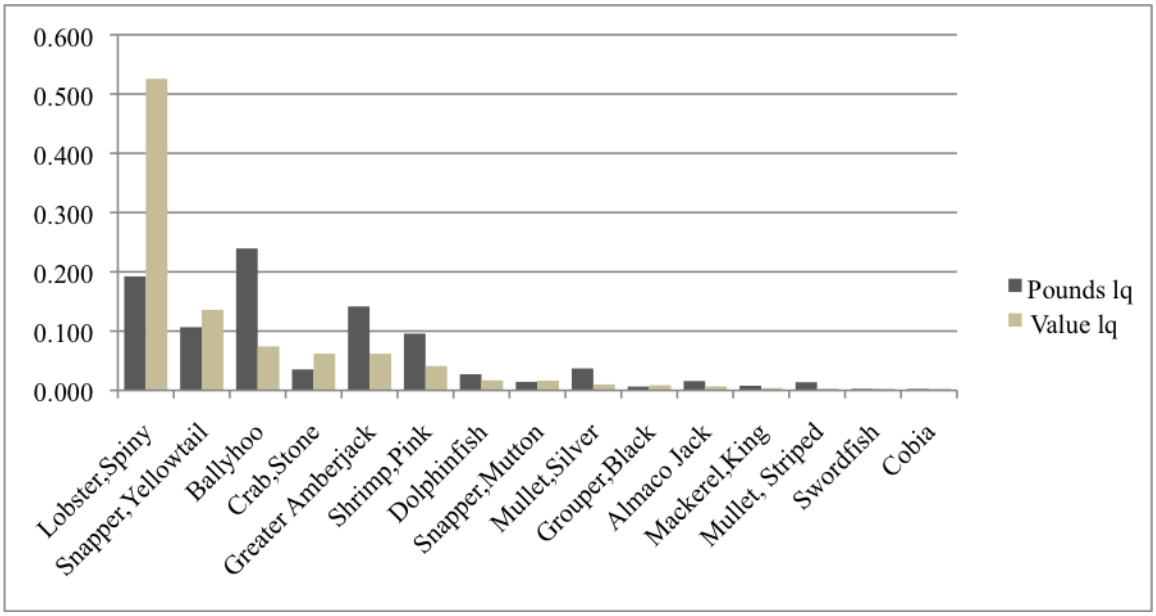

Figure 3-24. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key Largo, Florida.
Source: ALS 2008

A number of snapper grouper species are listed within the top fifteen species for Key Largo. Yellowtail snapper contribute over 10% of value and landings according to **Figure 3-24.** Greater amberjack is third in terms of lbs landed with over 14%, yet only accounts for just over 6% of landings value. Several other snapper grouper species are within the top fifteen but none contribute more than 2% to landings or value.

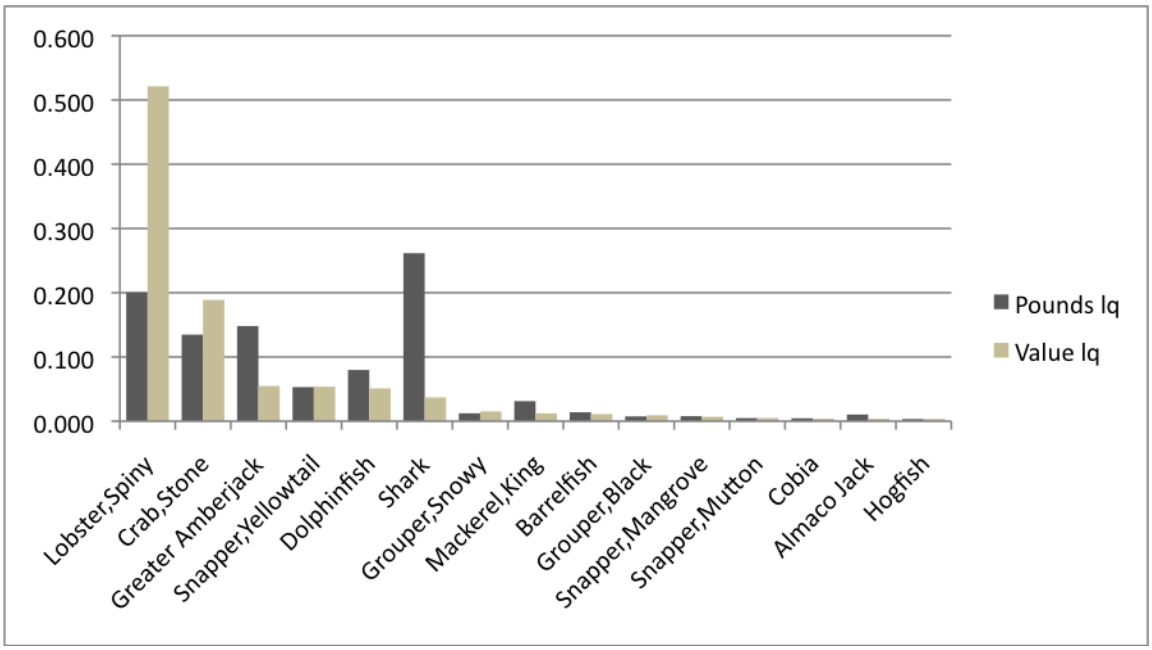

Figure 3-25. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Islamorada, Florida.
Source: ALS 2008

Like most Keys communties, Islamorada landings value is dominated by spiny lobster, however, greater amberjack contribute almost as much in terms of lbs landed as spiny lobster with almost 15% as shown in **Figure 3-25.** Other snapper grouper species with comparable value include yellowtail snapper and dolphinfish also have a local quotient value of just over 5%.

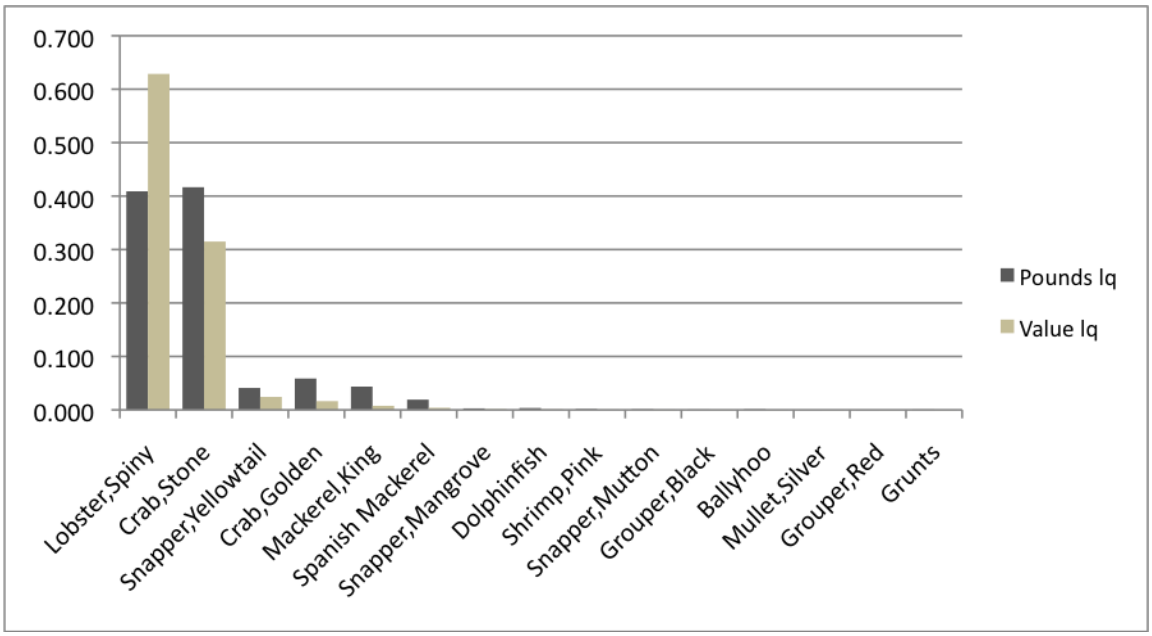

Figure 3-26. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Marathon, Florida.
Source: ALS 2008

Marathon also has a considerable amount of its local quotient derived from spiny lobster, but stone crab is the second most important species with just over 40% of lbs landed and 30% of overall value. Yellow tail snapper is the next most important species followed by golden crab with both contributing around 2% in terms of value according the **Figure 3-26.**

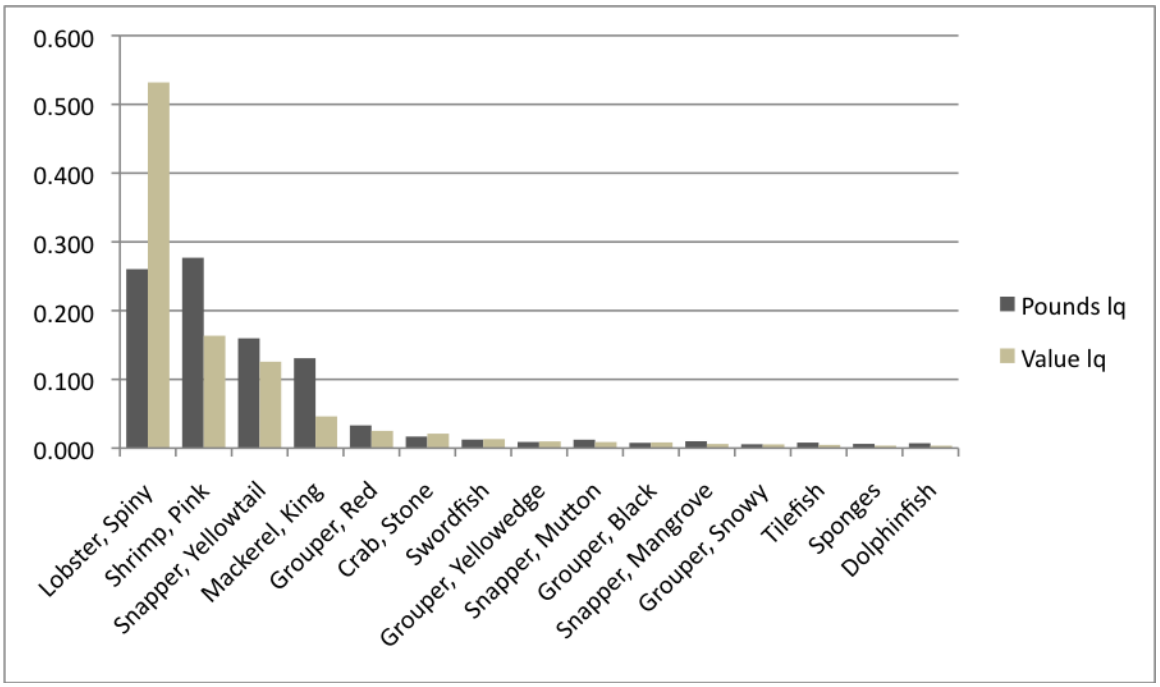

Figure 3-27. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key West, Florida.
Source: ALS 2008

Several snapper grouper species are included in the top fifteen species for Key West, but value of landings is dominated by spiny lobster as with most Keys communities. Yellowtail snapper, however, do contribute over 15% of lbs landed and over 12% of overall value. Red grouper is next with a little over 3% in landings and 2.5% of value.

3.8.3.5 Georgia Counties

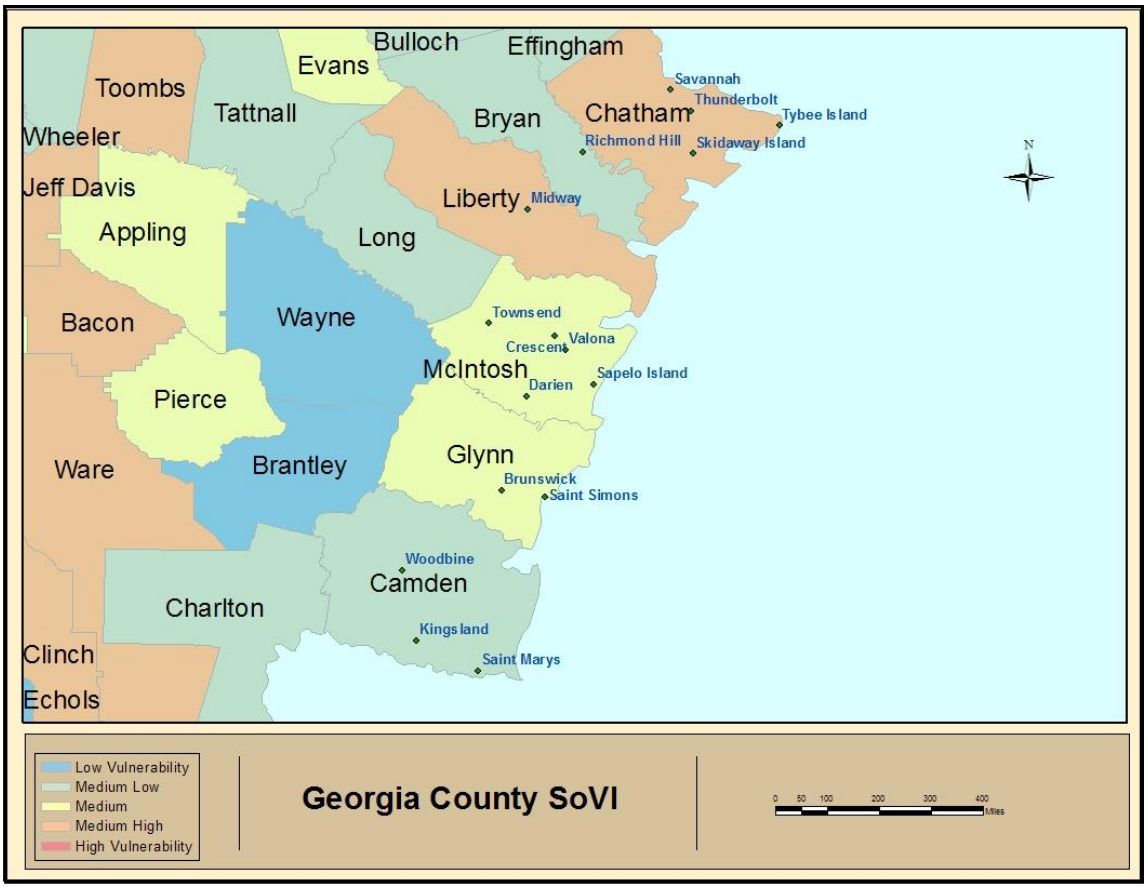

Figure 3-28. The Social Vulnerability Index applied to Georgia Counties.
Source http://webra.cas.sc.edu/hvri/products/sovi.aspx#

Those counties in Georgia which were categorized as having medium high vulnerability were Liberty and Chatham counties. The fishing communities within those counties are: Savannah, Tybee Island, Thunderbolt, Skidaway Island and Midway.

Table 3-78. Marine Related Employment for 2007 in Georgia Coastal Counties.
Source: Census Bureau 2010.

Georgia County	Camden		Glynn		McIntosh		Liberty		Bryan		Chatham	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	.	.	.	.	.	.	.	.	0	.	5	.
Seafood Dealers	.	.	.	183	.	1	.	.	.	.	.	6
Seafood Harvesters	13	.	60	.	100	.	10	.	13		73	
Seafood Retail	.	.	.	.	.	.	.	9	.	.	6	49
Marinas		13	.	85	.	.	.	.	.	2		110
Processors	.	.	.	846	.	13	.	.	.	.	.	.
Scenic Water	.	.	.	15	.	.	.	.	.	.	.	62
Ship Boat Builders	.	.	.	.	.	9	.	.	.	.	.	297
Shipping Support	.	.	.	299	.	27	.	9	.	.	.	2515
Shipping	.	.	.	7	.	27	.	.	.	.	.	43

All coastal counties within Georgia have employment in the seafood harvester sector in **Table 3-78.** Other marine related sectors are more sporadic. Seafood dealers appear in only Glynn, McIntosh and Chatham. Processor employment is important in Glynn with 846 persons employed in that sector. The marina sector has employees in Camden, Glynn, Bryan and Chatham. Shipping support has the highest number of employees of any sector with over 2500 in Chatham County.

Camden County

Camden County had a total population of 43,664 in 2000 that is estimated to have grown to 46,710 by 2007. Population density was 71 persons per square mile in 2000 and has grown to 79 persons in 2007. The majority of county residents were White (77.3%) and the Hispanic population was 3.1% in 2007. The percent of population that identified themselves as White alone was 73.6% with 20.5% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Camden County was estimated to have been 31.4, so Camden County's median age is younger than the State's 34.8. Median household income for 2007 was estimated to be $48,634, lower than that for the state which was $50,549. There was an estimated 6.5% of the population in the civilian force that was estimated to be unemployed in Camden County, which was just slightly lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 12.9% which was lower than the 14.5% for the state as a whole during 2007. Camden County had a lower owner occupied housing rate than the state with 85% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

The three communities identified as being primarily or secondarily involved in fishing are St. Mary's, Woodbine and Kingsland in Camden County. The majority of landings in each community are shrimp and blue crabs with no snapper grouper species nor dolphin or wahoo being landed in the top fifteen species. Golden crab was not landed in any of these communities.

Glynn County

Glynn County had a total population of 67,568 in 2000 that is estimated to have grown to 74,614 by 2007. Population density was 161 persons per square mile in 2000 and has grown to 179 persons in 2007. The majority of county residents were White (72.2%) and the Hispanic population was 4.6% in 2007. The percent of population that identified themselves as White alone was 67.6% with 26.0% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Glynn County was estimated to have been 37.3, so Glynn County's median age is older than the State's 34.8. Median household income for 2007 was estimated to be $51,785, higher than that for the state which was $50,549. There was an estimated 3.9% of the population in the civilian force that was estimated to be unemployed in Glynn County, which was much lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 15.1% which was higher than the 14.5% for the state as a whole during 2007. Glynn County had a lower owner occupied housing rate than the state with 77.1% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Two communities in Glynn County were identified as primarily or secondarily involved in fishing, St. Simon Island and Brunswick, based upon landings in 2008. As with the communities above in Camden there were no snapper grouper species within the top fifteen species landed nor was there any golden crab, dolphin or wahoo.

McIntosh County

McIntosh County has a smaller population base than the other coastal counties in Georgia, which prevents the county from estimated updates on census population as only populations greater than 65,000 are updated. However, five communities were identified as primarily or secondarily involved in fishing: Darien, Sapelo Island, Valona, Crescent, and Townsend.

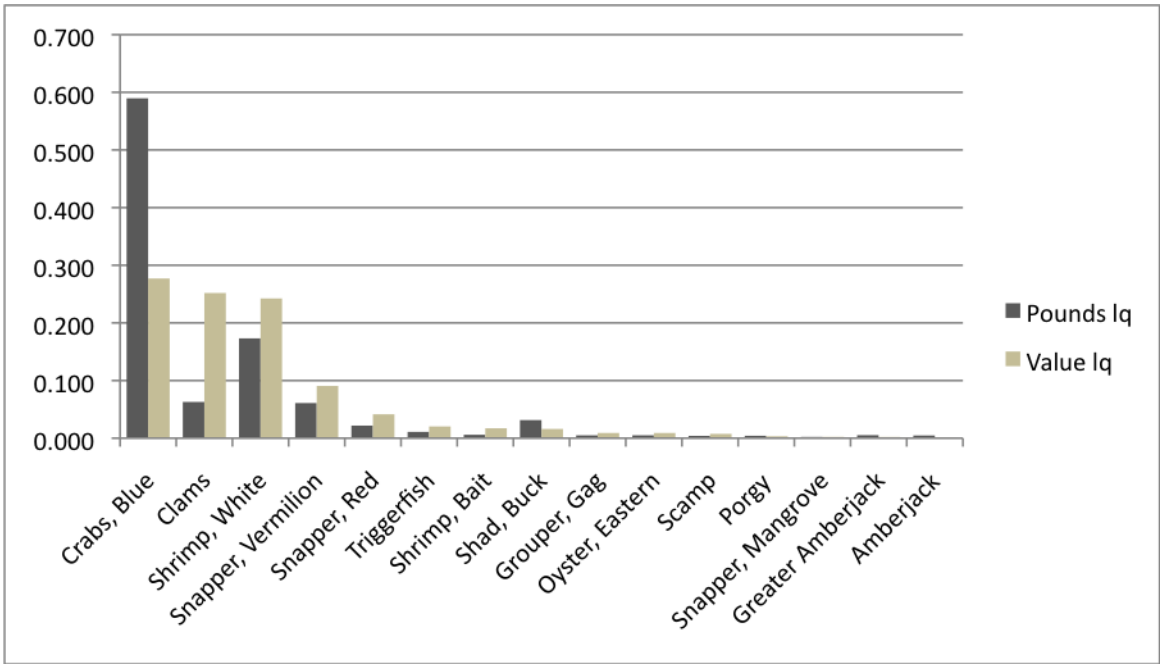

Figure 3-29. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Townsend, Georgia.
Source: ALS 2008

Townsend in McIntosh County has numerous snapper grouper species within the top fifteen species in terms of value local quotient as depicted in **Figure 3-29.** Vermilion snapper is the highest in value with over 9% of value. Red snapper are next with just over 4% of value and trigger fish follow with 2%.

Liberty County

Liberty County had a total population of 61,610 in 2000 that is estimated to have decreased to 59,747 by 2007. Population density was 125 persons per square mile in 2000 and decreased to 124 persons in 2007. The majority of county residents were White (51.5%) and the Hispanic population was 7.0% in 2007. The percent of population that identified themselves as White alone was 46.7% with 42.9% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Liberty County was estimated to have been 27.4, so Liberty County's median age is much younger than the State's 34.8. Median household income for 2007 was estimated to be $41,689, lower than that for the state which was $50,549. There was an estimated 9.3% of the population in the civilian force that was estimated to be unemployed in Liberty County, which was much higher than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 16.3% which was higher than the 14.5% for the state as a whole during 2007. Liberty County had a higher owner occupied housing rate than the state with 88.3% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Midway was the only community identified as being either primarily or secondarily involved in fishing in Liberty County. Landings and value for Midway consist of shrimp, crab and clams. No snapper grouper or dolphin or wahoo are reported landed in the community.

Bryan County

Bryan County had a total population of 28,417 in 2000 that is estimated to have increased to 29,956 by 2007. Population density was 58 persons per square mile in 2000 and has grown to 69 persons in 2007. The majority of county residents were White (82.7%) and the Hispanic population was 3.0% in 2007. The percent of population that identified themselves as White alone was 78.6% with 15.0% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Bryan County was estimated to have been 33.4, so Bryan County's median age is a little younger than the State's 34.8. Median household income for 2007 was estimated to be $66,054, much higher than that for the state which was $50,549. There was an estimated 3.9% of the population in the civilian force that was estimated to be unemployed in Bryan County, which was much lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 6.9% which was much lower than the 14.5% for the state as a whole during 2007. Bryan County had a higher owner occupied housing rate than the state with 89.7% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Richmond Hill was the only community identified as being primarily or secondarily involved in fishing in Bryan County. Like other coastal fishing communities in Georgia landings come solely from blue crabs and shrimp for the community of Richmond Hill.

Chatham County

Chatham County had a total population of 232,347 in 2000 that is estimated to have increased to 247,833 by 2007. Population density was 547 persons per square mile in 2000 and has grown to 585 persons in 2007. The majority of county residents were White (56.2%) and the Hispanic population was 3.1% in 2007. The percent of population that identified themselves as White alone was 53.2% with 40.7% of the population Black. Georgia as a state had an estimated 63.3% White population and Hispanics made up 7.7% of its total population and 30.4% of persons were Black. The White alone population for the state was estimated to be 68.5% in 2007. The median age for residents of Chatham County was estimated to have been 34.8, so Chatham County's median age is equal to the State's 34.8. Median household income for 2007 was estimated to be $44,990, lower than that for the state which was $50,549. There was an estimated 4.9% of the population in the civilian force that was estimated to be unemployed in Chatham County, which was lower than the State's unemployment rate of 6.9%. The percentage of persons below the poverty level was estimated at 16.0% which was higher than the 14.5% for the state as a whole during 2007. Chatham County's owner occupied housing rate was almost equal to the state with 86.8% compared to the State's 86.6% estimated for 2007 (U.S. Census Bureau).

Savannah, Tybee Island, Thunderbolt, Skidaway Island were all identified as being primarily or secondarily involved in fishing within Chatham County. Chatham County was also identified as

being vulnerable according to the Social Vulnerability Index. Of the four communities, Savannah was the only community in which snapper grouper species were listed within the top fifteen species as shown in **Figure 3-30.** However, none of these species consisted of more than 1% of landings or value. As for most coastal Georgia fishing communities landings were comprised primarily of blue crabs and penaeid shrimp.

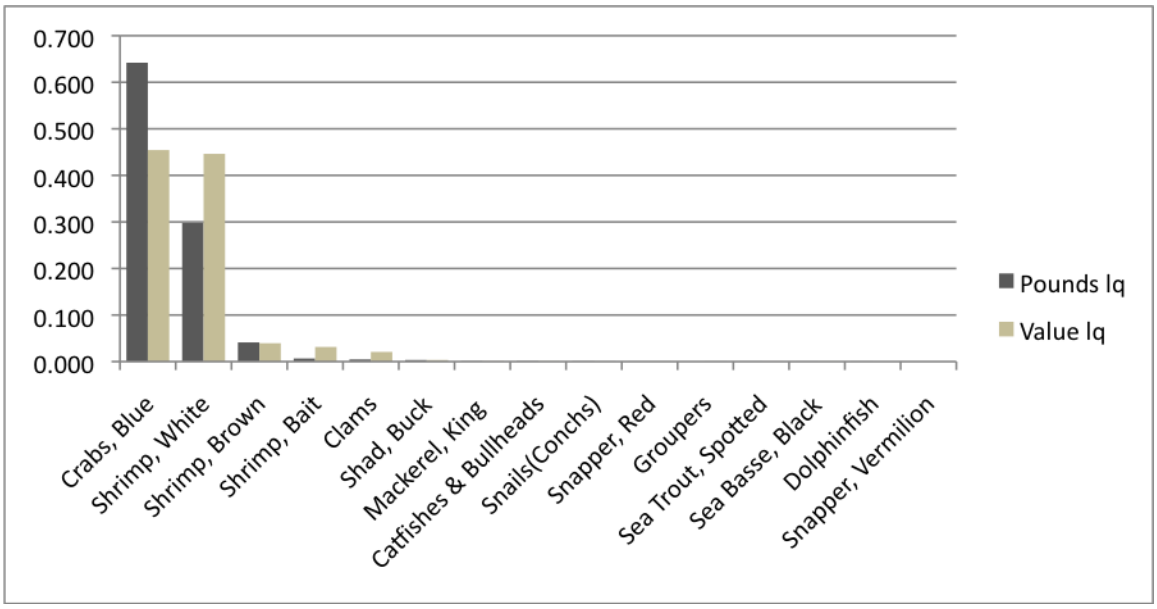

Figure 3-30. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Savannah, Georgia.
Source: ALS 2008

3.8.3.6 South Carolina Counties

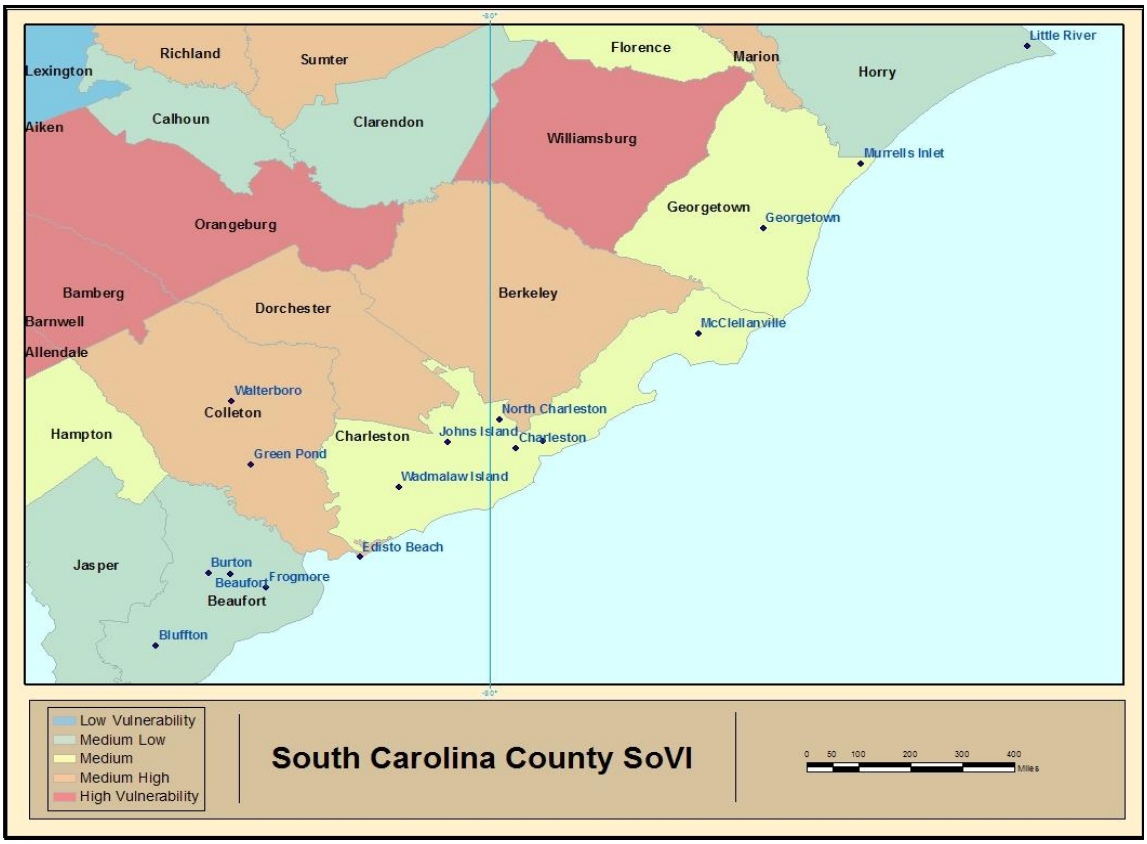

Figure 3-31. The Social Vulnerability Index applied to South Carolina Counties
Source: http://webra.cas.sc.edu/hvri/products/sovi.aspx#

There were no coastal counties in South Carolina which were categorized as having high social vulnerability with Colleton County the only coastal county with medium high vulnerability. The communities of Walterboro, Green Pond and Edisto Beach are located within Colleton County.

Table 3-79. Marine Related Employment for 2007 in South Carolina Coastal Counties. Source: Census Bureau 2010.

South Carolina County	Beaufort		Charleston		Colleton		Georgetown		Horry	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	7	.	18		.	.	.	.	7	.
Seafood Dealers	.	26	.	115	.	.	.	25	.	21
Seafood Harvesters	99	.	168		18	.	91	.	47	.
Seafood Retail	7	13	8	76	.	.	.	14	5	25
Marinas	.	62	.	115	.	5	.	39	.	59
Processors	.	12	4	4	.	.	.	.	.	.
Scenic Water	.	36	.	137	.	.	.	18	.	15
Ship Boat Builders	.	2	.	640	.	.	.	2	.	2
Shipping Support	.	4	.	1101	.	.	.	25	.	.
Shipping	.	11	.	121	.	.	.	.	.	2

This does not mean the communities located within other coastal counties are not susceptible to social disruptions as a result of management actions. Based upon this index, those communities within Colleton County may be more susceptible or have more difficulty adapting to disruptions, whether natural or man-made.

Beaufort County

Beaufort County had a total population of 120,948 in 2000 that is estimated to have grown to 146,743 by 2007. Population density was 206 persons per square mile in 2000 and has grown to 251 persons in 2007. The majority of county residents were White (75.2%) and the Hispanic population was 9.6% in 2007. The percent of population that identified themselves as White alone was 67.7% with 21.1% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Beaufort County was estimated to have been 38.1, so Beaufort County's median age is older than the State's 37.3. Median household income for 2007 was estimated to be $54,356, higher than that for the state which was $44,326. There was an estimated 5.9% of the population in the civilian force that was estimated to be unemployed in Beaufort County, which was just slightly lower than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 10.3% which was lower than the 15.5% for the state as a whole during 2007. Beaufort County had a lower owner occupied housing rate than the state with 71.9% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

The communities within Beaufort County do not have substantial landings of snapper grouper species or dolphin wahoo and therefore do not have figures documenting the local quotient for those species.

Charleston County

Charleston County had a total population of 309,978 in 2000 that is estimated to have grown to 344,064 by 2007. Population density was 338 persons per square mile in 2000 and has grown to 373 persons in 2007. The majority of county residents were White (65.4%) and the Hispanic

population was 3.7% in 2007. The percent of population that identified themselves as White alone was 62.6% with 31.6% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Charleston County was estimated to have been 36.7, so Charleston County's median age is slightly younger than the State's 37.3. Median household income for 2007 was estimated to be $49,118, higher than that for the state which was $44,326. There was an estimated 5.9% of the population in the civilian force that was estimated to be unemployed in Charleston County, which was lower than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 10.3% which was lower than the 15.5% for the state as a whole during 2007. Charleston County had a lower owner occupied housing rate than the state with 71.9% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

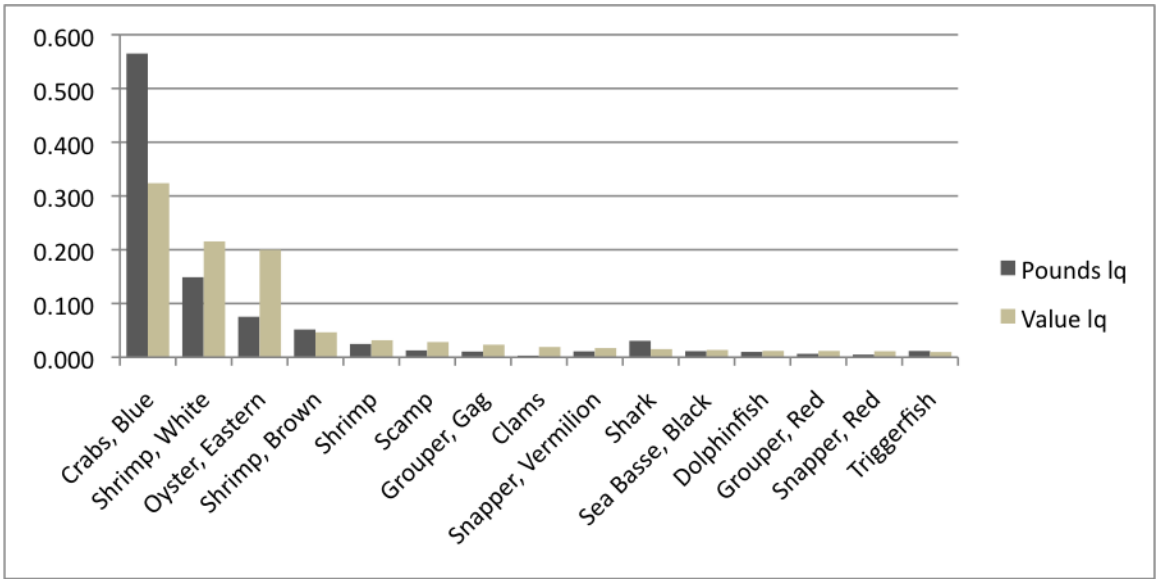

Figure 3-32. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Charleston, South Carolina.
Source: ALS 2008

There are a number of snapper grouper species that are in the top fifteen species in terms of landings and value for Charleston. Scamp is the top species in terms of value according to **Figure 3-32** with slightly less than 3% of landed value overall. Gag grouper, vermilion snapper and black sea bass follow with less than 2% of value and lbs landed each.

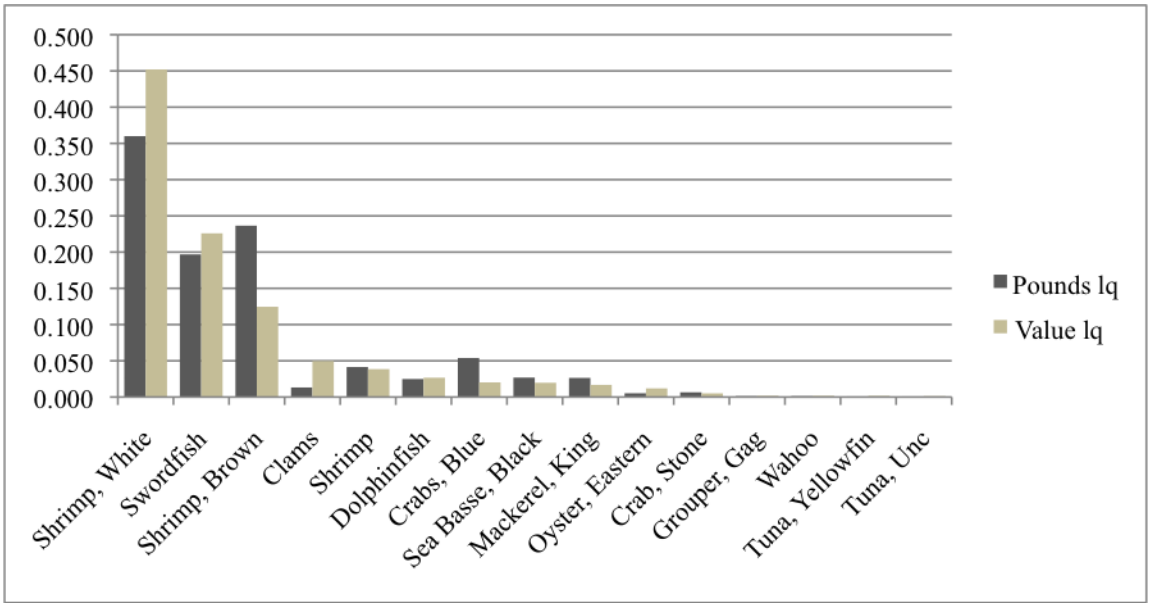

Figure 3-33. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Mount Pleasant, South Carolina.
Source: ALS 2008

For the community of Mount Pleasant dolphinfish contribute about 3% of value to overall landed value for the community as depicted in **Figure 3-33**. Black sea bass are the next highest valued snapper grouper species with 2% of value. Gag grouper and wahoo are both in the top fifteen but makeup up less than 1% each.

Colleton County

Colleton County has a smaller population base than the other coastal counties in South Carolina, which excludes the county from estimated updates on census population. However, the communities of Walterboro, Green Pond and Edisto Beach are located within Colleton County. Landings in these communities were dominated by blue crab and shrimp with relatively little, if any, snapper grouper species or dolphin wahoo.

Georgetown County

Georgetown County had a total population of 55,762 in 2000 that is estimated to have grown to 60,344 by 2007. Population density was 69 persons per square mile in 2000 and has grown to 74 persons in 2007. The majority of county residents were White (64.1%) and the Hispanic population was too small to estimate in 2007. The percent of population that identified themselves as White alone was 64.1% with 33.9% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Georgetown County was estimated to have been 41.1, so Georgetown County's median age is slightly older than the State's 37.3. Median household income for 2007 was estimated to be $47,686, higher than that for the state which was $44,326. There was an estimated 7.8% of the population in the civilian

force that was estimated to be unemployed in Georgetown County, which was slightly higher than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 19.1% which was higher than the 15.5% for the state as a whole during 2007. Georgetown County had a much lower owner occupied housing rate than the state with 65.4% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

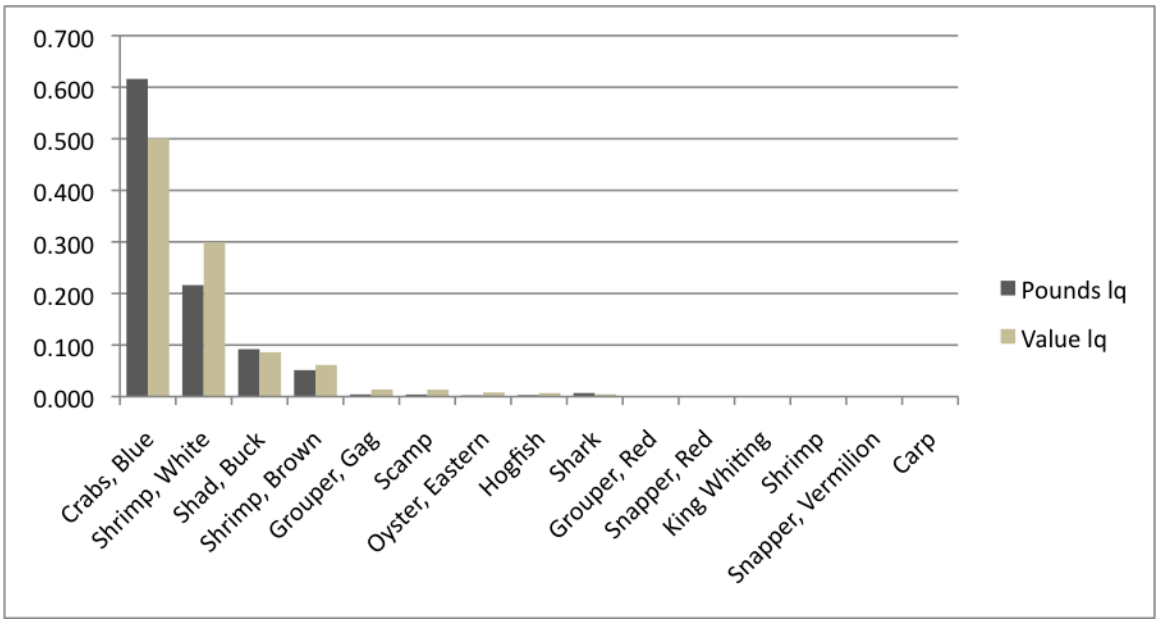

Figure 3-34. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Georgetown, South Carolina.
Source: ALS 2008

Of the snapper grouper species landed in Georgetown, gag grouper is ranked the highest in terms of overall value contributing just over 1% as with scamp as shown in **Figure 3-34.** Other species like red and vermilion snapper are also listed in the top fifteen, but contribute less than 1% each.

Horry County

Horry County had a total population of 196,660 in 2000 that is estimated to have grown to 248,862 by 2007. Population density was 173 persons per square mile in 2000 and has grown to 221 persons in 2007. The majority of county residents were White (81.3%) and the Hispanic population was 4.3% in 2007. The percent of population that identified themselves as White alone was 78.8% with 14.7% of the population Black. South Carolina as a state had an estimated 68.7% White population and Hispanics made up 3.8% of its total population and 29% of persons were Black. The White alone population for the state was estimated to be 65.2% in 2007. The median age for residents of Horry County was estimated to have been 39.6, so Horry County's median age is slightly older than the State's 37.3. Median household income for 2007 was estimated to be $43,270, lower than that for the state which was $44,326. There was an estimated 5.5% of the population in the civilian force that was estimated to be unemployed in Horry County, which was lower than the State's unemployment rate of 7.3%. The percentage of persons below the poverty level was estimated at 15.4% which was close to the 15.5% for the state as a whole during 2007. Horry County had a much lower owner occupied housing rate than the state with 65.1% compared to the State's 83.5% estimated for 2007 (U.S. Census Bureau).

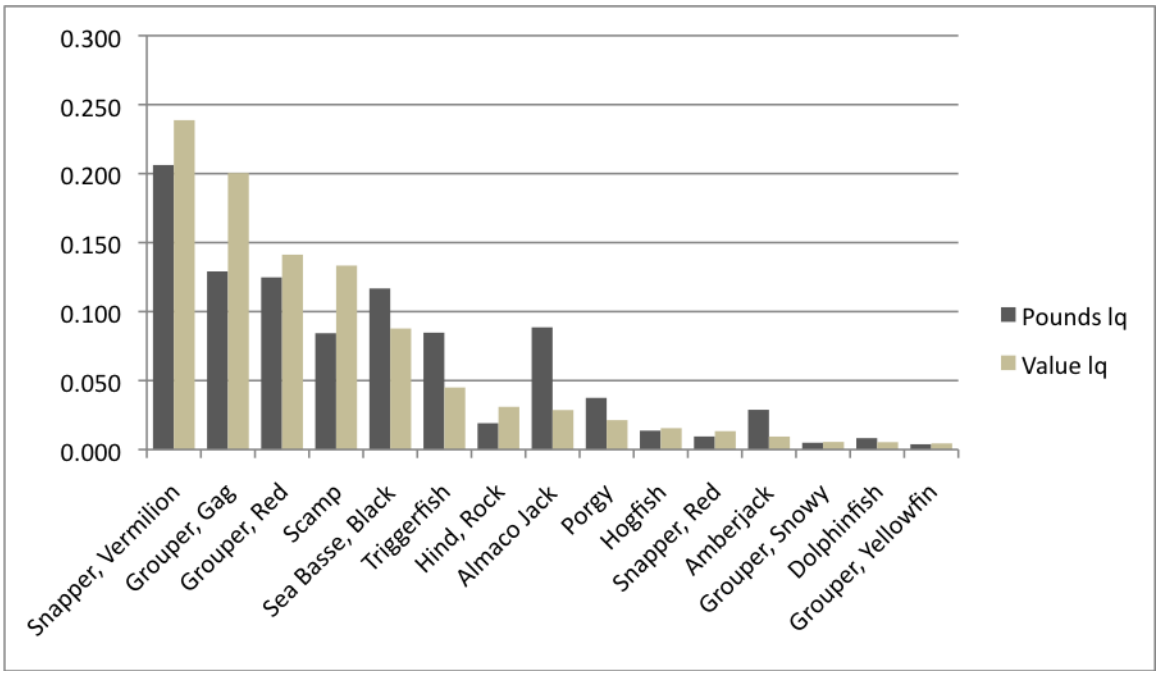

Figure 3-35. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Little River, South Carolina.
Source: ALS 2008

The community of Little River has much of its landed value derived from snapper grouper species with vermilion landed the most with close to 25% of total value. **Figure 3-35** shows that gag and red grouper are next with almost identical proportion of lbs landed at over 12% but gag contributing much more to value with 20% while red grouper contributes less than 15%.

The community of Murrell's Inlet also derives a considerable amount of its landed value from snapper grouper species as shown in **Figure 3-36**. Gag grouper has the highest proportional value at close to 23%. Scamp is next with just over 18% and vermilion snapper a close third with just over 17%.

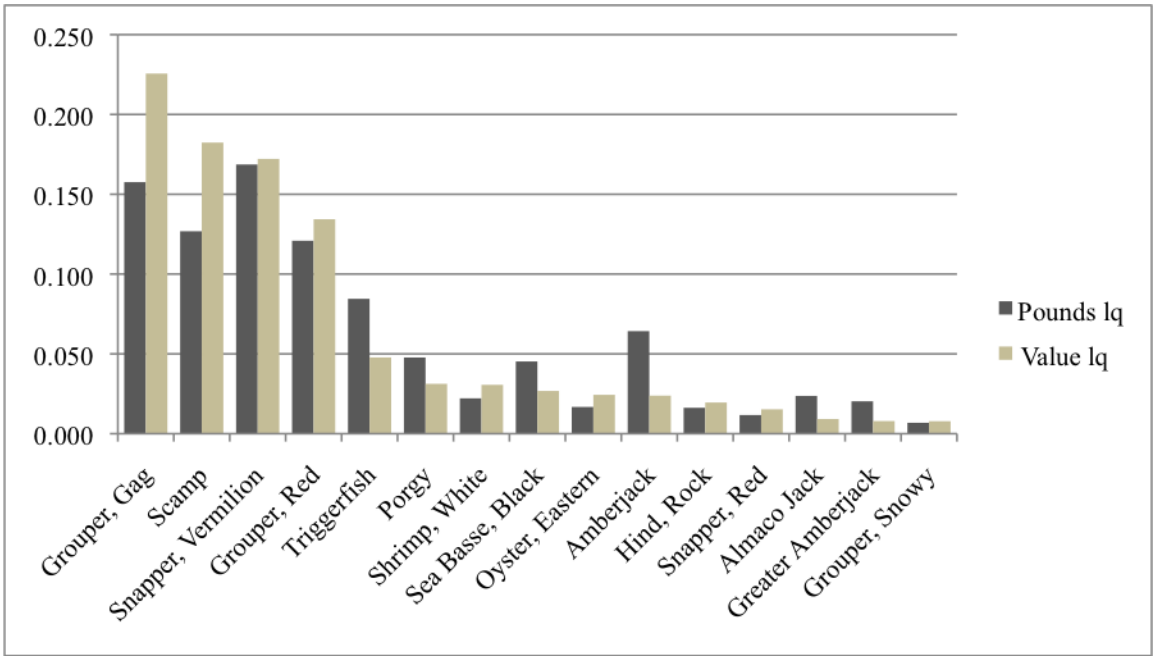

Figure 3-36. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Murrell's Inlet, South Carolina.
Source: ALS 2008

3.8.3.7 North Carolina Counties

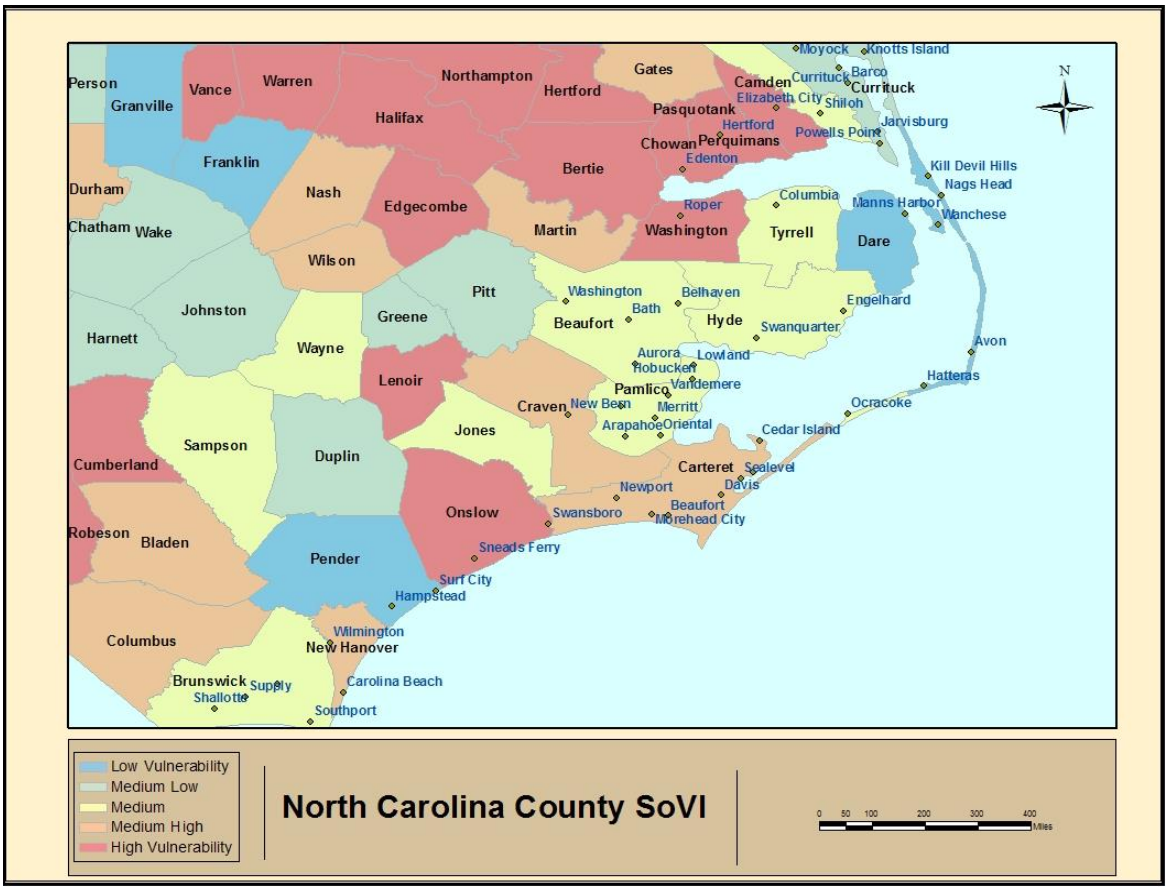

Figure 3-37. The Social Vulnerability Index applied to North Carolina Counties. Source http://webra.cas.sc.edu/hvri/products/sovi.aspx#

Those counties in North Carolina, which were categorized as having high social vulnerability using the SoVI, are: Onlsow, Washington, Bertie, Chowan, Perquimans. Those with medium high vulnerability were New Hanover, Carteret, and Craven.

All six counties profiled under marine related employment in **Table 3-80** have persons involved in the seafood harvesting sector with the most in Carteret (440). The next sector with the most employed is ship boat builders with persons in Beaufort, Brunswick, Carteret and Chowan employ in that sector. Most have persons employed in the seafood dealer sector with Bertie County the only county without persons employed there.

Table 3-80. Marine Related Employment for 2007 in North Carolina Coastal Counties. Source: Census Bureau 2010

North Carolina County	Beaufort		Bertie		Brunswick		Camden		Carteret		Chowan	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	4	.	.	.	7	.	.	.	17	.	.	.
Seafood Dealers	.	60	.	.	.	28	.	5	.	29	.	38
Seafood Harvesters	167	.	6	.	240	.	37	.	440	.	26	.
Seafood Retail	4	.	.	.	12	12	.	.	17	22	.	.
Marinas	.	11	.	.	.	24	.	2	.	153	.	.
Processors	.	30	.	11	.	29	.	.	0	3	.	.
Scenic Water	.	.	.	.	.	13	.	.	.	10	.	.
Ship Boat Builders	.	326	.	.	.	295	.	.	.	343	.	349
Shipping Support	.	.	.	2	.	11	.	.	.	54	.	.
Shipping	.	.	.	2	.	67	.	.	.	10	.	.

Beaufort County

Beaufort County had a total population of 44,948 in 2000 that is estimated to have grown to 45,795 by 2007. Population density was 54 persons per square mile in 2000 and has grown to 55 persons in 2007. The majority of county residents were White (68.7%) and the Hispanic population was 4.2% in 2007. The percent of population that identified themselves as White alone was 67.4% with 28.2% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Beaufort County was estimated to have been 41.9, so Beaufort County's median age is somewhat older than the State's 36.8. Median household income for 2007 was estimated to be $39,341, lower than that for the state which was $46,107. There was an estimated 4.8% of the population in the civilian force that was estimated to be unemployed in Beaufort County, which was slightly higher than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 15.1% which was higher than the 14.6% for the state as a whole during 2007. Beaufort County had a slightly lower owner occupied housing rate than the state with 82.2% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

The communities of Washington and Bath were identified as being primarily and secondarily involved fishing but neither community had either snapper grouper species or dolphin wahoo landings within the top fifteen.

Bertie County

Bertie County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. However, there were no communities identified as being either primarily or secondarily involved in Bertie County.

Brunswick County

Brunswick County had a total population of 73,141 in 2000 that is estimated to have grown to 98,667 by 2007. Population density was 86 persons per square mile in 2000 and has grown to 117 persons in 2007. The majority of county residents were White (71.6%) and the Hispanic population was 3.8% in 2007. The percent of population that identified themselves as White alone was 82.1% with 12.7% of the population Black. North Carolina as a state had an estimated 71.6% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Brunswick County was estimated to have been 41.0, so Brunswick County's median age is older than the State's 36.8. Median household income for 2007 was estimated to be $45,596, lower than that for the state which was $46,107. There was an estimated 4.9% of the population in the civilian force that was estimated to be unemployed in Brunswick County, which was just slightly higher than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 12.4% which was lower than the 14.6% for the state as a whole during 2007. Brunswick County had a lower owner occupied housing rate than the state with 60.1% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

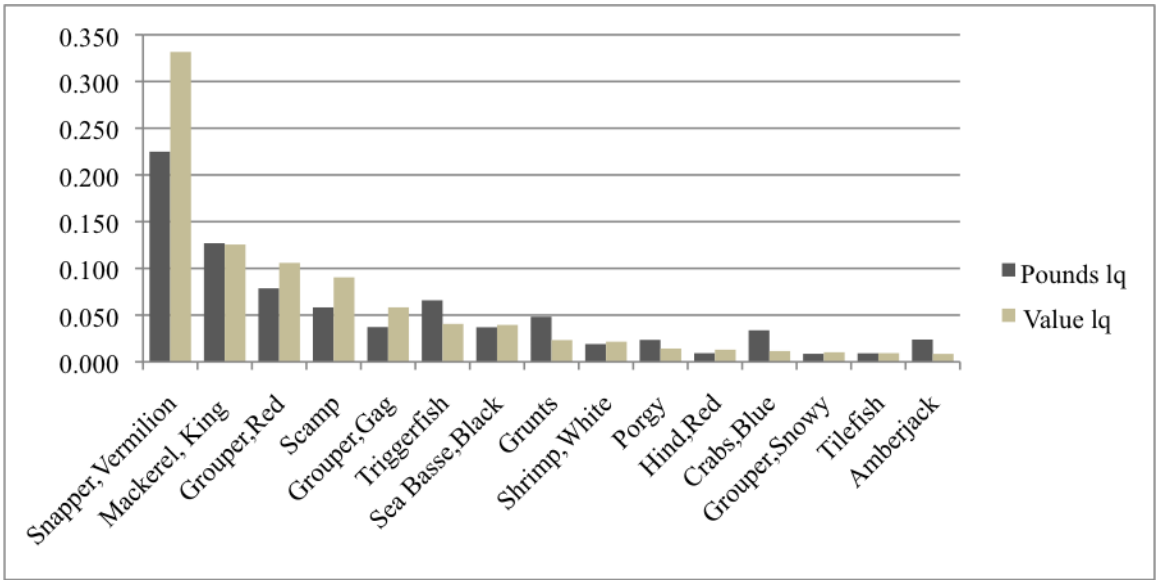

Figure 3-38. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Southport, North Carolina.
Source: ALS 2008

The community of Southport derives over 30% of its landed value from vermilion snapper and over 20% of lbs landed as depicted in **Figure 3-38**. Other snapper grouper species within the top fifteen were red grouper with just over 10% of proportional value and scamp at just under 10%. Gag grouper followed with 5.8% black sea bass and triggerfish 4% respectively.

The community of Supply does not derive as much of its landed value from snapper grouper species as does Southport, but does have over 14% of its value come from vermilion snapper. Gag, red grouper and scamp all contribute less than 2% each to the total landed value for the community.

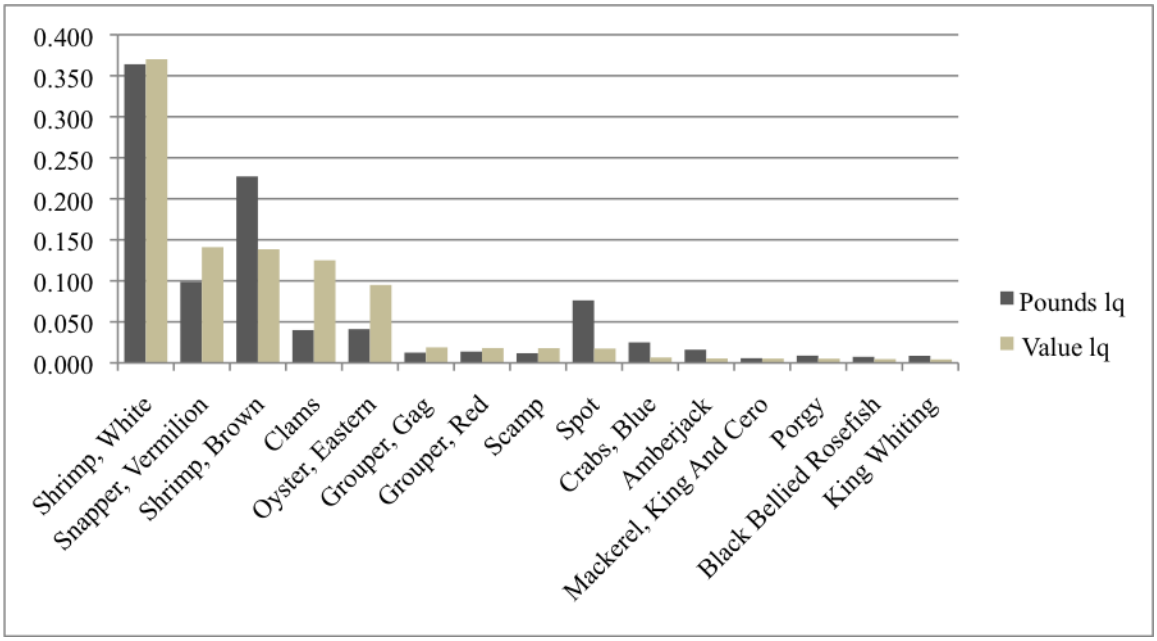

Figure 3-39. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Supply, North Carolina.
Source: ALS 2008

Camden County

Camden County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. Shiloh was the only community identified as being either primarily or secondarily involved in Camden County and had no snapper grouper species landed in 2008 nor any dolphin or wahoo.

Carteret County

Carteret County had a total population of 59,383 in 2000 that is estimated to have grown to 63,184 by 2007. Population density was 117 persons per square mile in 2000 and has grown to 125 persons in 2007. The majority of county residents were White (90.0%) and the Hispanic population was 2.4% in 2007. The percent of population that identified themselves as White alone was 87.6% with 7.7% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Carteret County was estimated to have been 43.7, so Carteret County's median age is considerably older than the State's 36.8. Median household income for 2007 was estimated to be $49,948, higher than that for the state which was $46,107. There was an estimated 4.8% of the population in the civilian force that was estimated to be unemployed in Carteret County, which was slightly higher than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 11.2% which was lower than the 14.6% for the state as a whole during 2007. Carteret County had a much lower owner occupied housing rate than the state with 59.1% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

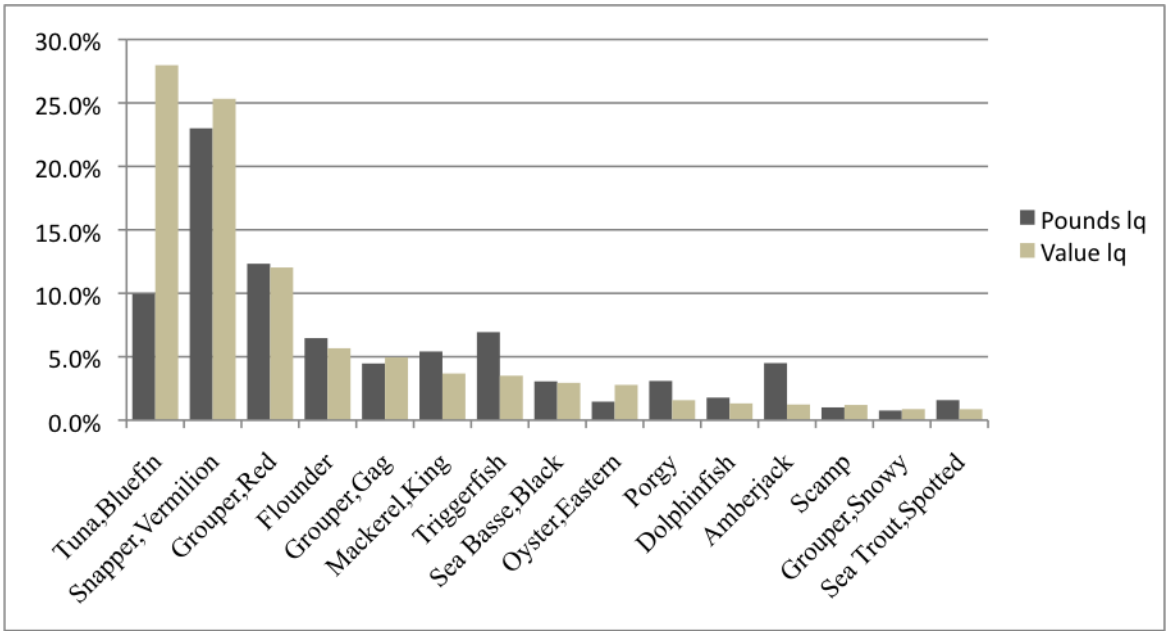

Figure 3-40. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Morehead City, North Carolina.
Source: ALS 2008

Although there are several communities within Carteret County that are identified as primarily involved in fishing, Morehead City was the only one with substantial landings of snapper grouper for 2008. Vermilion snapper provided over 25% of landed value in **Figure 3-40** with red grouper accounting for 12%. Gag comprises 5% of landed value and black sea bass just below 3% for the community as a whole.

Chowan County

Chowan County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. Edenton was the only community identified as being either primarily or secondarily involved in Chowan County and had no snapper grouper species landed in 2008 nor any dolphin or wahoo.

The second six counties profiled under the continuation of **Table 3-80** and marine related employment also have persons employed in seafood harvesting in all counties. The most are in Dare County where 488 persons are counted as proprietors. Hyde and New Hanover have well over 100 each employed in the sector. The ship boat builder sector also has numerous persons employed, but Craven County has by far the most with 1369 persons employed and Dare County next with 392. All counties except for Hertford have employment in the marinas sector.

Table 3-80. Continued. Marine Related Employment for 2007 in North Carolina Coastal Counties.
Source: Census Bureau 2010

North Carolina County	Craven		Currituck		Dare		Hertford		Hyde		New Hanover	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	.	.	.	.	3	.	.	.	.	.	19	.
Seafood Dealers	.	.	.	33	.	41	.	.	.	.	.	5
Seafood Harvesters	45	.	66	.	488	.	6	.	136	.	151	.
Seafood Retail	.	2	.	2	9	14	.	6	.	5	4	34
Marinas	.	18	.	37	.	37	.	.	.	3	.	74
Processors	.	7	.	.	.	.	.	.	.	56	3	.
Scenic Water	.	.	.	.	.	31	.	.	.	2	.	28
Ship Boat Builders	.	1369	.	3	.	392	.	.	.	.	.	43
Shipping Support	.	.	.	.	.	2	.	27	.	.	.	367
Shipping	.	.	.	.	.	.	.	27	.	.	.	6

Craven County

Craven County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. New Bern was the only community identified as being either primarily or secondarily involved in Craven County and had snapper grouper landings of less than 2% in 2008 and less than 1% of dolphin or wahoo landing proportionate to overall landings.

Currituck County

Currituck County had a total population of 18,190 in 2000 that is estimated to have grown to 23,829 by 2007. Population density was 69 persons per square mile in 2000 and has grown to 91 persons in 2007. The majority of county residents were White (91.6%) and the Hispanic population was 2.1% in 2007. The percent of population that identified themselves as White alone was 88.5% with 7.7% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Currituck County was estimated to have been 38.6, so Currituck County's median age is somewhat older than the State's 36.8. Median household income for 2007 was estimated to be $56,953, higher than that for the state which was $46,107. There was an estimated 4.5% of the population in the civilian force that was estimated to be unemployed in Currituck County, which was almost equal to the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 7.6% which was much lower than the 14.6% for the state as a whole during 2007. Currituck County had a much lower owner occupied housing rate than the state with 66.8% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

Currituck communities that were identified as primarily or secondarily involved in fishing did not have sufficient numbers of snapper grouper landings nor did they have dolphin or wahoo landings of any substantial nature.

Dare County

Dare County had a total population of 29,967 in 2000 that is estimated to have grown to 33,677 by 2007. Population density was 78 persons per square mile in 2000 and has grown to 88 persons in 2007. The majority of county residents were White (95.1%) and the Hispanic population was 0.0% in 2007. The percent of population that identified themselves as White alone was 95.1% with 3.1% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Dare County was estimated to have been 42.4, so Dare County's median age is somewhat older than the State's 36.8. Median household income for 2007 was estimated to be $54,594, higher than that for the state which was $46,107. There was an estimated 3.3% of the population in the civilian force that was estimated to be unemployed in Dare County, which was lower than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 9.2% which was lower than the 14.6% for the state as a whole during 2007. Dare County had a much lower owner occupied housing rate than the state with 48.5% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

Although the fishing communities in Dare County land a considerable amount of seafood, very little of it is snapper grouper species. Of the three main communities, Wanchese was the only one that had a snapper grouper species in the top fifteen and that was black sea bass. Neither Manteo nor Mann's Harbor had a snapper grouper species listed in the top fifteen species in terms of the proportion of landings out of total landings. While black sea bass is only eleventh in terms of the top species landed in Wanchese, it represents a substantial amount of black sea bass, although it represents only a little over 2% of total landing for the community in **Figure 3-41.**

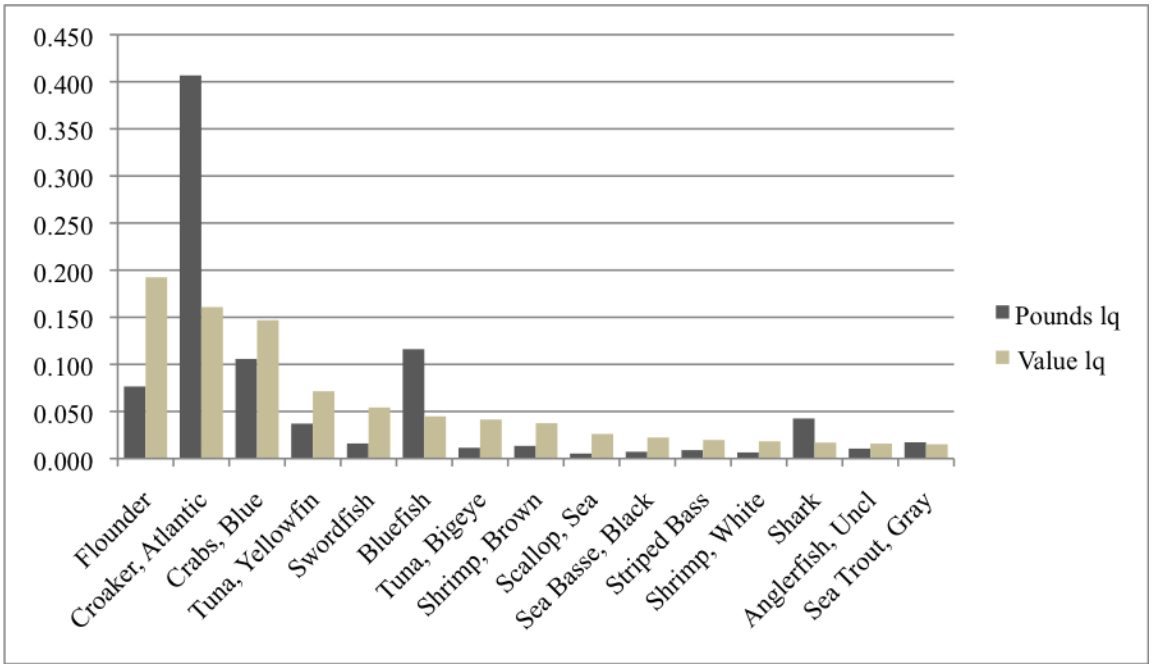

Figure 3-41. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Wanchese, North Carolina.
Source: ALS 2008

Hertford County

Hertford County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. There were no communities identified as being either primarily or secondarily involved in fishing within Hertford County.

Hyde County

Hyde County has a smaller population base than the other coastal counties in North Carolina, which prevents the county from census estimated updates as only populations greater than 65,000 are updated at this time. Ocracoke and Swan Quarter were the only communities identified as being either primarily or secondarily involved in fishing within Hyde County.

New Hanover County

New Hanover County had a total population of 160,327 in 2000 that is estimated to have grown to 189,860 by 2007. Population density was 835 persons per square mile in 2000 and has grown to 994 persons in 2007. The majority of county residents were White (80.7%) and the Hispanic population was 3.3% in 2007. The percent of population that identified themselves as White alone was 78.4% with 16.2% of the population Black. North Carolina as a state had an estimated 71.6% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of New Hanover County was estimated to have been 37.4, so New Hanover County's median age is just slightly older than the State's 36.8. Median household income for 2007 was estimated to be $49,068, higher than that for the state which was

$46,107. There was an estimated 3.6% of the population in the civilian force that was estimated to be unemployed in New Hanover County, which was just lower than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 13.9% which was lower than the 14.6% for the state as a whole during 2007. New Hanover County had a slightly lower owner occupied housing rate than the state with 84.1% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

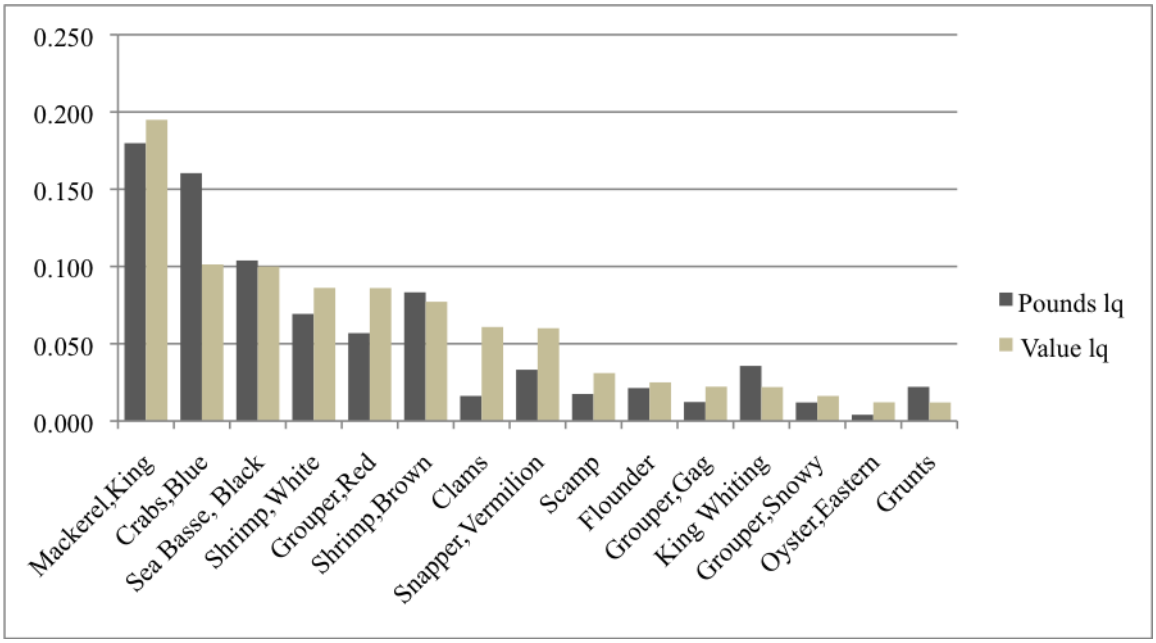

Figure 3-42. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Carolina Beach, North Carolina.
Source: ALS 2008

Carolina Beach has several snapper grouper species within its top fifteen species for landings and value with black sea bass accounting for slightly over 10% of value and landings. In **Figure 3-42** red grouper is the next most valuable snapper grouper species with over 8% of value and vermilion snapper with 6%.

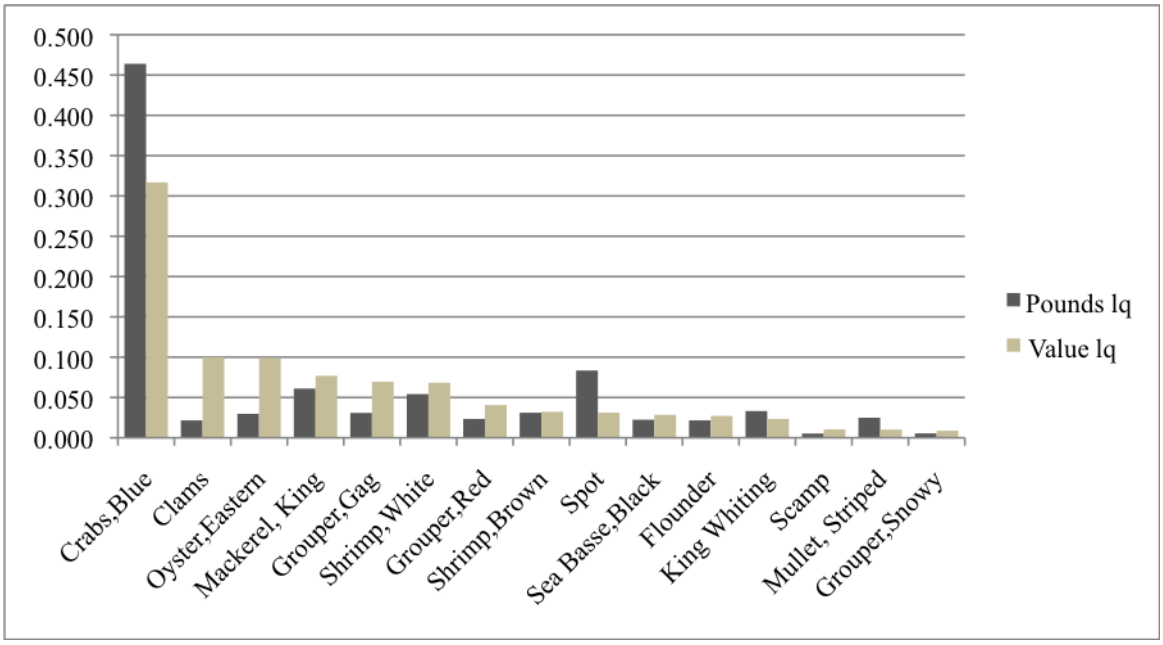

Figure 3-43. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Wilmington, North Carolina.
Source: ALS 2008

Wilmington had several species of snapper grouper listed in **Figure 3-43** within the top fifteen out of total landings. Gag grouper was the highest in terms of value for snapper grouper with almost 7% of value from overall landings. Red grouper was next with 4% and black sea bass with just less than 3% of value of total landings for the community.

Table 3-80. Continued. Marine Related Employment for 2007 in North Carolina Coastal Counties.
Source: Census Bureau 2010.

North Carolina County	Onslow		Pamlico		Pasquotank		Pender		Perquimans		Tyrrell		Washington	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	6	.	.	.	.	.	.	.	.	.	.	.	.	.
Seafood Dealers	.	4	.	40	.	67	.	47	.	2	.	.	.	.
Seafood Harvesters	237	.	130	.	31	.	67	.	28	.	61	.	8	.
Seafood Retail	6	9	.	.	.	29	3	3	.	.	.	.	.	.
Marinas	.	6	.	12	.	.	.	4	.	.	.	.	.	.
Processors	.	.	.	55	.	.	.	.	.	.	.	36	.	.
Scenic Water	.	2	.	.	.	.	.	.	.	.	.	.	.	.
Ship Boat Builders	.	153	.	14	.	.	.	16	.	.	.	.	.	.
Shipping Support	.	.	.	15	.	.	.	15	.	.	.	.	.	.
Shipping	.	.	.	.	.	12	.	.	.	.	.	.	.	.

Of all the counties in the final **Table 3-80**, only Onslow County has a population large enough to provide estimates of census demographics. With regard to marine related employment Onslow County has by far the most persons employed in the seafood harvester sector with 237 persons and Pamlico is second with 130. Each of the other counties has persons employed in that sector also. The other sectors do show some employment but it is sporadic and not in all counties.

Onslow County

Onslow County had a total population of 150,355 in 2000 that is estimated to have grown to 163,390 by 2007. Population density was 197 persons per square mile in 2000 and has grown to 213 persons in 2007. The majority of county residents were White (76.2%) and the Hispanic population was 6.9% in 2007. The percent of population that identified themselves as White alone was 74.2% with 18.4% of the population Black. North Carolina as a state had an estimated 71.0% White population and Hispanics made up 7.0% of its total population and 22% of persons were Black. The White alone population for the state was estimated to be 67.5% in 2007. The median age for residents of Onslow County was estimated to have been 25.7, so Onslow County's median age is considerably younger than the State's 36.8. Median household income for 2007 was estimated to be $44,641, lower than that for the state which was $46,107. There was an estimated 3.0% of the population in the civilian force that was estimated to be unemployed in Onslow County, which was lower than the State's unemployment rate of 4.3%. The percentage of persons below the poverty level was estimated at 13.3% which was lower than the 14.6% for the state as a whole during 2007. Onslow County had a slightly lower owner occupied housing rate than the state with 84.8% compared to the State's 85.5% estimated for 2007 (U.S. Census Bureau).

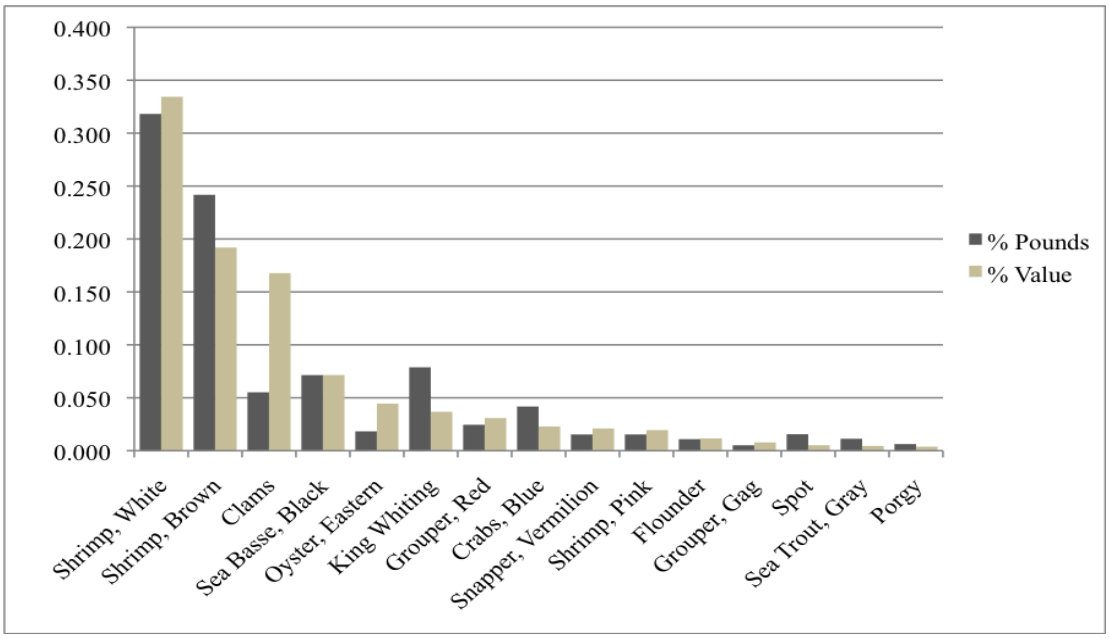

Figure 3-44. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Sneads Ferry, North Carolina.
Source: ALS 2008

Sneads Ferry does have snapper grouper species listed in the top fifteen in **Figure 3-44** with black sea bass contributing 7% to overall landings and value. Red grouper is the next highest with just over three percent of landed value out of total value and vermilion snapper shows 2%.

3.8.4 Snapper Grouper Fishery Social Environment

Permit requirements for the commercial snapper grouper fishery were established in 1998 by Amendment 8 (SAFMC 1997a). The amendment created a limited entry system for the fishery and established two types of permits based on the historic landings associated with a particular permit. Those who could demonstrate a certain amount of landings over a certain time period received transferable permits that did not limit the number of lbs of snapper grouper that could be landed from federal waters (hereafter referred to as "unlimited commercial permits"). Vessels with verified landings, but did not meet the threshold were issued permits that allowed them to land 225 lbs of snapper grouper species from federal waters each trip (hereafter referred to as "limited commercial permits"). These permits were not transferable. New entry into the fishery required the purchase of two unlimited permits from existing permit holders for exchange for a new permit. This "two for one" system was intended to gradually decrease the number of permits in the fishery. These restrictions only applied to the commercial snapper grouper permit.

Over time the limited entry system has reduced capacity in the commercial fishery as evidenced by the reduction in the number of permits over the eight year period beginning in 2001 through 2008 (**Figure 3-45**). There was a 34% decrease in the number of unlimited permits and a 54% decrease in the number of limited permits during that time period. This downward trend in permits is also reflected in other measures of effort that also show a steady decline, i.e. number of trips, landings, etc. (SAFMC 2009a). While the limited entry program has contributed to the reduced capacity, other factors have also contributed to this downward trend. Economic factors like increased imports, decreasing prices and rising prices for diesel fuel have had a widespread affect on commercial fishing throughout many regions of the U.S. In addition, the loss of working waterfronts has contributed to a growing loss of fishing infrastructure that may play a role in the decline in many different fisheries.

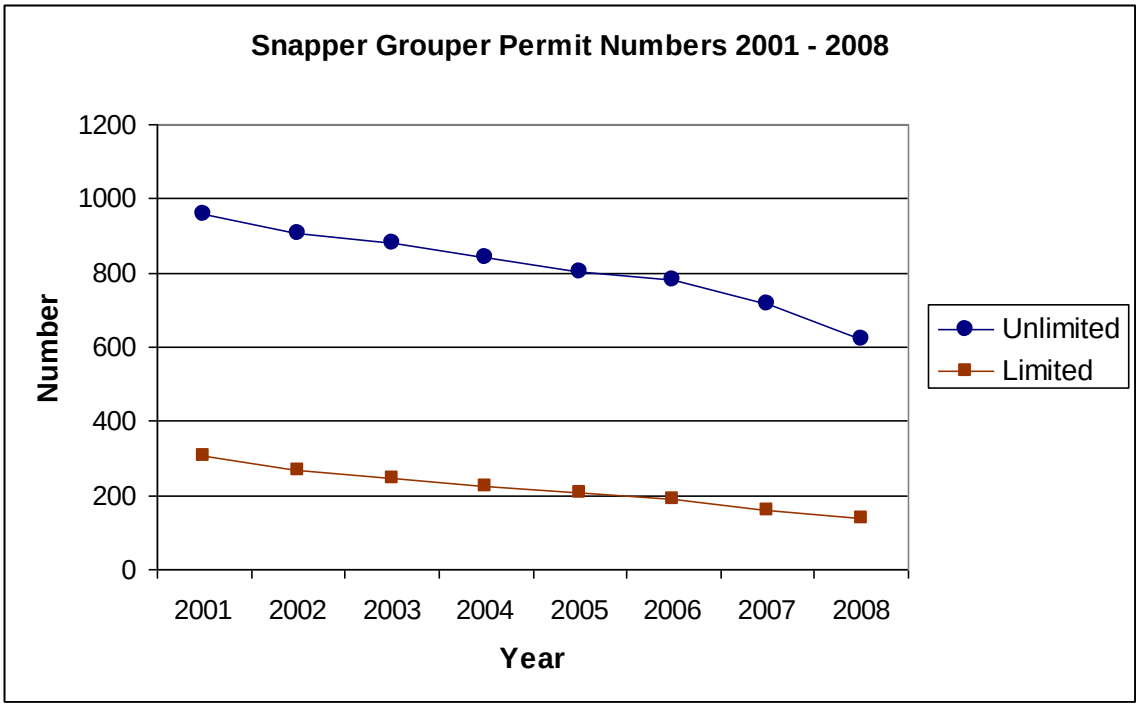

Figure 3-45. Snapper Grouper Permits from 2001-2008.
Source: SERO Permits.

The factors that affect the loss of working waterfronts in fishing communities are coastal development, rising property taxes, decreasing access to waterfront due to increasing privatization of public resources, rising cost of dockage and fuel, lack of maintenance of waterways and ocean passages, competition with imported fish, and other less tangible (often political) factors. These along with increasingly strict regulations have combined to place a great deal of stress on all communities and their associated fishing sectors including commercial, charter/headboat and private recreational. This is especially true for Monroe County in Florida which has very limited land area and has seen a steady rise in land values. Recent research on the Key's communities (Shivlani 2009) has described the problem of increasing land values and disappearance of working waterfronts, especially for communities like Key West.

Recreational fishing communities in the South Atlantic are listed in **Table 3-81**. 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 3-81. 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

While studies on the general identification of fishing communities have been undertaken in the past few years, little social or cultural investigation into the nature of the snapper grouper fishery itself has occurred. A socioeconomic study by Waters et al. (1997) covered the general characteristics of the fishery in the South Atlantic, but those data are now over 10 years old and do not capture more recent important changes in the fishery. Cheuvront and Neal (2004) conducted survey work of the North Carolina commercial snapper grouper fishery south of Cape Hatteras, but did not include ethnographic examination of communities dependent upon fishing.

Figure 3-46. Snapper Grouper Dealers by Zip code of Permit Holder
Source: SERO 2010

Snapper Grouper dealers range the entire US east coast, with the heaviest concentration in the Florida Keys. There are also scattered dealers with permits in the Gulf of Mexico but primarily along Florida's west coast (**Figure 3-46**).

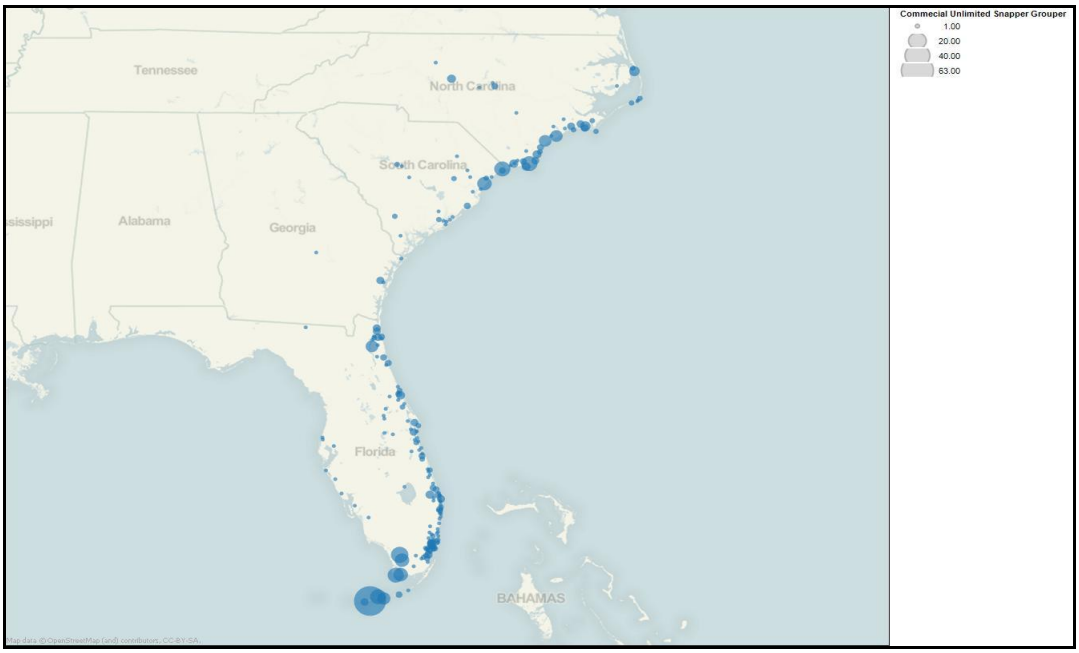

Figure 3-47. Snapper Grouper Commercial Limited Permits by Zip code of Permit Holder
Source: SERO 2010

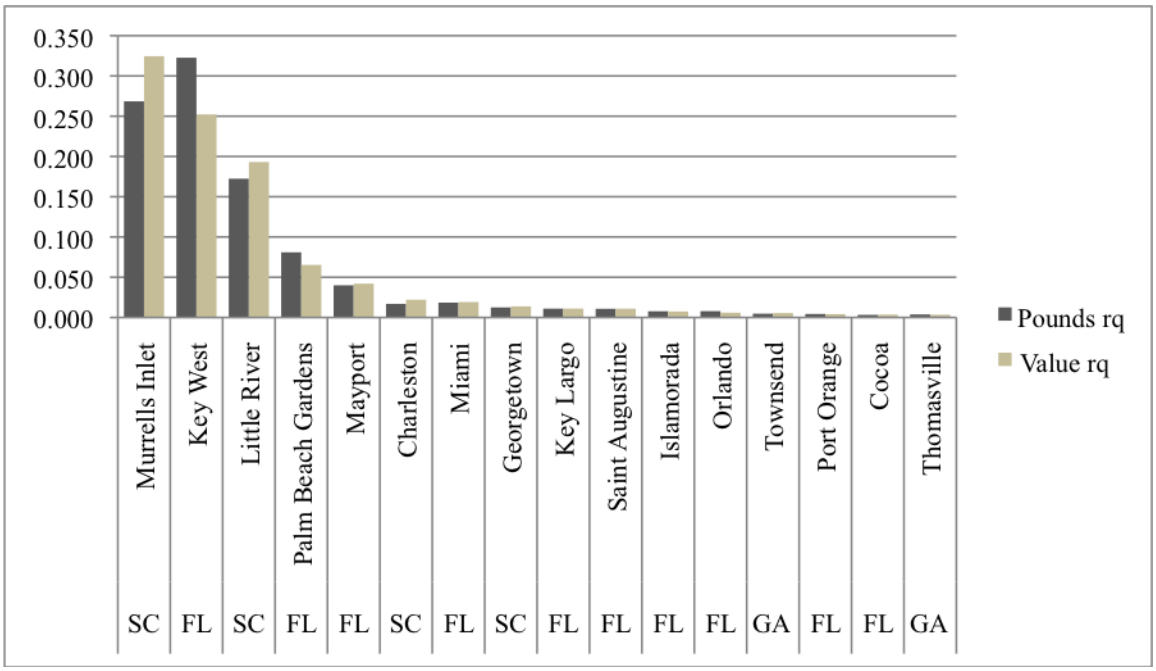

Figure 3-48. Shallow Water Grouper Regional Quotient Landings and Value for South Atlantic Coast Communities.
Source: ALS 2008

The eighteen communities in **Figure 3-48** represent those communities with at least 3% of the regional landings and value from shallow water grouper within the South Atlantic.

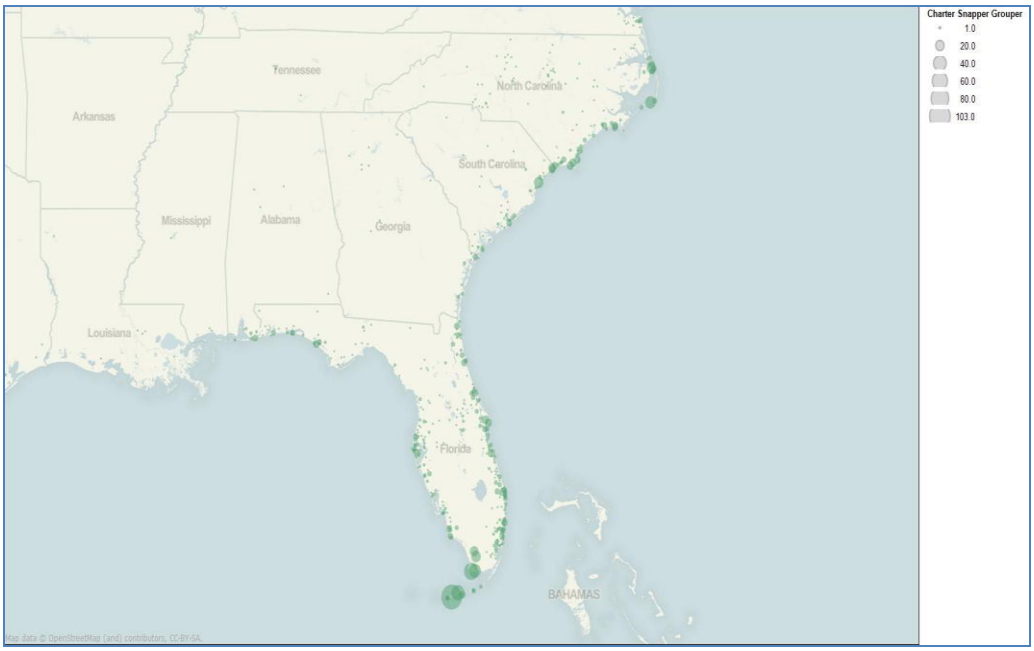

Figure 3-49. Snapper Grouper Charter Permits by Zip code of Permit Holder
Source: SERO 2010.

Like dealer permits, snapper grouper commercial permits also are located throughout the US east coast, with a heavier concentration in the South Atlantic states. The largest concentration of permits is in Monroe County and primarily the Florida Keys (**Figure 3-47**). Snapper grouper charter permits are shown in **Figure 3-49**.

3.8.5 Dolphin Wahoo Fishery Social Environment

The South Atlantic Fishery Ecosystem Plan contains a complete description of the fishing communities and fisheries of the South Atlantic, including the dolphin-wahoo fishery. These descriptions are summarized here and incorporated by reference.

There are little data available that are directly applicable to dolphin and wahoo recreational and commercial fishing communities in the U.S. South Atlantic. The data that are available are only partial for some communities and then, in many cases, only some sectors in those communities (commercial, charter, and/or recreational).

The dolphin wahoo fishery is primarily a recreational fishery with some commercial catch. In the mid 1990s there was considerable concern about the possibility of an increased commercial catch and its impact upon the recreational fishery. That concern spawned the fishery management plan that is in effect today with the South Atlantic Council as lead council (SAFMC 2003a). The commercial sector has remained a steady but small part of the fishery.

Figure 3-50. Dolphin Wahoo Dealers by Zip code of Permit Holder
Source: SERO 2010

Dolphin Wahoo dealers are located throughout the east coast of the US as far north as Maine. Permit holders are concentrated in the Florida Keys and both North and South Carolina., although the Florida east coast has a significant number from the central coast to Miami (**Figure 3-50**).

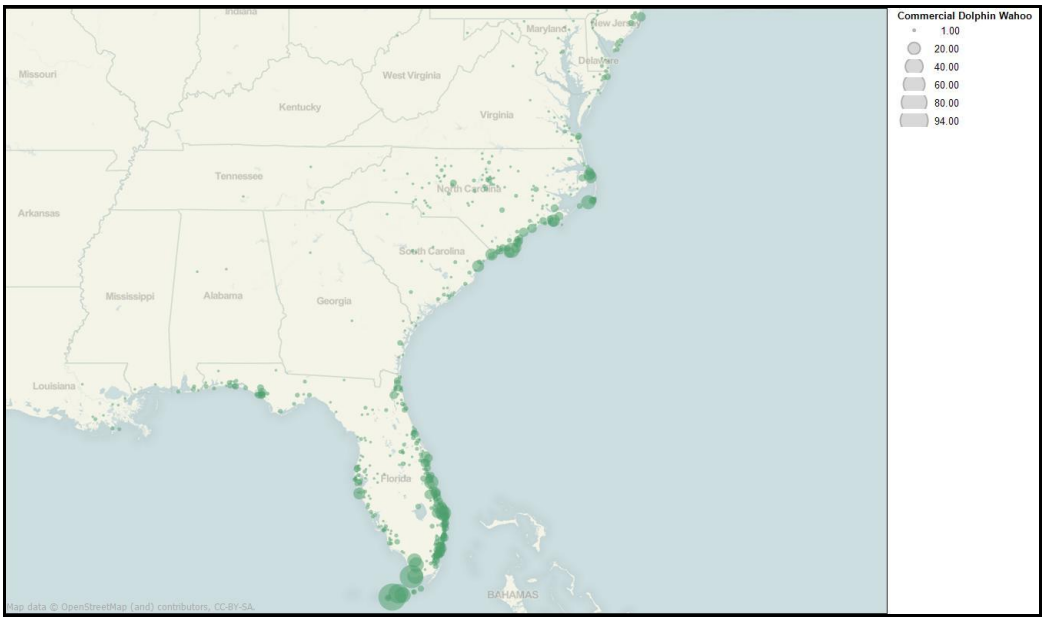

Figure 3-51. Dolphin Wahoo Commercial Permits by Zipcode of Permit Holder
Source: SERO 2010

Dolphin Wahoo commercial fishermen are also located throughout the east coast of the US. Permit holders are concentrated in the Florida Keys and both North and South Carolina., although the Florida east coast has a significant number from the central coast to Miami (**Figure 3-51**). This is true for Charter permits also according to **Figure 3-52**.

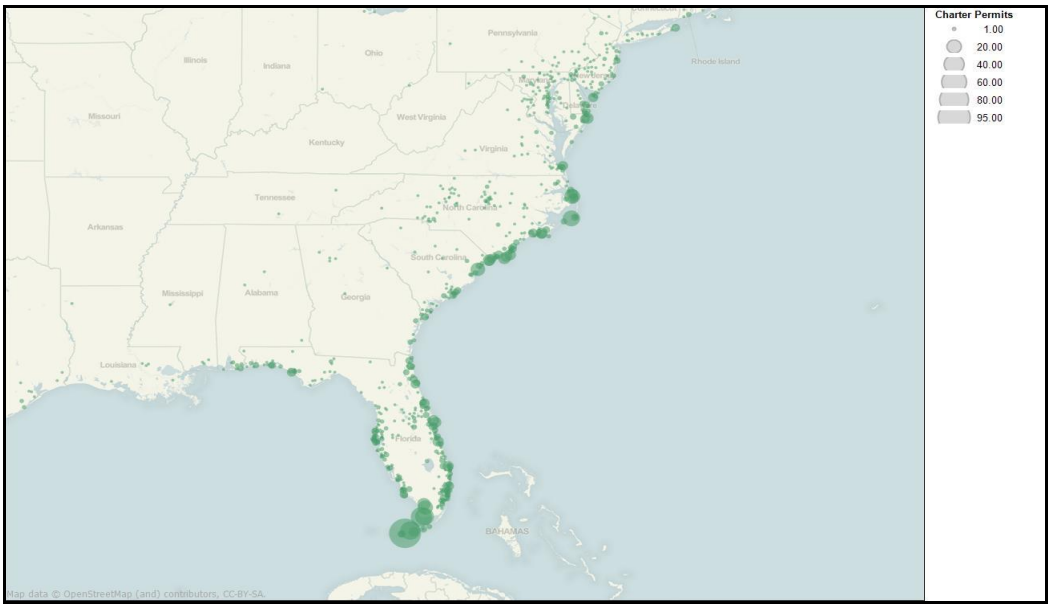

Figure 3-52. Dolphin Wahoo Charter Permits by Zipcode of Permit Holder
Source: SERO 2010

3.8.6 Sargassum Fishery Social Environment

At this time there is little information on the social environment of the *Sargassum* fishery. In the past there had been one vessel that was harvesting *Sargassum* for the purposes of utilizing it in the manufacturing of pharmaceuticals. Today, it is likely that there are no vessels harvesting *Sargassum*.

3.8.7 Golden Crab Fishery Social Environment

The golden crab FMP was initiated in the mid 1990s and provided a management framework for a small fishery which harvested a deep water crab. The fishery has remained small and is prosecuted primarily off the southeastern coast of Florida, while golden crab dealers range the entire east coast of the US with the majority in Florida. (**Figure 3-53**).

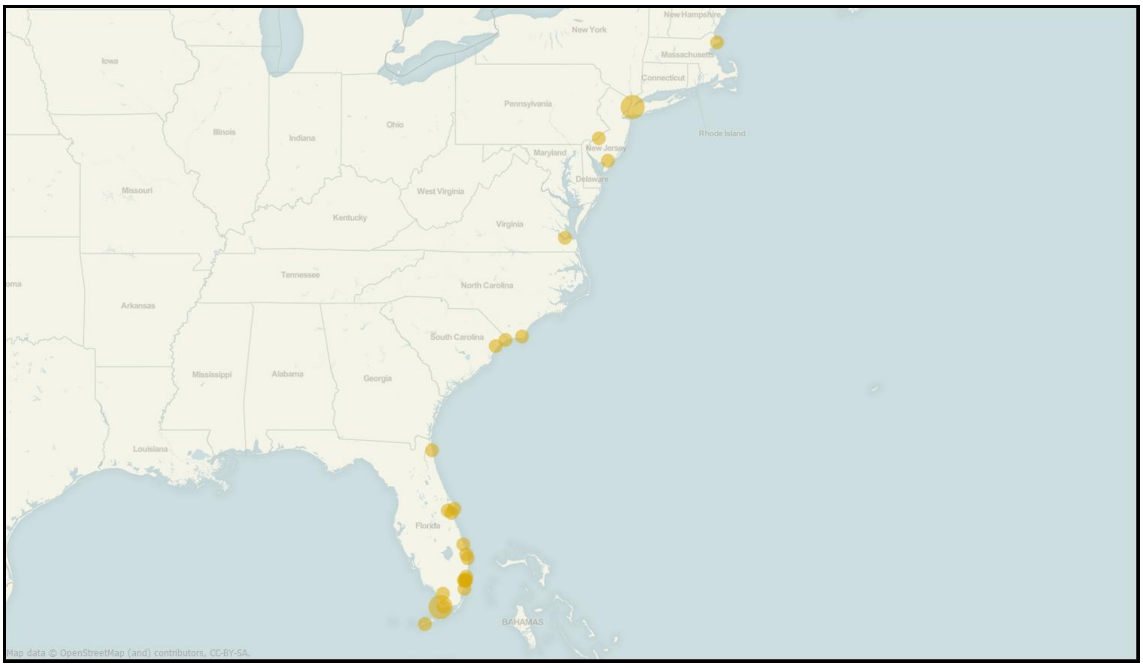

Figure 3-53. Golden Crab Dealer Permits by Zip code of Permit Holder
Source: SERO 2010

In terms of Golden crab landings and value, Fort Lauderdale has by far the largest portion of the regional quotient as shown in **Figure 3-54.** Marathon has the next largest portion of lbs landed, but West Palm Beach has a slightly higher portion of the value. Hollywood and Miami follow with much smaller percentages.

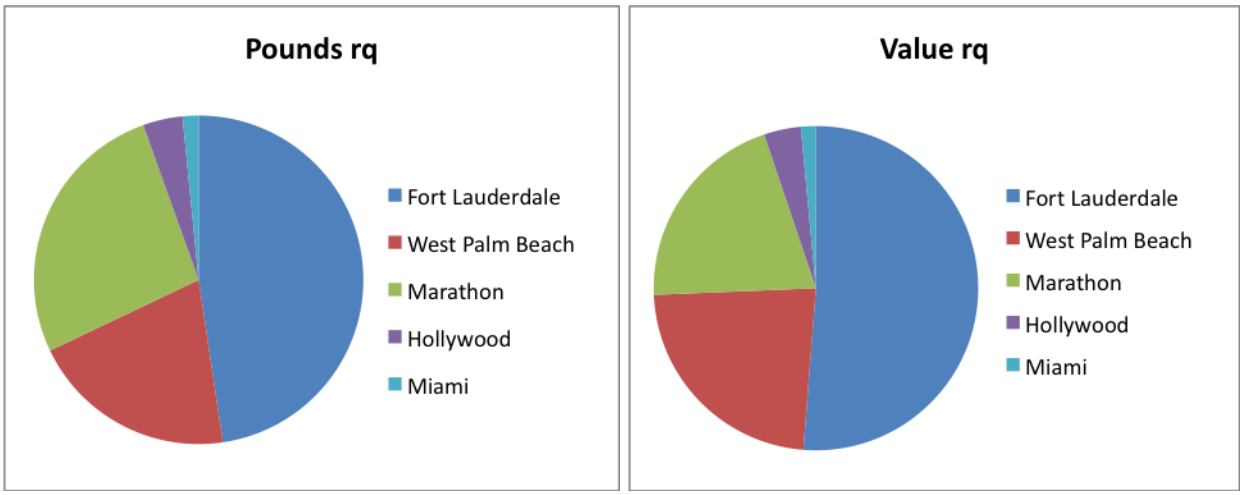

Figure 3-54. Golden Crab Landings and Value Regional Quotient by Community
Source: ALS 2008

3.8.8 Environmental Justice

As mentioned, environmental justice is related to the idea of social vulnerability; however, there are no thresholds with regard to social vulnerability. Environmental Justice is addressed through Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations and requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Impacts of commercial and recreational fishing on subsistence fishing are a concern in fisheries management; however, there are no such implications from the action proposed in this amendment.

Although it is anticipated that the impacts of this amendment may affect communities with environmental justice concerns, because the impacts should not discriminate against any group, this action should not trigger any environmental justice concerns. In reviewing the thresholds for minorities among all coastal counties involved, Liberty County in Georgia, Miami-Dade and Broward in Florida, all exceed the threshold for minorities. With regard to poverty, Georgetown County in South Carolina; Miami-Dade Counties in Florida all exceed the poverty threshold. Again, as illustrated by the SoVI, environmental justice is closely tied to social vulnerability index as most of the counties that do not meet these thresholds are also considered medium high or highly vulnerable. It is anticipated that the impacts from the following management actions may impact minorities and the poor, but not through discriminatory application of these regulations.

4.0 Environmental Effects

4.1 Actions under the Snapper Grouper Fishery Management Plan (except wreckfish; black grouper non-ABC actions; and jurisdictional allocations for yellowtail and mutton snappers)

4.1.1 Action 1: Remove Species from the Snapper Grouper Fishery Management Unit (FMU)

Alternative 1 (No Action). Do not remove any species from the Snapper Grouper FMU.

Alternative 2 (Preferred). Remove species from the Snapper Grouper FMU with 95% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate		

Alternative 3. Remove species from the Snapper Grouper FMU with 90% (or greater) of landings in state waters.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish	Puddingwife
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice	

Alternative 4. Remove species from the Snapper Grouper FMU with 80% (or greater) of landings in state waters, except hogfish and mutton snapper.

French grunt	Spanish grunt	Yellow jack	Grass porgy	Porkfish
Bluestriped grunt	Sheepshead	Crevalle jack	Black margate	Sailors Choice
Graysby	Schoolmaster	Saucereye porgy	Puddingwife	Margate

Alternative 5 (Preferred). Remove all the species under the Florida Marine Life Species Rule from the Snapper Grouper FMU.

Queen triggerfish	Porkfish	Puddingwife

Alternative 6. Remove species with state and federal (combined) landings that are less than, or equal to 10,000 lbs (with the exception of speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Spanish grunt
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Puddingwife
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 7. Remove species with state and federal (combined) landings that are less than, or equal to 20,000 lbs (with the exception of cubera snapper, warsaw grouper, lesser amberjack and speckled hind) from the Snapper Grouper FMU.

Tiger grouper	Black snapper	Misty grouper	Coney	Bank sea bass	Puddingwife
Smallmouth grunt	Longspine porgy	Blackfin snapper	Yellowmouth grouper	Dog snapper	Bar jack
Cottonwick	Mahogany snapper	Rock sea bass	Queen snapper	Scup	Ocean triggerfish
French grunt	Saucereye porgy	Grass porgy	Queen triggerfish	Schoolmaster	
Sand tilefish	Yellowfin grouper	Graysby	Sailors choice	Spanish grunt	

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.

Alternative 8. Remove tomtate, knobbed porgy, jolthead porgy, and whitebone porgy from the Snapper Grouper FMU.

Tomtate Knobbed porgy Jolthead porgy Whitebone porgy

Alternative 9 (Preferred). Remove tiger grouper and smallmouth grunt from the Snapper Grouper FMU.

Tiger grouper Smallmouth grunt
Note: Zero landings for both species.

4.1.1.1 Biological Effects

Alternative 1 (No Action) would not change the current composition of the multi-species snapper grouper fishery management unit (FMU), which includes 73 species of snappers, groupers, tilefishes, jacks, hinds, grunts, triggerfishes, porgies, and several other bottom fish. Sixty-nine of those species were identified in the original FMP for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) (SAFMC 1983). Wreckfish was added to the FMU through Amendment 3 to the Snapper Grouper FMP (SAFMC 1990b), and Atlantic spadefish, lesser amberjack, and banded rudderfish were added in Amendment 4 to the FMP (SAFMC 1991). According to the Snapper Grouper FMP, the composition of the snapper grouper FMU was originally defined to include species that:

1. Are considered to be sub-tropical/tropical in distribution and therefore limited to south of Cape Hatteras on the east coast of the U.S.;
2. Comprise overlapping ranges; and
3. Are part of a large multi-species fishery where co-occurring species are taken together with the same gear in the same area (SAFMC 1983).

At the time the FMU was established, the South Atlantic Council was concerned that about 13 of the species included in the FMU could be experiencing growth overfishing and that many others could be subject to overfishing in the future if corrective action was not taken (SAFMC 1983).

Currently, five species in the FMU (black sea bass, red grouper, red porgy, red snapper, and snowy grouper) are classified as "overfished," and nine species (black sea bass, red grouper, red snapper, snowy grouper, golden tilefish, gag, speckled hind, and warsaw grouper) are classified as "subject to overfishing". The South Atlantic Council has recently established restrictive measures to end overfishing and rebuild overfished species, with the exception of red grouper, which is currently being addressed in Amendment 24 to the Snapper Grouper FMP.

All the remaining species in the snapper grouper FMU are either classified as "not overfished", "not subject to overfishing", or "unknown", with the vast majority classified under the latter. These species are not likely to be assessed in the foreseeable future because they are not generally landed in sufficient quantities to provide scientists with data needed to estimate stock abundance. Commercial catches of these less desirable species are subject to general permitting requirements.

There are two types of snapper grouper federal commercial permits: (1) a transferable unlimited permit, and (2) a 225-lb trip limit non-transferable permit, which limits the permit holder to harvesting no more than 225 lbs of snapper grouper species on a given trip. No new 225-lb permits are being issued and the 225-lb permits cannot be sold or transferred to other individuals. The transferable unlimited permit is a limited entry permit. That is, there is a set number of such permits and persons wishing to obtain one must purchase two permits from existing permit holders and retire one of the permits. Individuals with an unlimited transferable permit are not restricted in the amount of fish they can catch on a trip unless a trip limit has been established for a species. In 2010, there were 598 and 136 unlimited transferable permits and 225-lb non-transferable permits, respectively (**Table 3-2**). With the exception of tomtate and blue runner, recreational catches of all snapper grouper species are subject to aggregate bag limits. Additionally, several species are managed with minimum size limits and/or a seasonal closure.

The FMU defined by each Council FMP identifies the specific fishery (or that portion thereof) that is relevant to the FMP's management objectives. Decisions about the composition of FMUs are an integral part of the plan development process, as FMUs define the specific species that are to be the target of federal conservation and management. NMFS guidelines to define FMUs specify that FMUs may be organized around biological, geographic, economic, technical, social, or ecological goals (50 CFR §600.320(d)(1)). NMFS guidelines for determining whether to include species in an FMU for purposes of federal conservation and management direct the Councils to consider the following seven factors (50 CFR §600.340(b)(2)):

1. The importance of the fishery to the Nation and the regional economy;
2. whether an FMP can improve the condition of the stock;
3. the extent to which the fishery could be or already is adequately managed by states;
4. whether an FMP can further the resolution of competing interests and conflicts;
5. whether an FMP can produce more efficient utilization of the fishery;
6. whether an FMP can foster orderly growth of a developing fishery; and
7. costs of the FMP balanced against benefits.

This action considers these factors in evaluating whether all species originally included in the snapper grouper FMU in 1983 are currently in need of federal conservation and management. The South Atlantic Council intends to review whether species meet these factors every five years

(SAFE report) to determine whether they should be added or removed from the FMU and take action as appropriate.

The Snapper Grouper FMP, as amended, established a "complex" comprising 73 species. However, recent examination of 2005-2009 landings data reveals that more than half (43) of those species are harvested primarily (>50%) in state waters. During that time period, 100% of the harvest of 3 species occurred in state waters, greater than 95% of the harvest of 10 species occurred in state waters, and greater than 80% of the harvest of 15 species occurred in state waters (see **Table 4-4**). Furthermore, landings of most species in the complex are small; 53 species together comprise just 10% of the total snapper grouper landings because they are not directly targeted and are generally less desirable. These are the species the South Atlantic Council is considering for removal under this action.

All 73 species in the snapper grouper FMU would remain subject to current federal regulations under **Alternative 1 (No Action)**. Additionally, that alternative would make all 73 species subject to the ABC control rule the South Atlantic Council chooses to adopt in this amendment to generate ACLs for managed species. Moreover, adoption of **Alternative 1 (No Action)** would imply that each of the 73 species in the snapper grouper complex is in need of federal fishery conservation and management, including species for which little or no landings were recorded in federal waters between 2005-2009 (see **Tables 4-2** through **4-6**). In theory, specifying ACLs for those species and constraining federal fisheries to those ACLs would provide biological and ecological benefits; however, the landings data that would be used to define such ACLs are generally not sufficient to provide meaningful management benchmarks because those species are landed in such small quantities.

NMFS' National Standard guidelines state that the principle implicit in National Standard 7 (NS7) is that not every fishery needs regulation. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires Councils to prepare FMPs only for overfished fisheries and for other fisheries where regulation would serve some useful purpose and where the present or future benefits of regulation would justify the costs. The overall objective of this action is to identify potential management efficiencies that could be achieved without compromising federal conservation and management objectives.

Alternatives 2, 5, and **9 (Preferreds)** would remove 13 species from the snapper grouper FMU, using criteria intended to identify species that meet NMFS guidelines regarding the need for federal fishery conservation and management. These criteria relate to the proportion of the fishery that occurs in state versus federal waters, the amount of fish harvested from federal waters, species desirability, and other factors. Any species removed from the FMU under these alternatives would no longer be subject to federal regulations. Current federal regulations for all species considered for removal are detailed in **Table 4-1**. **Alternatives 2, 5,** and **9 (Preferreds)** would not affect state regulations for these species, except in South Carolina. Regulations in state waters of South Carolina (http://www.dnr.sc.gov/regulations.html) are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. Therefore, any species that is removed from the snapper grouper FMU under this alternative would no longer be subject to state regulations in South Carolina waters unless that state acted to re-institute such regulations.

Table 4-1. Summary of current federal regulations for species proposed to be removed from the snapper grouper FMU under **Action 1**, **Alternatives 2, 5,** and **9 (Preferreds)**.

Species proposed for removal	Alternative(s)	Comm/Rec Min Size limit	Rec Bag limit/Comm trip limit	Comm/Rec Closed Season
Queen triggerfish	5	No minimum size limit	Included in 20 fish snapper grouper aggregate; No species-specific commercial trip limit.	No closed season
Crevalle jack	2			
Yellow jack	2			
French grunt	2			
Black margate	2			
Bluestriped grunt	2			
Spanish grunt	2			
Porkfish	2,5			
Sheepshead	2			
Grass porgy	2			
Tiger grouper	9			
Smallmouth grunt	9			
Puddingwife	2,5			

Alternatives 2 (Preferred), 3, and **4** would remove (with limited exceptions) species that were taken predominantly from state waters during 2005-2009. **Alternative 2 (Preferred)** specifies the most conservative threshold, proposing to remove 10 species for which 5% or less of the total harvest occurs in federal waters (**Table 4-2**). **Alternative 3** proposes to remove 11 species for which 10% or less of the total harvest occurs in federal waters (**Table 4-3**). **Alternative 4** proposes to remove 15 species for which 20% or less of the total harvest occurs in federal waters (**Table 4-4**). Many of the species in **Alternatives 2 (Preferred)-4** are harvested in more significant quantities than are species in **Alternatives 6-9 (Preferred)**, but such harvest occurs primarily in state waters outside the South Atlantic Council's management jurisdiction. Because such a small portion of the overall fishing activity for those species occurs in federal waters, any conservation and management measures applied to federal waters are not expected to have a noticeable effect on their populations.

Mutton snapper and hogfish are predominantly encountered and harvested in Florida state waters; however, in contrast to other species being identified for removal in **Alternatives 2, 5,** and **9 (Preferreds)**, the landings of these species, which are fairly large, are predominantly taken by the commercial sector. Therefore these species are omitted from **Alternative 4** despite meeting the removal criterion specified by that alternative because there was concern there may be an incentive for vessels registered in other states to target those commercially-desirable species in Florida waters if they are no longer federally managed. Similar concerns do not exist for other species in the South Atlantic Council's **Alternatives 2, 5,** and **9 (Preferreds),** because the species are predominantly taken by recreational fishermen who typically do not venture long distances for most fishing trips.

Table 4-2. Snapper grouper species listed in **Alternative 2 (Preferred)** with ≥95% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 4-3. Snapper grouper species listed in **Alternative 3** with ≥90% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
COMMON NAME	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**EEZ**	**State**	**% State**	**MRFSS**	**HBS**
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**

Source: SEFSC ACL and SE HBS CRNF datasets.*

Table 4-4. Snapper grouper species listed in **Alternative 4** with ≥80% estimated average annual landings (lbs, whole weight) from state waters during 2005-2009.

COMMON NAME	2005		2006		2007		2008		2009		TOTAL			TOP STATE	
	EEZ	State	EEZ	State	EEZ	State	EEZ	State	EEZ	State	EEZ	State	% State	MRFSS	HBS
French grunt	0	0	0	270	0	2,965	0	1,703	0	708	**0**	**5,646**	**100%**	**FL**	**FL**
Puddingwife	0	0	0	0	0	0	0	0	0	2,074	**0**	**2,074**	**100%**	**FL**	**FL**
Spanish grunt	0	0	0	688	0	0	0	0	0	0	**0**	**688**	**100%**	**FL**	**N/A**
Grass porgy	0	1,686	0	0	0	393	42	460	0	1,364	**42**	**3,903**	**99%**	**FL**	**FL**
Yellow jack	0	29,556	0	12,067	261	22,060	1,916	95,342	692	13,595	**2,868**	**172,620**	**98%**	**FL**	**FL**
Bluestriped grunt	811	24,500	0	70,320	1,346	62,742	1,237	37,764	0	6,535	**3,394**	**201,862**	**98%**	**FL**	**FL**
Black margate	1,834	63,481	4,304	39,041	25	66,304	1,559	51,386	0	201,325	**7,723**	**421,537**	**98%**	**FL**	**FL**
Porkfish	1,748	17,046	373	1,890	900	47,479	309	10,533	0	17,802	**3,330**	**94,750**	**97%**	**FL**	**FL**
Sheepshead	53,721	1,777,431	58,247	1,596,043	77,082	2,142,796	34,360	2,492,673	159,282	1,480,695	**382,693**	**9,489,638**	**96%**	**FL**	**SC**
Crevalle jack	31,850	841,147	34,586	528,530	33,483	642,703	32,070	703,856	30,164	682,501	**162,153**	**3,398,737**	**95%**	**FL**	**FL**
Sailors choice	1,868	35,153	863	2,951	1,752	19,491	894	15,299	4	17,768	**5,381**	**90,663**	**94%**	**FL**	**FL**
Schoolmaster	115	868	0	5,623	1,904	4,722	1,492	3,836	10	6,159	**3,521**	**21,208**	**86%**	**FL**	**FL**
Margate	1,727	28,788	2,676	18,025	3,071	18,104	1,815	4,650	3,721	5,283	**13,010**	**74,850**	**85%**	**FL**	**FL**
Saucereye porgy	139	4,453	591	769	325	0	0	0	0	223	**1,055**	**5,445**	**84%**	**FL**	**FL**
Graysby	1,624	8,722	2,620	7,266	530	4,428	1,099	8,132	1,219	1,953	**7,091**	**30,500**	**81%**	**FL**	**SC**

Source: SEFSC ACL and SE HBS CRNF datasets.*

*Note: **MRFSS**, **TPWD**, and **Commercial** data are from SEFSC ACL datasets and **HBS** data are from the SE HBS CRNF files. Therefore, **all sectors** are being considered for the state vs. federal landings analysis. Note that the CRNF files state vs. federal determination was based upon the headboat's "Distance from Shore" field. This field is sometimes not completed, and the weights of fish landed may not be very accurate. Additionally, the CRNF files may represent an incomplete landings dataset due to non-compliance with reporting requirements. As such, the landings values from the HBS component of the state vs. federal analysis will likely be underestimates of the total lbs landed and should not be substituted for the HBS landings data found within the SEFSC ACL dataset (which does not contain a state vs. federal breakout for headboat). Note ACL recreational dataset landings estimates may differ from MRFSS website queries because 'For Hire' includes headboat and charter, and SEFSC has used improved weight substitution and charter boat estimation procedures that differ from those on the MRFSS website. Note 'Atlantic' for recreational data includes MRFSS: SE Atl. states (NC-FLE) and Headboat: Atlantic (NC-FL Keys areas 1-17). Note gag and black grouper landings have been adjusted for misidentification prior to 1990.

Tiger grouper, black snapper, smallmouth grunt, misty grouper, and cottonwick did not have any reported landings. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest and sale is prohibited as per Amendment 17B.

Table 4-5. Total landings (lbs whole weight) of snapper grouper species under consideration for removal from the FMU in **Alternatives 2, 5,** and **9 (Preferreds)** under **Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Queen triggerfish	5	0	3,503	3,503	Federal
Sheepshead	2	251,552	1,743,372	1,994,924	FL
Crevalle jack	2	208,540	551,131	759,671	FL
Black margate	2	0	86,428	86,428	FL
Bluestriped grunt	2	0	44,873	44,873	FL
Yellow jack	2	8	35,209	35,217	FL
Porkfish	2,5	0	20,756	20,756	FL
French grunt	2	0	1,142	1,142	FL
Grass porgy	2	0	791	791	FL
Puddingwife	2,5	0	418	418	FL
Spanish grunt	2	0	138	138	FL
Smallmouth grunt	9	0	0	0	N/A
Tiger grouper	9	0	0	0	N/A

Alternative 5 (Preferred) evaluates whether species managed under the Florida Marine Life Species Rule (queen triggerfish, porkfish, and puddingwife) are in need of federal conservation and management based on the adequacy of management by the state of Florida. During 2005-2009, 100% and 97% of puddingwife and porkfish landings, respectively, were taken from state waters, and these catches occurred predominantly in Florida fisheries (**Tables 4-4 to 4-6**). While most of the queen triggerfish harvest occurred in federal waters during 2005-2009 (**Tables 4-6** and **4-9**), that species is not targeted by commercial or recreational fishermen in federal waters or in quantities that would impact the population.

Removing the proposed 13 species from the Snapper Grouper FMU would not impact state management, except in South Carolina. As previously noted, regulations in South Carolina waters are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. This means, queen triggerfish, porkfish, and puddingwife would no longer be included in the 20-fish snapper grouper aggregate bag limit in South Carolina waters if they were removed from the FMU under this alternative unless that state acted to re-institute such regulations. However, these species are not generally harvested in South Carolina waters. The Florida Marine Life Rule regulations would continue to apply to species harvested in Florida state waters. The Florida Marine Life Species Rule requires use of non-lethal methods of harvest and that the fish, invertebrates, and plants so harvested, be maintained alive for the maximum possible conservation and economic benefits. As such, the biological impacts of removing these three species from the FMU are expected to be insignificant.

Table 4-6. State and federal combined average commercial and recreational landings (lbs whole weight) of species considered for removal from the snapper grouper FMU under **Alternative 5 (Preferred)** during 2005-2009.

Species	Commercial	Recreational
Porkfish	0	20,756
queen triggerfish	0	3,503
Puddingwife	0	418

Alternatives 6 and **7** would remove species from the FMU if their combined (state and federal) average annual landings for 2005-2009 (**Tables 4-7** and **4-8**) were below a specified threshold. Many of these species could be considered to be of minor importance to the Nation and regional economy, because they are not captured in sufficient quantities to support targeted fisheries. The sum of the average landings of the 28 species considered for removal in **Alternative 7** is 117,697 lbs, accounting for just 0.14% of the snapper grouper landings during 2005-2009. Nine of the species considered in **Alternatives 6** and **7** for removal have average landings less than 1,000 lbs per year, and two species have no landings (smallmouth grunt and tiger grouper).

Table 4-7. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 10,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Queen triggerfish	3,503
Yellowmouth grouper	3,504
Queen snapper	5,086

Table 4-7. Continued. Snapper grouper species listed in **Alternative 6** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 10,000 LBS
Schoolmaster	5,423
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 4-8. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 20,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Spanish grunt	138
Black snapper	141
Longspine porgy	372
Puddingwife	418
Mahogany snapper	467
Grass porgy	791
French grunt	1,142
Misty grouper	1,834
Saucereye porgy	1,975
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Queen triggerfish	3,503
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,423

Table 4-8. Continued. Snapper grouper species listed in **Alternative 7** with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 20,000 lbs.

COMMON NAME	AVERAGE LANDINGS (2005-2009)* ≤ 20,000 LBS
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511
Bar jack	10,726
Ocean triggerfish	10,962
Sand tilefish	11,168
Yellowfin grouper	12,930
Graysby	14,648
Sailors choice	19,239

Note: Tiger grouper and smallmouth grunt are proposed for removal from the FMU under **Alternative 9 (Preferred)**.
*Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).

Table 4-9. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7, Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Yellowfin grouper	7	5,562	7,368	12,930	Federal
Scup	6,7	0	8,511	8,511	Federal
Queen snapper	6,7	4,804	282	5,086	Federal
Yellowmouth grouper	6,7	17	3,487	3,504	Federal
Queen triggerfish	5,6,7	0	3,503	3,503	Federal
Rock sea bass	6,7	609	1,716	2,325	FL
Misty grouper	6,7	1,833	0	1,834	Federal
Mahogany snapper	6,7	8	459	467	Federal
Longspine porgy	6,7	12	360	372	Federal
Black snapper	6,7	141	0	141	Federal
Sailors choice	3,4,7	0	19,239	19,239	FL
Graysby	4,6,7	520	14,129	14,648	FL
Sand tilefish	7	2,205	8,963	11,168	FL
Ocean triggerfish	7	0	10,962	10,962	FL
Bar jack	7	4,528	6,198	10,726	Federal

Table 4-9. Continued. Total landings (lbs whole weight) of snapper grouper species in **Alternatives 6-7**, **Action 1**, and primary harvest location. If harvest location is "federal" then greater than 50% of the landings occur in federal waters.

Species	Alternative(s)	Commercial	Recreational	Total	Primary Harvest Location
Dog snapper	6,7	528	5,930	6,458	FL
Schoolmaster	4,6,7	186	5,237	5,423	FL
Coney	6,7	8	2,445	2,453	Federal
Blackfin snapper	6,7	816	1,271	2,087	Federal
Saucereye porgy	4,6,7	0	1,975	1,975	FL
Bank sea bass	6,7	355	5,212	5,567	Federal
French grunt	2,3,4,6,7	0	1,142	1,142	FL
Grass porgy	2,3,6,7	0	791	791	FL
Puddingwife	2,3,4,5,6,7	0	418	418	FL
Spanish grunt	2,3,4,6,7	0	138	138	FL
Cottonwick	6,7	0	6	6	N/A
Smallmouth grunt	6,7	0	0	0	N/A
Tiger grouper	6,7	0	0	0	N/A

SOURCE: SEFSC ACL Datasets (2010).

Considering the 7 factors identified in the NMFS NS 7 guidelines for determining whether a species is in need of federal conservation and management, the species in **Alternatives 6** and **7** are possible candidates for removal from the FMU. In addition to the small magnitude of landings for species in **Alternatives 6** and **7**; most of the catch is from the recreational sector. Of the 28 species considered under **Alternative 7**, only three (yellowfin grouper, misty grouper, queen snapper) are landed primarily by the commercial sector, and landings of those species are relatively minor. Since most recreational data are survey based and these species are rarely encountered in the fishery, those data are extremely variable and uncertain.

Alternative 8 would remove an additional four species (tomtate, knobbed porgy, jolthead porgy, and whitebone porgy) from the snapper grouper FMU because they are not targeted or desired. Tomtate is sometimes retained for use as bait, but is the smallest of the grunts and is not highly regarded by fishermen. That species is not currently subject to any regulations and is not included in the 20-fish aggregate bag limit. Knobbed porgy, jolthead porgy, and whitebone porgy are included in the South Atlantic Council's 20-fish aggregate bag limit.

Alternative 9 (Preferred) would remove tiger grouper and smallmouth grunt from the snapper grouper FMU since there were zero landings for these species from 2005 to 2009. These species also met criteria established for classification as ecosystem component species (EC) in the NS1 Guidelines (see **Action 2**).

The Magnuson-Stevens Act requires that ACLs be set at a level that prevents overfishing. For species in **Alternative 9 (Preferred)**, which have very low landings, or no landings at all, setting

appropriate ABCs and ACLs to ensure overfishing does not occur is very difficult. Further, it is unlikely sufficient data will ever be available to conduct an effective stock assessment on these species. Inclusion of these species in the FMP is unlikely to improve the condition of the stock, produce more efficient utilization of the snapper grouper fishery, or foster orderly growth of a developing fishery because catches of these species have been largely constrained by their availability to the fishery rather than by fishery regulations. Thus, retaining species identified in **Alternative 9 (Preferred)** in the snapper grouper FMU and managing them with ACLs and AMs would be costly and impractical.

Table 4-10. Average state and federal (combined) landings (lbs whole weight) from all sectors, for tomtate, knobbed porgy, jolthead porgy, and whitebone porgy, in **Alternative 8**, from 2005-2009.

COMMON NAME	AVERAGE LANDINGS (2005-2009)
Tomtate	66,671
Knobbed porgy	37,618
Jolthead porgy	40,966
Whitebone porgy	21,064

Alternatives 2, 5, and **9 (Preferreds)** would not affect state regulations for these species, with the exception of South Carolina. Regulations in state waters of South Carolina (http://www.dnr.sc.gov/regulations.html) are currently structured to mirror those in federal waters for all species in the snapper grouper FMU. Therefore, any species that is no longer subject to federal regulations would no longer be subject to state regulations in South Carolina waters unless that state acted to re-institute such regulations. However, only two of the species identified for removal (sheepshead and crevalle jack) under the preferred alternatives are taken from South Carolina state waters. Additionally, while federal-state compatibility is often desirable from a management standpoint, managing state fisheries is not and was never an intended goal of the Snapper Grouper FMP. The stated intent of the FMP was to manage snapper grouper species within its "area of authority" (SAFMC 1983), which includes federal waters from North Carolina/Virginia border to the Atlantic side of the Florida Keys.

The South Atlantic Council has evaluated whether all species originally included in the snapper grouper FMU are currently in need of federal conservation and management according to the seven factors identified in 50 CFR §600.340(b)(2), and has determined 13 species identified in **Alternatives 2, 5**, and **9 (Preferreds)** should be removed from the FMU. Greater than 95% of the landings of ten species of these 13 species occur in state waters, and three species are already subject to management by the Florida Marine Life Rule. Thus, these species could be or already are adequately managed by the states. In addition, two species identified for removal have no commercial or recreational landings. The South Atlantic Council intends to evaluate landings and other available information on species removed from the FMU every five years (SAFE report) to determine whether they should be added back to the FMU or continue to be removed from the FMU and take action as appropriate. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in the FMU. If the South Atlantic Council determines that a removed species is in need of management, the species could be added back into the FMU. The South Atlantic Council also evaluated whether the species included in the FMU could be considered as ecosystem component (EC) species, and

determined six species met criteria established for classification as EC species in the NS1 Guidelines (see **Action 2**).

Part of the South Atlantic Council's stated rationale in the Snapper Grouper FMP (SAFMC 1983) for including species identified in **Alternatives 2, 5,** and **9 (Preferreds)** in the FMU was that they are part of a multi-species fishery and many of the species' ranges overlap. Therefore, while a species may predominantly occur in state waters, some interaction with species that occur mostly in federal waters could occur. Examination of logbook data from fishermen who possess a federal commercial snapper grouper permit reveals that species which occur commonly in federal waters are sometimes taken on the same trips as species that are predominant in state recreational landings. For example, examination of logbook data shows sheepshead, which most often occur in shallow state waters, are taken on a small percentage of trips with snapper grouper species including gag, red snapper, gray triggerfish, and red grouper, which more commonly occur in federal waters (**Table 4-11**). However, capture of sheepshead on the same trip as gag or red snapper does not necessarily mean they are caught together and occur in the same location. Fishermen may fish in multiple locations on a trip that involves fishing in both state and federal waters. Therefore, the actual interaction between sheepshead, which occur in shallow state waters, and other snapper grouper species, which occur more often in federal waters, is less likely than suggested by the information in **Table 4-11**, because they commonly occur at different depths.

Table 4-11. Taxa taken on trips during 2005-2009 when at least 1 pound of sheepshead was landed.

Common Name	% trips	% total
SHEEPSHEAD,ATLANTIC	100.00%	2.75%
SPANISH MACKEREL	37.94%	41.10%
FLOUNDER,ATLANTIC & GULF OF MEXICO,UNC	22.95%	5.39%
KING MACKEREL	20.61%	16.78%
BLUEFISH	18.74%	1.94%
SNAPPER,MANGROVE	15.22%	0.67%
BLUE RUNNER	13.82%	0.33%
GROUPER,GAG	13.82%	4.70%
SNAPPER,RED	13.58%	1.06%
COBIA	12.18%	1.10%
BUTTERFISH,UNC	10.30%	0.68%
TRIGGERFISH,GRAY	10.07%	0.29%
TUNA,LITTLE (TUNNY)	8.67%	1.29%
CREVALLE	7.96%	0.74%
MULLETS	7.49%	2.32%
BARRACUDA	6.56%	0.50%
GROUPER,RED	6.32%	0.23%
LOBSTER,SPINY	6.09%	1.84%
GOATFISHES	5.62%	1.67%
AMBERJACK,GREATER	5.39%	1.80%
SAND PERCH	5.15%	0.16%

Table 4-11. Continued. Taxa taken on trips during 2005-2009 when at least 1 pound of sheepshead was landed.

Common Name	% trips	% total
CROAKER,ATLANTIC,UNC	4.22%	0.08%
POMPANO	4.22%	0.15%
SPADEFISH	4.22%	0.15%
DRUM,BLACK	3.75%	0.06%
MOONFISH,ATLANTIC	3.75%	0.07%
BONITO,ATLANTIC	3.51%	0.54%
SEA BASSE,ATLANTIC,BLACK,UNC	3.51%	0.49%
TUNA,ALBACORE	3.51%	1.22%
SHARK,DOGFISH,SMOOTH	3.28%	2.84%
HOGFISH	2.81%	0.07%
FINFISHES,UNC FOR FOOD	2.58%	0.19%
KING WHITING	2.34%	0.04%
SHARK,ATLANTIC SHARPNOSE	2.34%	1.54%
SNAPPER,VERMILION	2.11%	0.05%
SPOT	2.11%	0.01%
SCAMP	1.87%	0.04%
PORGY,WHITEBONE	1.64%	0.02%
SEA TROUT,GRAY,UNC	1.64%	0.02%
SNAPPER,MUTTON	1.64%	0.04%
57 additional taxa		5.05%

The potential effects of **Alternatives 2, 5,** and **9 (Preferreds)** on bycatch are expected to be minimal in most cases because the species proposed for removal are not generally targeted or desired. Furthermore, most of the species in these alternatives are caught in shallow state waters where release mortality is low.

The biological effects (positive or negative) of **Alternatives 4** and **5 (Preferred)** are expected to be relatively minor. In addition, as the species listed in **Alternative 7** and **8** constitute about 1% of the total snapper grouper species, removal of these species from the FMU would not be expected to have significant biological effects. Therefore, there is very little difference in the biological effects of **Alternatives 2-8**. Among the alternatives considered, **Alternatives 4** and **7** could have the greatest negative biological effect because they would remove the most species from the FMU.

The Magnuson-Stevens Act requires federal action agencies which fund, permit, or carry out activities that may adversely affect essential fish habitat (EFH) to consult with NOAA Fisheries Service regarding the potential impacts of their actions on EFH and respond in writing to NOAA Fisheries Service recommendations. If the species in the preferred alternatives are removed from the FMU, the EFH identifications and descriptions for those species would not be incorporated in the description of EFH for the Snapper Grouper fishery in the South Atlantic. However, because the proposed action will not result in any individual habitat type or geographic area previously identified as EFH to lose that designation NMFS's authority to protect and conserve those habitats

through the EFH consultation process is not eliminated. Although consultations under the Magnuson-Stevens Act and other authorities (e.g., Fish and Wildlife Coordination Act) will still occur having particular habitat types designated as EFH for multiple life stages of multiple species provides a relative indicator of the overall value of a particular habitat which serve to strengthen the basis of NOAA Fisheries Service habitat protection recommendations. In addition, the effect is also mitigated by the fact that NOAA Fisheries Service regularly identifies species managed by the states that may be associated with the EFH designated for a managed species to highlight the potential impact to the ecosystem or species complex using that particular habitat type.

Thus, if the species in the preferred alternatives are removed from the FMU the essential fish habitat (EFH) identifications and descriptions for those species would not be incorporated in the description of EFH for the Snapper Grouper fishery in the South Atlantic. However, taking into account the considerable overlap of the distribution and life history habitat requirements of the remaining species in the Snapper Grouper FMU, and other fisheries managed by the South Atlantic Council, no individual habitat type or geographic area previously identified as EFH would lose its EFH designation.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between Endangered Species Act (ESA)-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2, 5,** and **9 (Preferreds)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. **Alternatives 2, 5,** and **9 (Preferreds)** are likely to perpetuate the existing level and type of adverse effects occurring to sea turtles and smalltooth sawfish from interactions with the fishery. Removing species from the FMU that are primarily taken in state waters is unlikely to alter fishing behavior in a way that would cause new or reduce existing adverse effects to affected protected species.

4.1.1.2 Economic Effects

As previously noted, none of the 73 species currently in the snapper grouper FMU would be removed under **Alternative 1 (No Action)**. Conversely, the number of species to be removed under **Alternative 2 (Preferred), Alternative 3**, **Alternative 4, Alternative 5 (Preferred), Alternative 6, Alternative 7, Alternative 8**, and **Alternative 9 (Preferred)** are 10, 11, 15, 3, 22, 28, 4, and 2, respectively **(Table 4-12)**.

Some overlap exists across the alternatives with respect to the species being removed. Specifically, one species (porkfish) would be removed under **Alternative 4** as well as **Alternative 5 (Preferred)**; seven species (French grunt, grass porgy, graysby, sailors choice, saucereye porgy, schoolmaster, and Spanish grunt) would be removed under both **Alternative 4** and **Alternative 7**; one species (queen triggerfish) would be removed under both **Alternative 5 (Preferred)** and **Alternative 7**; two species (puddingwife and queen triggerfish) would be removed under **Alternative 4**, **Alternative 5 (Preferred)** as well as **Alternative 7**; two species would be removed under **Alternative 6** and **Alternative 9 (Preferred)**; and two species would be removed under

Alternative 2 (Preferred) and **Alternative 5 (Preferred)**. Because of this overlap, the total number of snapper grouper species removed from federal oversight across multiple alternatives cannot be determined simply by adding the number of species to be removed under those alternatives. Thus, the total number of species removed under all preferred alternatives (**Alternative 2 (Preferred)**, **Alternative 5 (Preferred),** and **Alternative 9 (Preferred))** is 13 rather than 15. Regardless, it would appear that **Alternative 7** and **Alternative 6** would most reduce federal management of snapper grouper species.

However, the species removed from federal management differ considerably across these alternatives and thus a better measure of the reduction in federal oversight of snapper grouper species is total landings of snapper grouper species removed under each alternative. The total landings in millions of lbs (whole weight) of snapper grouper species being removed from federal management under **Alternative 2 (Preferred), Alternative 3**, **Alternative 4**, **Alternative 5 (Preferred), Alternative 6, Alternative 7, Alternative 8** and **Alternative 9 (Preferred)** are: 2.944, 2.964, 3.007, 0.025, 0.052, 0.132, 0.166, and 0, respectively (**Table 4-12**). Thus, it would appear that federal management of snapper grouper species would be most reduced under **Alternative 4**, **Alternative 3**, and **Alternative 2 (Preferred)**.

Given the previously noted overlap of species across certain alternatives, the total landings of snapper grouper species removed from federal oversight across multiple alternatives cannot be determined simply by adding the landings under those alternatives. Thus, for example, the total landings of snapper grouper species removed from federal management across all preferred alternatives (**Alternative 2 (Preferred)**, **Alternative 5 (Preferred),** and **Alternative 9 (Preferred))** is 2.948 million lbs (whole weight) rather than 2.969 million lbs (whole weight). Although a fair degree of overlap exists across alternatives in terms of the number of species removed, the overlap in terms of landings is relatively small.

More importantly, nearly 100% of the combined landings under all preferred alternatives come from species removed under **Alternative 2 (Preferred)**. Further, most of the landings (93%) removed under **Alternative 2 (Preferred),** and thus under all preferred alternatives, are of sheepshead and crevalle jack. For reasons noted in the biological effects discussion, current federal regulations are likely not restricting the harvest of the species being removed under **Alternatives 2 (Preferred), 4, 5 (Preferred), 7, 8**, or **9 (Preferred)**. Most importantly, 95% or more of the sheepshead and crevalle jack landings come from state waters, and thus the effective landings of those species being removed from federal management is approximately 124,000 lbs (whole weight) as opposed to 2.754 million lbs. The same logic applies to other species removed under **Alternative 4**. Landings of mutton snapper from state waters account for a smaller percentage (69%) of the total mutton snapper landings relative to the snapper grouper species being removed from the FMU under **Alternatives 4, 5 (Preferred), 7, and 8.** However, the effective landings of mutton snapper being removed from federal management under these alternatives is about 174,000 lbs rather than almost 562,000 lbs (whole weight). The effective landings of the 13 snapper grouper species being removed from federal management across all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)** is considerably less than 2.948 million lbs and, most likely, around 225,000 lbs.

For the reasons provided in the biological effects section, the economic benefits associated with retaining management of the 13 snapper grouper species' effective landings would be relatively small. The impact of removing these landings from federal management under the preferred alternatives (**Preferred Alternatives 2, 5**, and **9**) would be reduced by other factors, such as the fact that individual states can still manage species directly if landings occur at ports within their respective jurisdictions.

Further, removing species effectively managed by the states from the snapper grouper FMP is expected to result in more efficient management of all snapper grouper species. Specifically, the states will obtain management authority over snapper grouper species which they have more direct control over and federal authorities (SAFMC and NOAA Fisheries Service) will retain management over snapper grouper species which, to some or a large extent, fall within their jurisdiction and are harvested in relatively significant numbers based on landings. In turn, federal resources (labor and capital) could be used to more effectively manage the remaining snapper grouper species in the FMU. In general, the allocation of management authority over all snapper grouper species and thus the associated costs will more closely mirror the distribution of the resource.

If species are not removed from federal management, as would be the case under **Alternative 1 (No Action)**, annual catch limits (ACLs), accountability measures (AMs), and annual catch targets (ACTs) would need to be implemented and enforced for all 73 species within the FMU (including those currently subject to little management) on a regular basis. The administrative costs associated with management of these species is not presently known given currently available information. By removing 13 of the 73 (approximately 18%) species currently in the FMU, the administrative costs of federally-managing snapper grouper species could be reduced under all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)**, and potentially in a proportional manner (i.e., federal administrative costs might be reduced by 18%). These reductions in administrative costs are expected to be the greatest under **Alternatives 4, 5, 7**, and **8** relative to any individual alternative or other combination of alternatives[3] since they remove the largest number of species.

Therefore, in general, the net economic effects of removing species from the snapper grouper FMU are expected to result in net benefits rather than losses. More specifically, net economic benefits are expected to be maximized under the combination of **Alternatives 4, 5, 7,** and **8** relative to any individual alternative or other combination of alternatives given that 39 species would be removed from federal management. Given that only 13 species are being removed from federal management, net economic benefits are expected to be considerably less under the combination of all preferred alternatives (**Preferred Alternatives 2, 5,** and **9)**. Since the removal of species from the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net economic benefits are the result of indirect rather than direct economic effects.

Table 4-12. Average landings (2005-2009) for species removed from the snapper grouper FMU under all alternatives for **Action 1**.

[3] Combining **Alternative 2 (Preferred)**, **Alternative 3**, or **Alternative 4** in any manner would not be appropriate since all of the snapper grouper species removed under **Alternative 2 (Preferred)** and **Alternative 3** are also removed under **Alternative 4** and would thus result in considerable double-counting.

Species	Alt. 1	**Pref. Alt. 2**	Alt. 3	Alt. 4	**Pref. Alt. 5**	Alt. 6	Alt. 7	Alt. 8	**Pref. Alt. 9**	**All Pref. Alts.**	Average Landings (2005-09)
Sheepshead		**X**	X	X						**X**	1,994,924
Crevalle jack		**X**	X	X						**X**	759,671
Black margate		**X**	X	X						**X**	86,428
Tomtate								X			66,671
Bluestriped grunt		**X**	X	X						**X**	44,873
Jolthead porgy								X			40,966
Knobbed porgy								X			37,618
Yellow jack		**X**	X	X						**X**	35,217
Margate				X							22,342
Whitebone porgy								X			21,064
Porkfish		**X**	X	X	**X**					**X**	20,756
Sailors choice			X	X			X				19,239
Graysby				X			X				14,648
Yellowfin grouper							X				12,930
Sand tilefish							X				11,168
Ocean triggerfish							X				10,962
Bar jack							X				10,726
Scup						X	X				8,511
Dog snapper						X	X				6,458
Bank sea bass						X	X				5,567
Schoolmaster				X		X	X				5,423
Queen snapper						X	X				5,086
Yellowmouth grouper						X	X				3,504
Queen Triggerfish					**X**	X	X			**X**	3,503
Coney						X	X				2,453
Rock sea bass						X	X				2,325
Blackfin snapper						X	X				2,087
Saucereye porgy				X		X	X				1,975
Misty grouper						X	X				1,834
French grunt		**X**	X	X		X	X			**X**	1,142
Grass porgy		**X**	X	X		X	X			**X**	791
Mahogany snapper						X	X				467
Puddingwife		**X**	X	X	**X**	X	X			**X**	418
Longspine porgy						X	X				372
Black snapper						X	X				141
Spanish grunt		**X**	X	X		X	X			**X**	138
Cottonwick						X	X				6
Smallmouth grunt						X	X		**X**	**X**	0

Species	Alt. 1	**Pref. Alt. 2**	Alt. 3	Alt. 4	**Pref. Alt. 5**	Alt. 6	Alt. 7	Alt. 8	**Pref. Alt. 9**	**All Pref. Alts.**	Average Landings (2005-09)
Tiger grouper						X	X		**X**	**X**	0
Number of Species Removed	0	**10**	11	15	**3**	22	28	4	**2**	**13**	
Landings of Removed Species (mil. lbs ww)	0	**2.944**	2.964	3.261	**.025**	.052	.132	.166	**0**	**2.948**	3.824

*State landings = 69% of total landings

4.1.1.3 Social Effects

The social impacts from removal of species from the snapper grouper FMP may be beneficial as it may make management decisions timelier and streamlined if fewer species are included in the management unit and do not require monitoring and assessment. For some species that are caught infrequently and in low numbers it may be more efficient to exclude them from management as the difficulty in tracking landings and monitoring could prove costly to implement by assigning ACLs to all. This may become crucial with the present economic climate as state and federal budgets are reduced and management needs become more focused on species that are both more economically and socially important. Under **Alternative 1 (No Action)** ACLs will need to be implemented for all species within the FMP making management more cumbersome. With **Alternatives 2 (Preferred), 3** and **4,** removal of those species with a majority of landings from state waters would likely ensure continued management as the state would still monitor the landings. The same is true with **Alternative 5 (Preferred)** as these species do fall under state management with the Florida Marine Life Species Rule, which does provide some protection. The state can implement management measures and therefore should provide protection for these species. **Alternatives 6 and 7** will have a similar effect of providing for more streamlined management, which should have an overall benefit to the social impacts as long as protection for those species removed is provided by the states or other authority. **Alternative 8**, like the other **Alternatives 2-7,** will assist in streamlining management but has similar risks if monitoring and subsequent management cannot effectively maintain a viable stock after removal from federal management. **Alternative 9 (Preferred)** will likely also contribute to more streamlined management as these species are rarely encountered. The overall social effects of removal should be beneficial as management may be less encumbered with oversight of species that are not encountered or targeted on a regular basis and may still be accounted for through state landings. If budgets are reduced in the future, the removal of these species may lessen the burden of monitoring and assessment so that key species can continue to be assessed with the best available science through quality data collection.

4.1.1.4 Administrative Effects

Alternative 1 (No Action) would result in increased administrative impacts associated with establishing ACLs and AMs. Under **Alternative 1 (No Action)**, all 73 snapper grouper species in the FMU would remain in the FMU and ACLs and AMs would be required (see **Actions 6, 7, 8, 10,**

11, 15, 16, and **17**). **Alternatives 2 (Preferred)-4** would remove some species from the FMU based on frequency of landings in state waters, with **Alternative 2 (Preferred)** removing 10 species. **Alternative 5 (Preferred)** would further remove three species that are managed under the Florida Marine Life Species Rule. **Alternatives 6** and **7** would remove some species based on total landings in federal waters. **Alternative 7** would result in the highest number (28) of species being removed from the FMU and would result in the lowest administrative burden associated with establishing ACLs, ACTs and AMs. **Alternative 8** would remove four additional species from the FMU. The combination of **Preferred Alternatives 2, 5,** and **9** would result in reducing the number (13) of species in the snapper grouper FMU requiring the establishment of ACLs, AMs, and possibly ACTs. These alternatives could slightly lessen the administrative burden on the agency with regards to implementing, monitoring and enforcing ACLs, and AMs for these species.

4.1.1.5 Council Conclusions

The NS1 guidelines state that Councils have the discretion to determine, on a case-by-case basis, whether changes in their stock classifications under current FMPs are needed. If the criteria originally used to include a species in an FMP are no longer valid, then Councils should reclassify the species through an FMP amendment. Furthermore, for all species considered to be "in the fishery"—those with associated landings and that do not qualify for designation as "ecosystem component" species — Councils must specify the maximum sustainable yield (MSY), optimum yield (OY), an acceptable biological catch (ABC) Control Rule and ABC, ACLs, and AMs.

The FMP for the snapper grouper fishery, as amended, established a "complex" comprising 73 species. Only a portion of these, however, makes up the bulk of the landings from federal waters for the complex. Many species are caught mainly in state waters or incidentally to other snapper grouper species while others are already under management at the state level. Hence the South Atlantic Council considered removing species that met certain criteria from the management unit. The South Atlantic Council focused on harvest from state versus federal waters as the predominant criterion for removal and whether an overlap existed with state management as well as whether or not species contained within the FMU were in need of federal management according to criteria specified in NS 7. At their June 2011 meeting, the South Atlantic Council indicated it would evaluate species removed from the FMU every five years (SAFE reports). If, upon evaluation, it was determined that a species which had been removed from the FMU was in need of management, the South Atlantic Council could add that species back into the FMU.

The Council originally selected as their preferred **Alternatives 4, 5, 7,** and **8** but subsequently made changes to their preferred alternatives (see below).

The South Atlantic Council's Scientific and Statistical Committee (SSC) did not provide a recommendation for this action.

The Snapper Grouper Advisory Panel (AP) discussed the South Atlantic Council's proposal to remove species in **Alternatives 4, 5, 7,** and **8**. The AP expressed concerns about species proposed for removal from the FMU that have known species identification issues. For instance, graysby and coney may be reported as hinds. The AP recommended that mutton snapper and queen snapper be

retained in the FMU. The following concerns regarding removal of mutton snapper from the FMU were addressed:

- Recreational sale – AP members feel that a federal permit should be required to sell catch. If mutton snapper are removed from the FMP and are no longer under a federal permit requirement, more anglers will obtain recreational sale licenses.
- Targeting of mutton snapper could increase if they are removed from the FMP resulting in increased interactions with other snapper grouper species.
- Florida has established a protected area in the Florida Keys for mutton snapper. The AP questioned why the South Atlantic Council would remove them from management after so much work has been done to manage the species.
- The majority of mutton fishing is in federal waters off the Florida Keys. The AP stated that Florida should have to extend state regulations into federal waters to manage mutton snapper.

The AP expressed the following concerns regarding removal of queen snapper:

- Queen snapper are in the deepwater complex; they are caught in federal waters so there should be no need to remove them from the FMP.
- However, keeping species such as queen snapper within the management unit would detract stock assessments resources from other, more valuable, species.
- Removing queen snapper would increase interactions with other species such as speckled hind and snowy grouper.
- There is a large queen snapper fishery off Marathon, Florida.

At their March 2011 meeting, the South Atlantic Council voted to add mutton snapper to the list of species being considered for removal since Florida had expressed a willingness to manage this species and extend regulations into federal waters. However, prior to the June 2011 meeting, Florida expressed serious concerns over the state's ability to manage the species due to difficulty in enforcing regulations for vessels that are not registered in Florida. In light of this, the South Atlantic Council voted to retain mutton snapper in the FMU.

The Law Enforcement AP recommended confirming that a prohibition on filleting is in place to circumvent any potential species identification issues.

At their August 2011 meeting, after reviewing comments submitted by the public on the proposed actions and considering the recommendations from advisory panels, the South Atlantic Council reconsidered the removal of 39 species from the snapper grouper management unit. The Council re-evaluated whether or not species contained within the FMU were in need of federal management according to criteria specified in NS 7. The South Atlantic Council chose to deselect **Alternatives 4, 7, and 8** as their preferreds due to concerns including 1) potential for bycatch as a result of species removal, 2) uncertainty as to the level of state management and how a state would regulate catch in its waters that was landed in a neighboring state, and 3) concern that unregulated catch in federal waters could push some species above their overfishing limit.

The South Atlantic Council chose instead to select **Alternative 2** as a preferred, retain **Alternative 5** as a preferred and add a new alternative (also a preferred) to remove two species with zero reported landings in federal waters (**Alternative 9**). The South Atlantic Council reasoned that

removing species with 95% of landings in state waters (**Preferred Alternative 2**) was reasonable since these species are harvested almost exclusively in state waters and federal management would likely have little effect on conservation. Finally, the Council chose to remove smallmouth grunt and tiger grouper from the FMU due to no documented landings of these species. There is evidence that these species occur in the South Atlantic, but only occasionally; therefore, the South Atlantic Council did not feel they were in need of federal management. Tiger grouper appears to be an insular species; that is, a species that occurs primarily around islands as opposed to continental areas that constitute the majority of the South Atlantic Council's jurisdiction. South Atlantic Council members stated that such insular species may occasionally occur in the Florida Keys but the population is located elsewhere hence management of these species is ineffectual and not really needed in the Council's area of authority.

The South Atlantic Council concluded that **Preferred Alternatives 2, 5,** and **9** best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.2 Action 2: Designate Ecosystem Component (EC) Species

Alternative 1 (No Action). Do not designate EC species.

Alternative 2. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 10,000 lbs, as EC species.

Alternative 3. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 1,000 lbs, as EC species.

Alternative 4. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 2,500 lbs, as EC species.

Alternative 5. Designate snapper grouper species with state and federal (combined) landings that are less than, or equal to 5,000 lbs, as EC species.

Alternative 6 (Preferred). Designate snapper grouper species that meet three out of four NS1 criteria, as EC species.

4.1.2.1 Biological Effects

The NS1 guidelines pertaining to ecosystem component species (74 FR 3178; Section 50 CFR 600.310 (d) (5) (i)) indicate a species should meet four criteria to be considered for classification as an EC species: (1) Be a non-target species or non-target stock; (2) not be determined to be subject to overfishing, approaching overfished, or overfished; (3) not be likely to become subject to

overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and (4) not generally be retained for sale or personal use. The EC species would be retained in the snapper grouper FMU, but would not require ACLs and AMs and would not be subject to management measures such as bag limits and size limits.

To determine if a species could be considered as an ecosystem component species, the four criteria identified in the NS1 guidelines were scored a 1 (does not meet criteria) or 0 (meets criteria) for each of the four components (**Table 4-13**). Scoring of non-target species or stock was based on landings (commercial and recreational). If landings met the threshold of ≤ 10,000 lbs, a score of 0 was provided. Species with landings > 10,000 lbs were scored 1.

If a species had a stock assessment, and the assessment indicated a status of overfishing/overfished, a score of 1 was provided. If a species had no stock assessment, or if there was a stock assessment but the assessment indicated that the species was not overfished/overfishing, a score of 0 was provided.

The likelihood of becoming overfished or undergoing overfishing was based on a Productivity and Susceptibility Analysis (PSA) score provided by MRAG Americas, which suggests vulnerability to overfishing or becoming overfished (MRAG 2009). A score ranges from 1 to 3 for high to low productivity and 1-3 for low to high susceptibility. Productivity factors include life-history characteristics of the species such as age at maturity, size at maturity, and its role in the food web. Examples of susceptibility factors include release mortality, availability, and encounterability (MRAG 2009). If the total PSA score for a species provided by MRAG (2009) is less than 3, a stock is considered in **Table 4-13** to have a low probability of overfishing or becoming overfished.

"Not generally retained for sale of personal use" was based on landings, magnitude of discards not affected by regulations in relation to landings, and desirability. Assigning a score to this category was subjective. For example, it was assumed a grouper or snapper species occurring in South Atlantic waters would be retained even if landings were low because they are generally sought after by most commercial and recreational fishermen. Level of desirability depends on individuals fishing and availability of a species. Some species like bank sea bass are generally not retained because of their small size and availability of a higher quality co-occurring species. However, if regulations restrict harvest of all species except one species that was formerly discarded, that species would likely be retained. Further, it is likely that all species in the snapper grouper FMU are retained to some degree by some segments of the fishing population. In addition, part of the South Atlantic Council's rationale for including all 73 species in the snapper grouper FMU was that they are part of a multispecies fishery where species occur together, suggesting an ecosystem reason for originally including rarely taken species in the FMU.

Table 4-13. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species.
A score of 0 indicates ecosystem criteria are met for the category. A total score of less than 2 suggests the species could be considered as an EC species. Thirteen species met this criterion, but seven overlapping species (highlighted in yellow) are excluded under the preferred alternatives in **Action 1**. Six EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Almaco jack	1	0	1	1	3
Atlantic spadefish	1	0	1	1	3
Banded rudderfish	1	0	1	1	3
Bank sea bass	0	0	1	0	1
Bar jack	1	0	1	0	2
Black grouper	1	0	1	1	3
Black margate	1	0	1	1	3
Black sea bass	1	1	1	1	4
Black snapper	0	0	1	1	2
Blackfin snapper	0	0	1	1	2
Blue runner	1	0	1	1	3
Blueline tilefish	1	0	1	1	3
Bluestriped grunt	1	0	0	0	1
Coney	0	0	1	1	2
Cottonwick	0	0	0	1	1
Crevalle jack	1	0	1	1	3
Cubera snapper	1	0	1	1	3
Dog snapper	0	0	1	1	2
French grunt	0	0	0	0	0
Gag	1	1	1	1	4
Grass porgy	0	0	1	0	1
Gray snapper	1	0	1	1	3
Gray triggerfish	1	0	0	1	2
Graysby	1	0	0	1	2
Greater amberjack	1	0	1	1	3
Hogfish	1	0	1	1	3
Jolthead porgy	1	0	1	1	3
Knobbed porgy	1	0	1	1	3
Lane snapper	1	0	0	1	2
Lesser amberjack	1	0	1	1	3

Table 4-13. Continued. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
Longspine porgy	0	0	1	0	1
Mahogany snapper	0	0	1	1	2
Margate	1	0	1	0	2
Misty grouper	0	0	1	1	2
Mutton snapper	1	0	1	1	3
Ocean triggerfish	0	0	1	0	1
Porkfish	1	0	1	0	2
Puddingwife	0	0	1	0	1
Queen snapper	0	0	1	1	2
Queen triggerfish	0	0	1	0	1
Red grouper	1	1	1	1	4
Red hind	1	0	1	1	3
Red porgy	1	1	1	1	4
Red snapper	1	1	1	1	4
Rock hind	1	0	1	1	3
Rock sea bass	0	0	1	0	1
Sailors choice	1	0	1	0	2
Sand tilefish	1	0	1	0	2
Saucereye porgy	0	0	1	1	2
Scamp	1	0	1	0	2
Schoolmaster	0	0	1	0	1
Scup	1	0	0	1	2
Sheepshead	1	0	1	1	3
Silk snapper	1	0	1	1	3
Smallmouth grunt	0	0	0	1	1
Snowy grouper	1	1	1	1	4
Spanish grunt	0	0	1	1	2
Tiger grouper	0	0	1	0	1
Tilefish (Golden)	1	1	1	1	4
Tomtate	1	0	0	1	2
Vermilion snapper	1	1	1	1	4

Table 4-13. Continued. Evaluation of snapper grouper species in fishery management unit for four criteria for consideration as Ecosystem Component species.

Common Name	Non-target species or non-target stock	Not be determined to be subject to overfishing, approaching overfished, or overfished	Not likely to become subject to overfishing or overfished	Not generally be retained for sale or personal use	Total
White grunt	1	0	0	1	2
Whitebone porgy	1	0	1	1	3
Yellow jack	1	0	1	0	2
Yellowedge grouper	1	0	1	1	3
Yellowfin grouper	1	0	1	1	3
Yellowmouth grouper	0	0	1	1	2
Yellowtail snapper	1	0	1	1	3
Wreckfish	1	0	1	1	3

In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper and Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Alternative 1 (No Action) would not designate any species in the snapper grouper FMU as EC species. **Alternative 2** would designate 16 snapper grouper species with state and federal (combined) landings that are less than, or equal to 10,000 lbs, as ecosystem component species (**Table 4-14**). This total includes tiger grouper and smallmouth grunt, which would be removed from the FMU under **Action 1**. Based on evaluation of the four ecosystem component criteria in **Table 4-13**, six species (including tiger grouper and smallmouth grunt) scored less than two. Landings of these species are small, but they could be retained by fishermen due to their quality as food fish. Coney, misty grouper, and yellowmouth grouper are retained by commercial fishermen and are also vulnerable to overfishing because they change sex and are relatively long lived. Dog snapper are mostly retained by the private recreational sector. Scup in the South Atlantic are often very small and discarded as “trash fish”. However, in the mid-Atlantic there is a FMP for this species and they are very important to commercial and recreational fishermen. Furthermore, **Table 4-14** does show some tendency for scup to be retained by fishermen on headboats. As a result, it was not clear if scup should be considered as a species that is generally not retained as it is important to fishermen in other parts of its range.

Table 4-14. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 10,000 lbs as specified in **Alternative 2**.*** Yellow highlights indicate species removed in **Action 1**. Green highlights indicate species that qualified as EC species.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 10,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467
Misty grouper	1,834
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Yellowmouth grouper	3,504
Queen snapper	5,086
Schoolmaster	5,427
Bank sea bass	5,567
Dog snapper	6,458
Scup	8,511

Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009).
***Note: In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper, Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Alternative 3 would designate six snapper grouper species with state and federal (combined) landings that are less than, or equal to 1,000 lbs, as EC species (**Table 4-15**). Three of the species considered in this alternative had zero to six pounds landed during 2005-2009, two of which would be removed from the FMU under **Action 1**. Four species scored less than 2 when the four NS1 criteria were evaluated in **Table 4-13**. Although mahogany snapper is extremely rare in landings, they would be expected to be retained if caught by a fisher due to their quality as a food fish. While it is likely that tiger grouper would be retained if caught by a fisher, there were no landings of this species during 2005-2009. Tiger grouper is commonly found in the Caribbean and there are reports of this species in the Tortugas; however, this species is rare to absent in the South Atlantic. The preferred alternative in **Action 1** is to remove tiger grouper and smallmouth grunt from the FMU because the South Atlantic Council does not feel they are in need of federal management since they are not caught in the South Atlantic. Black snapper have no discards, but there are few reported landings as well. While the criteria may be met for smallmouth grunt, black snapper would likely be retained by fishermen.

Table 4-15. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005 to 2009, that are less than or equal to 1,000 lbs as specified in **Alternative 3**.[1,2] Yellow highlights indicate species removed in **Action 1**. EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 1,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467

[1] Average landings computed from SEFSC ACL Datasets (2010) as the sum of sector-specific annual averages (2005-2009). [2] In cases where no data were recorded for a species, charter boat and/or other recreational landings were assumed to be zero. Goliath grouper, Nassau grouper are excluded since harvest is prohibited for these species. Speckled hind and warsaw grouper are also excluded since harvest is restricted to one fish per vessel per trip and sale is prohibited.

Alternative 4 would designate ten snapper grouper species with state and federal (combined) landings less than, or equal to 2,500 lbs as ecosystem component species (**Table 4-16**). Based on evaluation of the four NS1 criteria in **Table 4-13**, five species specified within this alternative scored less than two. Coney is a small grouper that would be expected to be retained by commercial and recreational fishermen due to its high quality relative to other species as a food fish.

Table 4-16. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005-2009, that are less than or equal to 2,500 lbs as specified in **Alternative 4**.[1,2] Yellow highlights indicate species removed in **Action 1**. EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 2,500 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467
Misty grouper	1,834
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453

See [1,2] in **Table 4-15**.

Alternative 5 would designate 11 snapper grouper species with state and federal (combined) landings less than, or equal to 5,000 lbs as ecosystem component species (**Table 4-17**). Based on evaluation of the four NS1 criteria in **Table 4-13**, five species specified within this alternative scored less than two. Although landings of coney, misty grouper, and yellowmouth grouper are small, they are retained and sold by commercial fishermen. They are also vulnerable to overfishing because they change sex and are relatively long lived. Black snapper are not commonly caught but are likely to be retained by commercial and recreational fishermen because, like mahogany snapper, they would be desired above many other species as a food fish. Thus, these species may not be considered for designation as ecosystem component species.

Table 4-17. Snapper grouper species with average state and federal (combined) landings from all sectors, from 2005 to 2009, that are less than or equal to 5,000 lbs as specified in **Alternative 5**.[1,2] Yellow highlights indicate species removed in **Action 1**. EC candidate species from **Alternative 6 (Preferred)** are highlighted in green.

COMMON NAME	AVERAGE LANDINGS (2005-2009) ≤ 5,000 LBS
Tiger grouper	0
Smallmouth grunt	0
Cottonwick	6
Black snapper	141
Longspine porgy	372
Mahogany snapper	467
Misty grouper	1,834
Blackfin snapper	2,087
Rock sea bass	2,325
Coney	2,453
Yellowmouth grouper	3,504

See [1,2] in **Table 4-15**.

Excluding tiger grouper and smallmouth grunt, **Alternative 6 (Preferred)** would designate six snapper grouper species that meet three out of four NS1 criteria, as ecosystem component species (**Table 4-18**). Most of these species are generally not retained because of their small size and availability of a higher quality co-occurring species. While it is likely that tiger grouper would be retained if caught by a fisher, there were no landings of this species during 2005-2009. Tiger grouper is commonly found in the Caribbean; however, this species is rare to absent in the South Atlantic. The preferred alternative in **Action 1** would remove tiger grouper and smallmouth grunt from the FMU.

Table 4-18. Snapper grouper species that met three out of four NS1 criteria as Ecosystem Component species, as specified in **Alternative 6 (Preferred)**.
Yellow highlights indicate species removed in **Action 1**. Green highlights indicate species that qualified as EC species.

COMMON NAME
Tiger grouper
Smallmouth grunt
Cottonwick
Longspine porgy
Bank sea bass
Rock sea bass
Ocean triggerfish
Schoolmaster

Most of the species in **Alternatives 2-6 (Preferred)** are subject to little management and are infrequently landed. Exceptions include the grouper (coney, misty grouper, yellowmouth grouper) and snapper species (dog snapper, mahogany snapper, blackfin snapper, and black snapper), which have limits on the number of individuals that can be retained by recreational fishermen.

Furthermore, coney and yellowmouth grouper are included in the four-month spawning season closure for shallow water grouper species. Therefore, designating grouper (coney, misty grouper, and yellowmouth grouper) and snapper (mahogany snapper, blackfin snapper, dog snapper, and black snapper) species through proposed actions in **Alternatives 2-5** could result in increased harvest (albeit small) of the species by commercial and recreational fishermen since they would no longer be subject to management. Therefore, the beneficial biological effects for these species would be greatest for **Alternative 1 (No Action)** and would be least for **Alternative 2**.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2-6 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. There will likely be little biological benefit to sea turtles and smalltooth sawfish from **Alternatives 2-6 (Preferred).** Since most of the species in **Alternatives 2-6 (Preferred)** are subject to little management and are infrequently landed, designating them as ECs is unlikely to alter fishing behavior in a way that would cause new or reduce existing adverse effects to sea turtles and smalltooth sawfish. Therefore, these alternatives are likely to perpetuate the existing level and type of adverse effects occurring to sea turtles and smalltooth sawfish from interactions with the fishery.

4.1.2.2 Economic Effects

Alternative 1 (No Action) would not designate any species as EC species. **Alternatives 2-6 (Preferred)** would designate certain species as EC species. **Alternative 2** identifies 16 species as EC species while **Alternatives 3, 4, 5,** and **6 (Preferred)** identify 6, 10, 11, and 8 species as potential EC species, respectively. With the exception of **Alternative 6 (Preferred)**, these counts are based only on landings. Under each alternative, two species (tiger grouper and smallmouth

grunt) are taken out of consideration due to their removal from the FMU under **Alternative 9 (Preferred)** for **Action 1**. In addition, the NS1 criteria noted in **Section 4.1.2.1** serve as the sole basis for determining which species can be considered for designation as EC species under **Alternative 6 (Preferred)**. When these criteria are also taken into account under all of the alternatives, the effective number of species that can be considered for designation as EC species is 5, 2, 3, 3, and 6 for **Alternatives 2, 3, 4, 5,** and **6 (Preferred)**, respectively. Furthermore, because the species that can be considered for designation as EC species are the same under **Alternative 4** and **Alternative 5**, the economic effects under those two alternatives would be equivalent.

Based on 2005-09 average landings, the total landings of the species that would be designated as EC species are 13,697 lbs, 378 lbs, 2,703 lbs, 2,703 lbs, and 24,655 lbs, respectively, for **Alternatives 2, 3, 4, 5,** and **6 (Preferred)**. Designating species as EC could result in positive economic effects for commercial and recreational fishermen if catches of these species increase in the short-term. However, consistent with the NS1 criteria indicating that these are not target species and are rarely if ever retained for sale or personal use, it is unlikely that landings of these species will increase much if at all in the short-term. In theory, **Alternative 6 (Preferred)** has the potential to result in the greatest negative economic effects compared to **Alternative 1 (No Action)** if fishermen significantly alter their fishing behavior by targeting and landing these species in the long-term. However, such changes are not expected as a result of the management actions being taken in this Amendment or any other currently known factors, and thus the likelihood such changes will occur are remote.

The primary economic effects of designating species as EC species are nearly identical in nature to the effects of removing species from the FMU (**Action 1**). If species which are not removed under **Action 1** are also not designated as EC species, as would be the case under **Alternative 1 (No Action)**, annual catch limits (ACLs), accountability measures (AMs), and annual catch targets (ACTs) would need to be implemented and enforced for these species, including those currently subject to little or no management, on a regular basis. The administrative costs associated with management of these species is not presently known given currently available information. By designating 6 species currently in the FMU as EC species, the administrative costs of federally-managing snapper grouper species are expected to be reduced, and potentially in a proportional manner according to the number of species receiving that designation. These reductions in administrative costs are expected to be the greatest under **Alternative 6 (Preferred)** followed by **Alternative 2**, **Alternatives 4** and **5**, **Alternative 3**, with **Alternative 1 (No Action)** resulting in no reduction in administrative costs.

Therefore, in general, the net economic effects of designating species as EC species in the snapper grouper FMU are expected to result in net economic benefits rather than losses. More specifically, net economic benefits are expected to be maximized under **Alternative 6 (Preferred)** relative to the other alternatives. Since the designation of species as EC species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these net economic benefits are the result of indirect rather than direct economic effects.

4.1.2.3 Social Effects

Designating some EC species, much like the previous action, could have beneficial social impacts as it could foster timelier management decisions and make management more streamlined with fewer species to monitor and for which to develop management measures. **Alternative 1 (No Action)** would not designated any species as Ecosystem Component species and require management and the setting of limits and targets for species that are encountered infrequently. The costs of monitoring and implementing management could be expensive for the amount of biological protection that would be afforded. For **Alternatives 2, 3, 4, 5,** and **6 (Preferred)** designating these species as EC would likely have beneficial effects as management would be more streamlined and focused on those species that are more recreationally and commercially important, yet these species would be monitored through landings. The overall social effects should be positive for both recreational and commercial sectors as these species will not require unnecessary management thresholds that could trigger further management for species that are rarely encountered.

4.1.2.4 Administrative Effects

Species that are designated as EC species are not required to have an ACL or AMs. **Alternative 1 (No Action)** would not designate species as EC species and would not reduce the administrative impacts on the agency of establishing an ACL, ACTs and AMs under various other actions in this amendment. **Alternatives 2-6 (Preferred)** would all reduce the number of species in the FMU that require management by increasing amounts. **Alternative 2** results in the largest reduction of species from the FMU and would reduce the administrative burden the most. **Alternative 6 (Preferred)** would designate six EC species, which could slightly decrease the administrative burden on the agency.

4.1.2.5 Council's Conclusions

The South Atlantic Council initially sought designation for some species as "ecosystem components" based on the criteria described in the NS1 guidelines (**Appendix J**). Because all of the species that met the NS1 criteria to be designated "ecosystem component" species also had low harvest from federal waters and thus qualified for removal from the FMU under the South Atlantic Council's rationale, the South Atlantic Council initially chose not to consider this action further.

However, at the August 2011 meeting, the South Atlantic Council changed their preferred course of action for removing species from the management unit and re-considered designation of some species as ecosystem components. Furthermore, the South Atlantic Council received comments from the public in support of designating some snapper grouper species as ecosystem components instead of removing them from the management unit.

The Snapper Grouper Advisory Panel (AP) recommended **Alternative 1 (No Action)**. The Scientific and Statistical Committee (SSC) recommended making sure that there were no problems with species identification and that NS1 guidelines would hold. The Law Enforcement Advisory Panel (LEAP) had no recommendation on this action.

The South Atlantic Council concluded that **Preferred Alternative 6** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to

the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.3 Action 3: Establish Species Groupings for Snapper Grouper Species

Alternative 1 (No Action). Do not establish multi-species groupings for the Snapper Grouper FMU.

Alternative 2. Establish species groups (**Table 4-19**) for the Snapper Grouper FMU using associations based on life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. Establish sub-complexes within species complexes. Complex and/or sub-complex ACLs will be a sum of the individual ACLs included in that complex (all sectors combined) and/or sub-complex. When a complex ACL is exceeded, all species in that complex, as well as those in sub-complexes will be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex will be subject to AMs.

Table 4-19. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Deepwater Complex	Deepwater Subcomplexes	Individual ACLs w/o Complex
Yellowedge grouper	Yellowedge grouper	Atlantic spadefish
Snowy grouper$_1$	Snowy grouper$_1$	Bar jack
Golden tilefish$_1$	Golden tilefish$_1$	Black sea bass$_1$
Blueline tilefish	Blueline tilefish	Blue runner
Silk Snapper	Silk Snapper	Goliath grouper$_{1,3}$
Misty grouper$_2$	Misty grouper$_2$	Gray triggerfish
Sand tilefish	Sand tilefish	Hogfish$_1$
Queen snapper	Queen snapper	Nassau grouper$_3$
Black snapper	Black snapper	Red snapper$_{1,3}$
Blackfin snapper	Blackfin snapper	Speckled hind$_3$
Jacks Complex	Jacks Subcomplexes	Vermilion snapper$_1$
Greater amberjack$_1$	Greater amberjack$_1$	Warsaw grouper$_3$
Almaco jack	Almaco jack	Wreckfish
Banded rudderfish	Banded rudderfish	
Lesser amberjack$_2$	Lesser amberjack$_2$	

Table 4-19. Continued. Complexes (dark gray), sub-complexes (light gray), and individual ACLs (white) for snapper grouper species under the **Alternative 2** species grouping approach.

Snappers Complex	Snappers Subcomplexes
Yellowtail snapper$_1$	Yellowtail snapper$_1$
Mutton snapper$_1$	Mutton snapper$_1$
Gray snapper	Gray snapper
Lane snapper	Lane snapper
Cubera snapper$_2$	Cubera snapper$_2$
Dog snapper	Dog snapper
Mahogany snapper	Mahogany snapper
Grunts Complex	**Grunts Subcomplex**
White grunt	White grunt
Sailors choice$_2$	Sailors choice$_2$
Tomtate	Tomtate
Margate	Margate
Shallow-Water Groupers Complex	**Shallow-Water Groupers Subcomplexes**
Gag$_{1,2}$	Gag$_{1,2}$
Red grouper$_1$	Red grouper$_1$
Black grouper$_1$	Black grouper$_1$
Scamp	Scamp
Red hind	Red hind
Rock hind	Rock hind
Yellowmouth grouper	Yellowmouth grouper
Yellowfin grouper	Yellowfin grouper
Coney	Coney
Graysby	Graysby
Porgies Complex	**Porgies Subcomplexes**
Red porgy$_1$	Red porgy$_1$
Jolthead porgy	Jolthead porgy
Knobbed porgy	Knobbed porgy
Saucereye porgy$_2$	Saucereye porgy$_2$
Scup	Scup
Whitebone porgy$_2$	Whitebone porgy$_2$

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

Alternative 3. Establish species groups (**Table 4-20**) for the Snapper Grouper FMU based on similar life histories (indicator species in bold).

Table 4-20. Complexes (units) for snapper grouper species under the **Alternative 3** species grouping approach.

SHALLOW WATER GROUPER	**JACK UNIT**
UNIT 1	**Greater amberjack**
Gag	Almaco jack
Red grouper	Banded rudderfish
Black grouper	Lesser amberjack
Scamp	Bar jack
Red hind	Blue runner
Rock hind	**GRUNT AND PORGY UNIT**
Yellowmouth grouper	**UNIT 1**
Yellowfin grouper	**White grunt**
Coney	Sailor's choice
Graysby	Tomtate
UNIT 2	Margate
Goliath grouper	
UNIT 3	**UNIT 2**
Nassau grouper	**Red porgy**
DEEP WATER GROUPER UNIT	Jolthead porgy
Snowy grouper	Knobbed porgy
Yellowedge grouper	Saucereye porgy
Speckled hind	Scup
Warsaw grouper	Whitebone porgy
Misty grouper	**SEA BASS UNIT**
TILEFISH UNIT	**Black sea bass**
Golden tilefish	**SHALLOW WATER SNAPPER AND WRASSE UNIT**
Blueline tilefish	**Yellowtail snapper**
Sand tilefish	**Mutton snapper**
WRECKFISH	Gray snapper
Wreckfish	Lane snapper
MID-SHELF SNAPPER UNIT	Cubera snapper
Vermilion snapper	Dog snapper
Red snapper	Mahogany snapper
Silk Snapper	Hogfish
Queen snapper	**TRIGGERFISH AND SPADEFISH UNIT**
Black snapper	**Gray triggerfish**
Blackfin snapper	Atlantic spadefish

Alternative 4 (Preferred). Establish single species ACLs and grouped species complexes for the establishment of ACLs (**Table 4-21**). Single species ACLs would be established for assessed and targeted species, species where ACL=0, and species that cannot be placed in a complex based on the criteria below. Complexes for groups of species would be established for other species using

associations based on one or more of the following: life history, catch statistics from commercial logbook and observer data, recreational headboat logbook and private/charter survey, and fishery-independent MARMAP data. When a complex ACL is exceeded, all species in that complex will be subject to AMs. When an individual ACL is exceeded, the individual stock will be subject to AMs.

Table 4-21. Complexes (gray) and individual ACLs (white) for snapper grouper species under the **Alternative 4 (Preferred)** species grouping approach.

Deepwater Complex	Individual ACLs
Yellowedge grouper	Atlantic spadefish
Blueline tilefish	Greater amberjack$_1$
Silk Snapper	Blue runner
Misty grouper$_2$	Bar jack
Sand tilefish	Gray triggerfish
Queen snapper	Snowy grouper$_1$
Black snapper	Golden tilefish$_1$
Blackfin snapper	Warsaw grouper$_3$
Jacks Complex	Wreckfish
Almaco jack	Scamp
Banded rudderfish	Gag$_1$
Lesser amberjack$_2$	Red grouper$_1$
Snappers Complex	Goliath grouper$_{1,3}$
Gray snapper	Nassau grouper$_3$
Lane snapper	Black sea bass$_1$
Cubera snapper$_2$	Black grouper$_1$
Dog snapper	Speckled hind$_3$
Mahogany snapper	Red porgy$_1$
Grunts Complex	Hogfish$_1$
White grunt	Yellowtail snapper$_1$
Sailors choice$_2$	Red snapper$_{1,3}$
Tomtate	Vermilion snapper$_1$
Margate	Mutton snapper$_1$
Shallow-Water Groupers Complex	Porgies Complex
Red hind Rock hind Yellowmouth grouper Yellowfin grouper$_2$ Coney Graysby	Jolthead porgy Knobbed porgy Saucereye porgy$_2$ Scup Whitebone porgy$_2$

1 = Assessed species; 2 = Most vulnerable species in complex (PSA analysis); 3 = Prohibited (ACL = 0).

4.1.3.1 Biological Effects

There are 73 species in the Snapper Grouper FMU. Thirteen species are proposed for removal in **Action 1**, six species are being proposed for designation as EC species (which do not require ACLs) in **Action 2**, and Amendments 17A and 17B established ACLs for ten species in 2010. **Alternative 1 (No Action)** would not establish species groups in the Snapper Grouper FMU, and would hence require individual ACLs for 44 species. Stock assessments are currently available for only 13 of these species, with no status determination values for the remaining species; however, definitions of overfishing and overfished were established for all snapper grouper species in Amendment 11 to the Snapper Grouper FMP (SAFMC 1998e). Many of these stocks suffer from issues with species identification and/or extreme fluctuations in relative landings through time due to rarity, or lack of targeted fishing effort. Thus, specifying individual ACLs based on median or average catch for these stocks might result in periodic overages that would require AM implementation, creating additional burdens on science and enforcement. Grouping unassessed stocks into complexes may help avoid implementing AMs for species whose landings fluctuate due to rarity or species identification issues. National Standard 3 (Section 301 of the Magnuson-Stevens Act) states that, "to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." A stock complex, as defined by the recently amended NS1 guidance (**Appendix J**), is "a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar" (74 FR 3178). Stocks may be grouped into complexes if: 1) they cannot be targeted independently of one another in a multispecies fishery; 2) there are not sufficient data to measure their status relative to established status determination criteria; or 3) when it is feasible for fishermen to distinguish individual stocks among their catch (50 CFR 600.310 (b) (8) in 74 FR 3178). Guidelines at 50 CFR 600.320 (d) define a management unit as "a fishery or that portion of a fishery identified in a FMP as relevant to the FMP's management objectives." Management units may be organized based on biological, geographic, economic, technical, social, or ecological considerations (50 CFR 600.320 (d) (1)).

Alternative 2 meets the above guidelines and establishes species groups using life history, fishery-dependent, and fishery-independent data for the 54 species remaining in the Snapper Grouper FMU. Detailed quantitative analyses included Productivity-Susceptibility Analysis (PSA) and life history characteristics, in addition to examining differences in vulnerability and other population dynamic parameters (see report in **Appendix O** for complete details on methodology). Multivariate statistical analyses were used to identify stock associations from life history, fishery-dependent, and fishery-independent data sources. Identified associations between stocks were used to develop stock complexes and sub-complexes (**Table 4-19**). Heavily targeted stocks and stocks with assessments would be managed at both the complex level and at the individual level, unless they had low levels of association with other stocks. Stocks that did not logically group into any complex would be managed only by an individual ACL. In **Alternative 2**, stocks within complexes would be managed by two ACLs; one at the complex level and another at the individual or sub-complex level. When a complex ACL is exceeded, all species in that complex would be subject to AMs. When a sub-complex ACL is exceeded, but is below the combined ACL of the complex, only the species in that particular sub-complex would be subject to AMs. Sector-specific complex ACLs would be the sum of the sector-specific individual ACLs and sub-complex ACLs included in that complex.

Under **Alternative 2**, a deep-water complex ACL (DW Grouper and Tilefish Complex, **Table 4-19**) would be established for yellowedge grouper, blueline tilefish, silk snapper, snowy grouper, golden tilefish, misty grouper, sand tilefish, queen snapper, black snapper, and blackfin snapper. A sub-complex aggregate ACL would be established for blueline tilefish, silk snapper, misty grouper, sand tilefish, queen snapper, black snapper, and blackfin snapper. Individual ACLs would be established for yellowedge grouper, snowy grouper, and golden tilefish. Golden tilefish and snowy grouper have Southeast Data Assessment and Review (SEDAR) assessments and would have individual ACLs as well as a complex-level ACL. Misty grouper is the most vulnerable species (PSA analysis).

A shallow-water grouper complex ACL (Shallow-Water Grouper Complex, **Table 4-19**) would be established for scamp, gag, red grouper, black grouper, red hind, rock hind, yellowmouth grouper, yellowfin grouper, coney, and graysby. Individual ACLs would be established for gag, red grouper and black grouper. A subcomplex would be specified for scamp, red hind, rock hind, yellowmouth grouper, yellowfin grouper, coney, and graysby. Gag, red grouper, and black grouper have SEDAR assessments. Gag is also the most vulnerable species (PSA analysis).

A Jacks complex ACL (Jacks Complex, **Table 4-19**) would be established for almaco jack, banded rudderfish, lesser amberjack, and greater amberjack. A sub-complex ACL would be established for almaco jack, banded rudderfish, and lesser amberjack (most vulnerable species, PSA) (**Table 4-19**). Greater amberjack has a SEDAR stock assessment and would also have an individual ACL.

A snapper complex ACL (Snappers Complex, **Table 4-19**) would be established for gray snapper, lane snapper, cubera snapper, yellowtail snapper, dog snapper, mahogany snapper and mutton snapper. A sub-complex ACL would be established for gray snapper, lane snapper, cubera snapper, dog snapper, and mahogany snapper. Yellowtail snapper and mutton snapper have SEDAR assessments and would also have individual ACLs. Cubera snapper is the most vulnerable species (PSA analysis).

A Grunts Complex ACL would be established for white grunt, sailor's choice, tomtate, and margate (Grunts Complex, **Table 4-19**). There are no SEDAR assessments for any stocks in this complex. Sailors choice is the most vulnerable species (PSA analysis).

A Porgies Complex ACL would be established for red porgy, jolthead porgy, knobbed porgy, saucereye porgy, scup, and whitebone porgy (Porgies Complex, **Table 4-19**). Red porgy has SEDAR assessments, and would have an individual ACL, while jolthead porgy, knobbed porgy, saucereye porgy, scup, and whitebone porgy would have a sub-complex ACL.

Finally, individual ACLs would be utilized for Atlantic spadefish, bar jack, black sea bass, blue runner, goliath grouper, gray triggerfish, hogfish, Nassau grouper, red snapper, speckled hind, vermilion snapper, warsaw grouper, and wreckfish (**Table 4-19**, Individual ACLs). Red snapper, vermilion snapper, red porgy, goliath grouper, black sea bass, and hogfish have SEDAR stock assessments. Speckled hind, warsaw grouper, red snapper, goliath grouper, and Nassau grouper are prohibited species. Atlantic spadefish and blue runner did not group well with any species having similar life histories.

The approach in **Alternative 2** would provide multiple handles of control in the AMs that would help prevent overfishing of all species in the complex. If a single-species ACL were slightly exceeded, AMs would be implemented for that stock without necessarily impacting the stocks in the sub-complex, allowing the fishery to obtain OY for the other stocks. If the sub-complex ACLs were exceeded, AMs would be implemented for that sub-complex without necessarily impacting the individual ACLs, which often contain the most productive stocks. Finally, if the ACL for the targeted stock were grossly exceeded (causing the complex ACL to also be exceeded) AMs would be implemented for the whole complex. This multi-faceted approach promotes attaining OY for assessed stocks while providing two mechanisms to prevent overfishing of the unassessed stocks, which are often less productive and more vulnerable. Grouping less productive, vulnerable, and/or data-poor stocks into sub-complexes helps mitigate uncertainty in individual landings histories, mitigates issues with species identification, and provides buffers against the unnecessary implementation of AMs. The use of an ACL for an overall complex containing one or more productive stocks plus other less productive stocks from the sub-complex helps protect the sub-complex stocks from overfishing because even if their sub-complex ACL is not exceeded according to the existent data collection program, undetected overfishing of these stocks may be taking place during overharvesting of a productive stock with which they are often incidentally or deliberately harvested or misidentified. However, this approach is complicated and also carries a heavy administrative burden with regards to quota monitoring.

Alternative 3 represents an approach towards species groupings that was explored during the development of Snapper Grouper Amendment 13B (SAFMC unpublished), and modified to incorporate species added back into the amendment after the South Atlantic Council changed the preferred alternative to remove species in **Action 1**. Management groups proposed are: Shallow Water Grouper Units 1, 2 and 3; Deep Water Grouper Unit, Tilefish Unit; Wreckfish Unit; Mid-shelf Snapper Unit; Jack Unit; Grunt and Porgy Units 1 and 2; Sea Bass Unit; Shallow-water Snapper and Wrasse Unit; and Triggerfish and Spadefish Unit **(Table 4-20)**.

Generally, each unit was composed of species that were usually targeted, or captured, collectively due to similarities in susceptibility to fishing gear, occupying similar habitats, and/or possessing similar life history strategies and/or depth preferences. The indicator species specified for each unit is highlighted in bold font. The South Atlantic Council's SSC did not endorse this approach as "best available science" (SSC/SAFMC, 2005), because it felt that the scientific rationale presented was inadequate to justify the groupings for their intended purpose. The SSC also felt that groupings by life-history attributes or taxonomy alone did not address aggregations of species that are caught together by each gear type used in the fishery. Comparing the species groups between **Alternative 2** and **Alternative 3**, shows differences such as: Speckled hind is included in the deep-water species group in **Alternative 3**, whereas it has an individual ACL in **Alternative 2**. **Alternative 3** also used indicator species in its groupings, whereas, the method used in **Alternative 2** followed the guidance of Landres et al. (1988) and Niemi et al. (1997), of not using indicator species unless supported by strong evidence from the system in question. Furthermore, Bird et al. (2007) recommend that even closely related species may have dissimilarities in their population structures and dispersal patterns that lead to different responses to exploitation.

Alternative 4 (Preferred) meets the 50 CFR 600.320(d)(1) guidelines and establishes species groups using life history, fishery-dependent, and fishery-independent data for all 54 species remaining in the FMU. Detailed quantitative analyses included PSA and life history characteristics, in addition to examining differences in vulnerability and other population dynamic parameters (see report in **Appendix O** for complete details on methodology). Multivariate statistical analyses were used to identify stock associations from life history, fishery-dependent, and fishery-independent data sources. Identified associations between stocks were used to develop complexes for unassessed stocks (**Table 4-21**). Heavily targeted stocks, stocks with assessments, stocks with fishery closures (ACL =0), and stocks that did not fall into any complexes would be managed only by individual ACLs. When the stock with an individual ACL is exceeded, that individual species would be subject to AMs. When a complex ACL is exceeded, all species in that complex will be subject to AMs. Sector specific complex ACLs will be a sum of the sector-specific ACLs for individual stocks included in that complex.

Under **Alternative 4 (Preferred)**, a Deep-water Complex ACL (Deep-water Complex, **Table 4-21**) would be established for yellowedge grouper, blueline tilefish, silk snapper, misty grouper, sand tilefish, queen snapper, black snapper, and blackfin snapper.

A Jacks Complex ACL (Jacks Complex, **Table 4-21**) would be established for almaco jack, banded rudderfish, and lesser amberjack (most vulnerable species, PSA).

A Snappers Complex ACL (Snappers Complex, **Table 4-21**) would be established for gray snapper, lane snapper, cubera snapper (most vulnerable species, PSA), dog snapper, and mahogany snapper.

A Grunts Complex ACL would be established for white grunt, sailor's choice (most vulnerable species, PSA), tomtate, and margate (Grunts Complex, **Table 4-21**). There are no SEDAR assessments for any stocks in this complex.

A Porgies Complex ACL (Porgies Complex, **Table 4-21**) would be established for jolthead porgy, knobbed porgy, saucereye porgy, scup, and whitebone porgy (most vulnerable species, PSA).

Finally, individual ACLs would be specified for species with SEDAR assessments (red porgy, greater amberjack, golden tilefish, snowy grouper, black sea bass, gag, red grouper, black grouper, yellowtail snapper, red snapper, vermilion snapper, mutton snapper, and hogfish). Goliath grouper, warsaw grouper, speckled hind, red snapper, and Nassau grouper are prohibited species. Wreckfish has an established individual quota, which is being modified in **Action 10** of this document. Scamp, bar jack, and gray triggerfish are unassessed and would require an individual ACL. Atlantic spadefish and blue runner did not group well with any species having similar life histories and would also need individual ACLs.

A similar approach to that proposed under **Alternative 2** in the Gulf of Mexico Fishery Management Council's (Gulf of Mexico) Generic ACL/AM Amendment was endorsed by the Southeast Fisheries Science Center as "best available science", and the Gulf of Mexico SSC did not oppose it. The Gulf of Mexico Council's SSC also subsequently endorsed an approach similar to **Alternative 4 (Preferred)** as being the best scientifically available approach to stock complexes for ACL management. Similar to **Alternative 2**, the approach in **Alternative 4 (Preferred)** helps

prevent overfishing of all species in stock complexes and allows individual ACL management of assessed or prohibited species. If an individual (single-stock) ACL were exceeded, AMs would be implemented for that individual stock. If a stock complex ACL was exceeded, AMs would be implemented for that complex. This approach streamlines and simplifies ACL management, and provides an incentive to move stocks up the SSC's ABC tiers by promoting individual ACLs for species with completed assessments. Additionally, **Alternative 4 (Preferred)** promotes attaining OY for assessed stocks while providing a mechanism to prevent overfishing of the less productive or more vulnerable, unassessed stocks. Grouping less productive, vulnerable, and/or data-poor stocks into complexes helps mitigate uncertainty in individual landings histories, mitigates issues with species identification, and provides buffers against the unnecessary implementation of AMs. This approach is relatively simple and also carries a minimal administrative burden with regards to quota monitoring as compared to the other alternatives. The approach towards assignment of species to complexes in **Alternative 4 (Preferred)** also explicitly considered discard information when available (**Appendix O**).

The Magnuson-Stevens Act requires regional fishery management councils to implement ACLs and AMs for all stocks under federal management by 2011, to ensure overfishing does not occur. **Alternative 1 (No Action)** would not accomplish this. **Alternatives 2, 3,** and **4 (Preferred)** would help in accomplishing Magnuson-Stevens Act goal of ensuring overfishing does not occur, with **Alternative 2** and **Alternative 4 (Preferred)** having the highest potential of yielding the best biological effect.

The South Atlantic Council intends to evaluate landings and other available information on all species periodically through SAFE reports. Ongoing monitoring and data collection will continue for all species that are sold to dealers or caught recreationally, regardless of whether or not they are in complexes. If the South Atlantic Council determines that landings of any species within a complex changed significantly, more appropriate species groupings could be established.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2, 3,** and **4 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefit to sea turtles and smalltooth sawfish from **Alternatives 2, 3,** and **4 (Preferred)** is unclear. If these alternatives perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.3.2 Economic Effects

The analysis of economic effects for **Action 3** assumes all preferred alternatives under **Action 1** (**Preferred Alternatives 2, 5,** and **9**) are selected and **Preferred Alternative 6** is selected under

Action 2. Therefore, **Action 3** would only apply to the 54 snapper grouper species remaining in the FMU that are also not designated as EC species.

While all alternatives would avoid overfishing to some extent, **Alternative 1 (No Action)** would result in individual ACLs being placed on all 54 species in the snapper grouper FMU and thus is the most likely to prevent overfishing of these species relative to **Alternative 2, Alternative 3**, and **Alternative 4 (Preferred).** By grouping species according to a particular methodology, **Alternative 2, Alternative 3**, and **Alternative 4 (Preferred)** increase the likelihood of overfishing for species not covered by an individual ACL. The magnitude of that probability and associated risk varies according to the different methodologies proposed under **Alternative 2, Alternative 3**, and **Alternative 4 (Preferred)**.

Thus, for example, **Alternative 2** would be the next most likely to prevent overfishing of species within the snapper grouper FMU as it would establish 35 ACLs: 6 complex ACLs (Deepwater, Shallow Water Grouper, Jacks, Snappers, Grunts, and Porgies), 6 sub-complex ACLs (Blueline tilefish, Silk snapper, Misty grouper, Sand tilefish, Queen snapper, Black snapper, and Blackfin snapper; Almaco jack, Banded rudderfish, and Lesser amberjack; Gray snapper, Lane snapper, Cubera snapper, Dog snapper, and Mahogany snapper; White grunt, Sailors choice, Tomtate, and Margate; Gag, Scamp, Red hind, Rock hind, Yellowmouth grouper, Yellowfin grouper, Coney, and Graysby; and Jolthead porgy, Knobbed porgy, Saucereye porgy, Scup, and, Whitebone porgy) and 23 individual ACLs (bar jack, snowy grouper, golden tilefish, scamp, gag, red grouper, black grouper, greater amberjack, yellowtail snapper, mutton snapper, red snapper, red porgy, blue runner, gray triggerfish, vermilion snapper, goliath grouper, Atlantic spadefish, wreckfish, hogfish, Nassau grouper, warsaw grouper, speckled hind, and black sea bass). All 14 assessed species (red grouper, black grouper, golden tilefish, mutton snapper, red snapper, hogfish, red porgy, black sea bass, goliath grouper,[4] gag, snowy grouper, vermilion snapper, greater amberjack, and yellowtail snapper), 3 prohibited species (Nassau grouper, warsaw grouper, and speckled hind) and 5 unassessed species (scamp, blue runner, gray triggerfish, Atlantic spadefish, wreckfish) would have an individual ACL. As under **Alternative 1 (No Action)**, the probability of overfishing and associated risk would be minimized for these 23 species. The probability of overfishing and associated risk for the 31 unassessed species covered by sub-complex ACLs (all species covered by sub-complex ACLs with the exception of gag) would be higher than under **Alternative 1 (No Action)**, but less than if they were covered only by a complex ACL. Six of these 31 unassessed species (misty grouper, lesser amberjack, cubera snapper, Sailors choice, saucereye porgy, and whitebone porgy) are considered most vulnerable species according to the PSA analysis. One unassessed species only covered by a complex ACL (yellowedge grouper) would be subject to the highest probability of overfishing and associated risk relative to **Alternative 1 (No Action)**, though it is not considered a most vulnerable species according to the PSA analysis.

Alternative 4 (Preferred) would be the next most likely to prevent overfishing of species within the snapper grouper FMU as it would establish 29 ACLs: 6 complex ACLs (Deepwater, Shallow Water Grouper, Jacks, Snappers, Grunts, and Porgies) and 23 individual ACLs (bar jack, snowy grouper, golden tilefish, scamp, gag, red grouper, black grouper, greater amberjack, yellowtail snapper, mutton snapper, red snapper, red porgy, blue runner, gray triggerfish, vermilion snapper, goliath grouper, Atlantic spadefish, wreckfish, hogfish, Nassau grouper, warsaw grouper, speckled

[4] Goliath grouper is a prohibited as well as an assessed species.

hind, and black sea bass). As such, all 14 assessed species (red grouper, black grouper, golden tilefish, mutton snapper, red snapper, hogfish, red porgy, black sea bass, Goliath grouper,[5] gag, snowy grouper, vermilion snapper, greater amberjack, and yellowtail snapper), 3 prohibited species (Nassau grouper, warsaw grouper, and speckled hind) and 6 unassessed species (bar jack, scamp, blue runner, gray triggerfish, Atlantic spadefish, wreckfish) would have an individual ACL. As under **Alternative 1 (No Action)** and **Alternative 2**, the probability of overfishing and associated risk would be minimized for these 23 species. The probability of overfishing and associated risk for the 26 unassessed species (Yellowedge grouper, Blueline tilefish, Silk Snapper, Misty grouper, Sand tilefish, Queen snapper, Black snapper, Blackfin snapper, Almaco jack, Banded rudderfish, Lesser amberjack, Gray snapper, Lane snapper, Cubera snapper, Dog snapper, Mahogany snapper, White grunt, Sailors choice, Tomtate, Margate, Red hind, Rock hind, Yellowmouth grouper, Yellowfin grouper, Coney, and Graysby) covered by complex ACLs would be higher than under **Alternative 1 (No Action)**. Six of these 26 unassessed species (misty grouper, lesser amberjack, cubera snapper, Sailors choice, yellowfin grouper, and whitebone porgy) are considered most vulnerable species according to the PSA analysis. The 26 unassessed species covered by a complex ACL under **Alternative 4 (Preferred)** are effectively grouped in the same manner as the 31 unassessed species covered by a sub-complex ACL and 1 unassessed species covered by a complex ACL under **Alternative 2.** Thus, for these 26 species, the probability of overfishing and associated risk is effectively equivalent under **Alternative 2** and **Alternative 4 (Preferred)**.

Alternative 3 is the least likely to prevent overfishing of species within the snapper grouper FMU as it would establish 12 ACLs: 6 complex (unit) ACLs (Shallow water grouper unit 1, Deep-water grouper and tilefish, Mid-shelf snapper unit, Jack unit, Shallow water snapper/tilefish/wrasse unit, and Triggerfish/spadefish unit) and 6 individual ACLs (goliath grouper, Nassau grouper, wreckfish, red porgy, white grunt, and black sea bass). As such, only 3 of the 13 assessed species (red porgy, black sea bass, and Goliath grouper[6]), 1 prohibited species (Nassau grouper) and 2 unassessed species (wreckfish and white grunt) would have an individual ACL. As under **Alternative 1 (No Action)**, the probability of overfishing and associated risk would be minimized for these 6 species. However, an additional 8 assessed species would be indicator species for their respective complexes/units (gag, red grouper, and black grouper for Shallow water grouper unit 1, snowy grouper for Deep-water grouper and tilefish, vermilion snapper for Mid-shelf snapper unit, greater amberjack for Jack unit, and yellowtail snapper and mutton snapper for Shallow water snapper/tilefish/wrasse unit). In effect, these 8 assessed indicator species would be treated the same as species covered by an individual ACL. Thus, as under **Alternative 1 (No Action)**, **Alternative 2**, and **Alternative 4 (Preferred)**, the probability of overfishing and associated risk would be minimized for the 14 species covered by an individual ACL or considered an indicator species.

Conversely, 6 assessed species (red grouper, black grouper, golden tilefish, mutton snapper, red snapper, and hogfish) and 2 prohibited species (warsaw grouper and speckled hind) would only be covered by a complex/unit ACL under **Alternative 3**. Thus, the probability of overfishing and associated risk would be higher for these 6 assessed and 2 prohibited species under **Alternative 3** relative to **Alternative 1 (No Action)**, **Alternative 2**, and **Alternative 4 (Preferred)**. The 6 assessed species are economically important, or at least somewhat economically important, to the commercial and/or recreational sectors of the snapper grouper fishery. Moreover, not establishing

[5] Goliath grouper is a prohibited as well as an assessed species.
[6] Goliath grouper is a prohibited as well as an assessed species.

an individual ACL for golden tilefish, warsaw grouper, and speckled hind would be inconsistent with actions taken in Amendment 17B to the Fishery Management Plan for the South Atlantic Region (Amendment 17B), not establishing an individual ACL for red snapper would be inconsistent with actions taken in Amendment 17A, not establishing an individual ACL for red grouper would be inconsistent with actions expected to be taken in Amendment 24, not establishing an individual ACL for mutton snapper would be inconsistent with **Alternative 2 (Preferred)** under **Action 5** in this Amendment, and not establishing an individual ACL for black grouper would be inconsistent with **Alternative 2 (Preferred)** under **Action 14** in this Amendment.

The probability of overfishing and associated risk for the 32 unassessed species (Bar jack, Blueline tilefish, Silk snapper, Misty grouper, Sand tilefish, Queen snapper, Black snapper, Blackfin snapper, Almaco jack, Banded rudderfish, Lesser amberjack, Gray snapper, Lane snapper, Cubera snapper, Dog snapper, Mahogany snapper, White grunt, Sailors choice, Tomtate, Margate, Scamp, Red hind, Rock hind, Yellowmouth grouper, Yellowfin grouper, Coney, Graysby, Jolthead porgy, Knobbed porgy, Saucereye porgy, Scup, and Whitebone porgy) covered by complex ACLs would be higher under **Alternative 3** relative to **Alternative 1 (No Action)**. Further, 5 of these 32 unassessed species (bar jack, scamp, blue runner, gray triggerfish, and Atlantic spadefish) are covered by individual ACLs under **Alternative 2** and **Alternative 4 (Preferred)**. Thus, the probability of overfishing and associated risk for these 5 unassessed species would be higher under **Alternative 3** relative to **Alternative 2** and **Alternative 4 (Preferred)**.

Thus, with respect to expected long-term economic benefits derived from protecting snapper grouper species in the FMU from overfishing, **Alternative 1 (No Action)** is expected to generate the greatest long-term economic benefits, followed by **Alternative 2** and **Alternative 4 (Preferred)**, which are expected to generate equivalent long-term economic benefits, while **Alternative 3** would yield the least long-term economic benefits. Since the grouping of species in the snapper grouper FMU is an administrative action, and thus does not directly affect participants in the snapper grouper fishery, these expected economic benefits are the result of indirect rather than direct economic effects.

However, these expected economic benefits must be evaluated relative to the expected economic costs in order to estimate the net economic benefits associated with each of these alternatives. In general, the expected economic costs are a function of expected administrative costs associated with implementing, monitoring, and enforcing ACLs, AMs, and ACTs as well as the probability of triggering AM actions in the future (e.g., fishery closures reductions in ACLs, reductions in fishing seasons, etc.).

Administrative costs arise from fishery management and the required scientific research to support management. Administrative costs would be greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. Relative to **Alternative 1 (No Action)**, the reduction in ACLs and thus expected administrative costs is 78% under **Alternative 3**, 46% under **Alternative 4 (Preferred)**, and 35% under **Alternative 2**. Since the methodology under **Alternative 2** is considered more scientifically complex, and thus more costly in terms of research costs, relative to **Alternative 4 (Preferred)**, the difference in administrative costs is even greater than the difference in the number of ACLs suggests. On the other hand, the probability of triggering an AM action in the future is inversely related to the

number of ACLs, all else being equal. Thus, the probability of triggering an AM action in the future would be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**. AM actions in the future are expected to generate adverse indirect economic effects on fishery participants. Thus, total expected economic costs are expected to be the greatest under **Alternative 1 (No Action)**, followed by **Alternative 2**, **Alternative 4 (Preferred)**, and the least under **Alternative 3**.

Although quantitative estimates of the expected net economic benefits cannot be generated for these alternatives, a qualitative assessment based on the available information can be conducted. An analysis of the information discussed above suggests that expected net economic benefits would be greatest under **Alternative 4 (Preferred)**, followed by **Alternative 2**, **Alternative 3**, and **Alternative 1 (No Action)**. However, this conclusion must be cautioned by the fact that it is unknown how fishing behavior will be altered under the different species grouping methodologies and potential AMs in the future.

4.1.3.3 Social Effects

It is difficult to determine what the social effects would be from species groupings as many of the impacts would come from the thresholds for ACLs that are determined for each species group as a result. While this solution helps resolve the problem of placing ACLs on all species, especially those that do not have stock assessments, it may place further burdens on different fishing sectors according to their fishing practices for a particular species. **Alternative 1 (No Action)** would likely result in ACLs being placed on every species, which could induce a cumbersome management regime. By grouping species according to the methodology in **Alternative 2**, the burden of placing ACLs on all species is removed, although there will continue to be monitoring issues that arise from the monitoring of species groups as well. By basing the groupings on life history and associations with harvesting behavior, these groupings should help account for different fishing behaviors and tie that behavior to more realistic fishing thresholds. However, it is not known how each grouping will be affected by fishing behavior over time and whether or not harvest levels will change as a result and trigger accountability measures in response to ACL thresholds being met. The same is true for **Alternative 3** in that the grouping by species life history does tend to lump those species together that might be harvested together, however there are differences in harvesting behaviors that are not accounted for but were in **Alternative 2**. With **Alternative 4 (Preferred)** there are similar components of other alternatives in that species groupings will allow for regulations that account for behavior and life history and some catch history, yet continues the species-specific ACLs with which fishermen are more familiar. If thresholds are set lower than actual harvest rates, then there will be negative social impacts as species complexes are closed, forcing fishermen to switch to other species, use catch and release only, or not fish at all. Catch and release could increase discard mortality and not fishing at all could have negative impacts on local economies. It is anticipated that the preferred alternative will have positive social benefits through practical grouping that is less cumbersome than single species ACLs but will still allow monitoring. However, as mentioned earlier, the formation of ACLs for grouped species may induce some changes in fishing behavior if unanticipated closures occur as a result of these thresholds being exceeded.

4.1.3.4 Administrative Effects

The establishment of species groupings will aid in the establishment of ACLs, ACTs, and AMs for species for which there is not a lot of information. The development of species groupings requires complex data analysis and manipulation, which requires staff time. However, if the number of species in the snapper grouper FMU can be reduced by incorporating species complexes and groupings, the administrative impacts of establishing, monitoring, and implementing ACLs, ACTs, and AMs will be reduced.

4.1.3.5 Council Conclusions

The NS1 guidelines provide guidance to Councils on the establishment of stock complexes and situations in which they are appropriate for management. Grouping species into complexes reduces the administrative burden with regards to monitoring ACLs while meeting the mandates of the Magnuson-Stevens Act to achieve OY while preventing overfishing. The alternatives under this action explored various approaches to species groupings for the snapper grouper complex. The South Atlantic Council's preferred alternative streamlines and simplifies ACL management by promoting individual ACLs for species with completed assessments. The approach is relatively simple and also carries a minimal administrative burden as compared to the other alternatives. The idea behind creating species groupings is that they create a "buffer" for species that have landings that fluctuate through time or where there are identification issues or just to simplify the management approach.

The SSC provided the following input with regards to species groupings:

- Difficult to achieve OY while preventing overfishing.
- Fishermen will likely have to forgo catch on some species and will likely overfish others.
- Additional uncertainty will have to be added to both the scientific buffer (to account for uncertainty in the groupings themselves) as well as the implementation buffer (to account for increased uncertainty in how the catches will respond to management).
- It is not known how uncertain the groupings are and how well we will be able to detect when the groupings need to be changed.
- It is not known if groupings allow for a better understanding or will impede understanding of the socio-economic impacts of management actions.
- The statistical underpinnings of the approach are questionable given the temporally correlated and seasonally-impacted data.

Benefits of the approach:

- It provides a better understanding of how catches are correlated across species and may help with understanding how the management of one species may affect the catch of another.
- The results are easily comprehended by laypeople.

Ultimately, the SSC recommended against the use of complexes in general unless used to aid with issues of species identification. The SSC felt that the single-species approach outlined through the draft ABC control rule provided the best solution for unassessed stocks.

The Snapper Grouper Advisory Panel (AP) recommended that the South Atlantic Council take no action to establish species groupings.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded that **Alternative 4 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.4 Action 4: Establish an Acceptable Biological Catch (ABC) Control Rule for Snapper Grouper Species

Alternative 1 (No Action). Do not establish an ABC Control Rule for species in the Snapper Grouper FMU.

Alternative 2. Where applicable, establish an ABC Control Rule where ABC equals OFL.

Alternative 3. For unassessed species: establish an ABC Control Rule where ABC equals a percentage of OFL or a percentage of the median landings 1999-2008, as appropriate.

Subalternative 3a. ABC=65% (OFL or median landings 1999-2008)
Subalternative 3b. ABC=75% (OFL or median landings 1999-2008)
Subalternative 3c. ABC=85% (OFL or median landings 1999-2008)
Subalternative 3d. ABC=95% (OFL or median landings 1999-2008)

Alternative 4. For assessed species: establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

Subalternative 4a. ABC=yield at 65%MFMT
Subalternative 4b. ABC=yield at 75%MFMT
Subalternative 4c. ABC=yield at 85%MFMT

Alternative 5. For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 4-22**. For unassessed species: adopt the South Atlantic Council SSC's Control Rule in **Table 4-22** but establish an interim ABC = median landings 1999-2008 and OFL = unknown until the SSC's control rule can be fully applied.

Alternative 6. For assessed species: establish ABCs based on the South Atlantic's SSC's ABC control rule. For unassessed species: Adopt the Gulf of Mexico Council SSC's ABC Control Rule for unassessed species as described in **Table 4-23**. The indicated default ABC buffer levels for Tier 3a and 3b are to be used unless specified otherwise by the Gulf of Mexico Council on a stock by stock basis.

Alternative 7 (Preferred). For assessed species: establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 4-22**. Recommended ABC values are shown in **Table**

4-25. For unassessed species: When the ABC control rule portion for unassessed species is complete, establish ABCs based on the South Atlantic SSC's ABC control rule described in **Table 4-22**. Until the ABC Control Rule is complete, establish ABCs based upon the approach in **Table 4-24** and OFL = unknown. Recommended ABC values are shown in **Table 4-27**.

Table 4-22. The South Atlantic Council's SSC's ABC Control Rule.
Note: The ABC control rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension. See **Appendix Q** for details on the methodology.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. Assessment Information (10%)	1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%) 2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%) 3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%) 4. Reliable catch history. (7.5%) 5. Scarce or unreliable catch records. (10%)
2. Uncertainty Characterization (10%)	1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%) 2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%) 3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%) 4. Low. Distributions of F_{MSY} and MSY are lacking. (7.5%) 5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. Stock Status (10%)	1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%) 2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%) 3. Stock is either overfished or overfishing. (5%) 4. Stock is both overfished and overfishing. (7.5%) 5. Either status criterion is unknown. (10%)
4. Productivity and Susceptibility – Risk Analysis (10%)	1. Low risk. High productivity, low vulnerability, low susceptibility. (0%) 2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%) 3. High risk. Low productivity, high vulnerability, high susceptibility. (10%)
Level 2 - Unassessed Stocks. Reliable landings and life history information available	
OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible.	
Level 3 - Unassessed Stocks. Inadequate data to support DBSRA	
ABC derived directly, from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.	
Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA	
OFL and ABC derived on a case-by-case basis. ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC.	

Table 4-23. The Gulf of Mexico Council's SSC's Acceptable Biological Catch Control Rule for unassessed species. Note: The South Atlantic Council is only considering Tiers 3a and 3b in **Alternative 6**.

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. e. Risk of exceeding OFL = 45% f. Risk of exceeding OFL = 35% g. Risk of exceeding OFL = 25% (default level for unassigned stocks) h. Risk of exceeding OFL = 15% Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as: i. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) j. ABC = mean of the landings plus 1.0 * standard deviation (default) (risk of exceeding OFL = 16%) k. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) l. ABC = mean of the landings (risk of exceeding OFL = 2.3%)

Table 4-23. Continued. The Gulf of Mexico Council's SSC's Acceptable Biological Catch Control Rule for unassessed species.

Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: m. ABC = 100% of OFL n. ABC = 85% of OFL o. ABC = 75% of OFL (default level for unassigned stocks) p. ABC = 65% of OFL

*Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.

Table 4-24. South Atlantic Council's SSC approach to recommend ABCs for unassessed species in Level 4 of the Control Rule (**Table 4-22**).

1. Will catch affect stock? NO: Ecosystem Species (Council largely done this already, ACL amend) YES: GO to 2
2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series. YES: Go to 3
3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes. Go to 4.
4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? what are the regulations? what is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Table 4-25. ABCs (landed catch) for assessed snapper grouper species based on recommendation from the S. Atlantic Council's SSC.

Species[1]	ABC
Black sea bass	847,000 lbs ww
Gag	949,000 lbs ww
Snowy grouper	102,960 lbs ww
Red porgy	395,304 lbs ww
Vermilion snapper	1,109,000 lbs ww
Greater amberjack	1,968,000 lbs ww
Yellowtail snapper[2]	2,173,875 lbs ww
Mutton snapper[2]	926,600 lbs ww
Black grouper[2,3]	245,595 lbs ww
Red grouper[4]	622,000 lbs ww

[1] The SSC chose not to specify an ABC for golden tilefish in June 2009 because the age of the 2004 assessment and lack of a current estimate of abundance. In April 2010, however, the SSC provided an ABC recommendation of 311,000 lbs. A new ABC will be provided for golden tilefish through SEDAR 25 in December 2011. The Council will take action to adopt the new ABC for golden tilefish in Amendment 18B, currently under development.
[2] Values for ABC for black grouper, yellowtail snapper and mutton snapper are for South Atlantic only (see Actions 13 18 and 19 for jurisdictional separation of ABC between the South Atlantic and Gulf of Mexico)
[3] ABC recommended by the Gulf Council's SSC
[4] ABC recommended by South Atlantic's SSC, but may change as per preferred jurisdictional allocation in Amendment 24.

4.1.4.1 Biological Effects

Alternative 1 (No Action) would not establish an ABC control rule for species in the snapper grouper FMU. Although there are currently no ABC control rules, there are status quo ABC values for some snapper grouper species based on recommendations from the South Atlantic Council's SSC. Status quo ABC values of 0 lbs landed catch for speckled hind and warsaw grouper are contained in Amendment 17B (SAFMC 2010b), and are based on recommendations from the South Atlantic Council's SSC. For overfished species (red snapper, snowy grouper, black sea bass, and red porgy), the SSC has recommended ABCs equal to the value specified in the rebuilding plan, which are included in Amendment 15A (SAFMC 2008a), 17A (SAFMC 2010a), and 17B (SAFMC 2010b) (**Table 4-25**).

Values for ABC have also been identified by the South Atlantic Council's SSC for greater amberjack, mutton snapper, black grouper, red grouper, vermilion snapper, gag, and yellowtail snapper based on SEDAR assessments. The ABCs have been identified for black grouper and red grouper based on the recently completed SEDAR 19 (2010); however, these ABCs apply to both the Gulf of Mexico Fishery Management Council (Gulf Council) and South Atlantic Council's areas of jurisdiction. The ABC for black grouper is addressed in **Action 13** of this document and ABC for red grouper is specified in Amendment 24, which is under development (**Table 4-25**). **Actions 18** and **19** separate the SSC's recommended ABC for yellowtail snapper and mutton snapper into the jurisdictional areas of the South Atlantic Council and Gulf Council. Overfishing levels (OFL) and ABCs were specified for vermilion snapper and gag in Amendment 16 (SAFMC 2009a) and 17B (SAFMC 2010b). The SSC did not provide an ABC value for golden tilefish when they discussed ABC control rules because of the age of the assessment and because of the lack of a

current estimate of abundance. Completion of a SEDAR assessment for Golden tilefish is expected in fall 2011 and the preferred ABC control rule in this document will be applied to golden tilefish to obtain an ABC value when the assessment and amendment are completed in 2011. The combined commercial and recreational ACL for golden tilefish is 331,000 lbs ww, and sector specific ACLs are provided in Amendment 17B (SAFMC 2010b). However, ABCs have not been specified for many other snapper grouper species. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 would specify an ABC control rule for assessed and unassessed species or species groups where needed. Under **Alternative 2**, ABC would be equal to OFL. The NS1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than that of **Alternatives 3-6**, which would account for scientific and management uncertainty. **Alternative 3** would set the ABC for unassessed species as a percentage of the OFL or the median landings from 1999-2008 where **Subalternative 3a** would be the most conservative subalternative where ABC = 65%OFL and **Subalternative 3d** would be the least conservative subalternative where ABC = 95%OFL (**Table 4-26**). Therefore, **Alternative 3** would be expected to have a greater biological benefit among **Alternatives 1 (No Action)**, **2**, and **3.** However, the South Atlantic Council's SSC has indicated that OFL cannot be determined for most unassessed species based on their recommended ABC control rule. Therefore, given the SSC's recommendation, **Alternatives 2** and **3** could only be applied to species that have an OFL from a stock assessment.

Table 4-26. OFL and ABC values for unassessed species which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2**, **3** and **5**.
The table excludes species that would be removed from the FMU (**Action 1**).

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Yellowedge grouper	30,221	n/a	19,643	22,665	25,687	28,710
Blueline tilefish	146,134	n/a	94,987	109,600	124,214	138,827
Silk Snapper	27,519	n/a	17,887	20,639	23,391	26,143
Misty grouper	2,346	n/a	1,525	1,760	1,994	2,229
Sand tilefish	6,353	n/a	4,130	4,765	5,400	6,036
Queen snapper	7,584	n/a	4,930	5,688	6,446	7,205
Black snapper	229	n/a	149	171	194	217
Blackfin snapper	2,154	n/a	1,400	1,615	1,830	2,046
Almaco jack	229,236	n/a	149,004	171,927	194,851	217,775
Banded rudderfish	119,916	n/a	77,945	89,937	101,928	113,920
Lesser amberjack	7,490	n/a	4,869	5,618	6,367	7,116

Table 4-26. Continued. OFL and ABC values for unassessed species which do not have ABCs specified by South Atlantic Council's SSC under **Alternatives 2**, **3** and **5**.

Species Common Name	Alt. 5 ABC (lbs ww) = Median Landings (1999-2008)	Alt. 2 ABC=OFL OFL is unknown	Alt. 3a ABC=65% Median Landings (1999-2008)	Alt. 3b ABC=75% Median Landings (1999-2008)	Alt. 3c ABC=85% Median Landings (1999-2008)	Alt. 3d ABC=95% Median Landings (1999-2008)
Gray snapper	769,475	n/a	500,159	577,107	654,054	731,002
Lane snapper	114,395	n/a	74,357	85,797	97,236	108,676
Cubera snapper	22,362	n/a	14,535	16,771	19,007	21,244
Dog snapper	2,586	n/a	1,681	1,940	2,198	2,457
Mahogany snapper	53	n/a	34	40	45	50
White grunt*	635,899	n/a	413,335	476,925	540,514	604,104
Sailors choice	18,458	n/a	11,998	13,844	15,689	17,535
Tomtate	64,454	n/a	41,895	48,341	54,786	61,231
Margate	25,412	n/a	16,518	19,059	21,600	24,142
Red hind	24,406	n/a	15,864	18,304	20,745	23,185
Rock hind	32,792	n/a	21,315	24,594	27,873	31,152
Yellowmouth grouper	2,147	n/a	1,396	1,610	1,825	2,040
Yellowfin grouper	4,414	n/a	2,869	3,310	3,752	4,193
Coney	1,975	n/a	1,284	1,481	1,678	1,876
Graysby	16,265	n/a	10,573	12,199	13,826	15,452
Jolthead porgy	32,829	n/a	21,339	24,622	27,905	31,188
Knobbed porgy	45,912	n/a	29,843	34,434	39,025	43,616
Saucereye porgy	2,952	n/a	1,919	2,214	2,509	2,805
Scup	6,579	n/a	4,276	4,934	5,592	6,250
Whitebone porgy	24,715	n/a	16,065	18,537	21,008	23,480
Atlantic spadefish	231,056	n/a	150,187	173,292	196,398	219,503
Blue runner	1,007,120	n/a	654,628	755,340	856,052	956,764
Bar jack	10,009	n/a	6,506	7,507	8,508	9,509
Gray triggerfish*	529,309	n/a	344,051	396,981	449,912	502,843
Scamp	492,572	n/a	320,172	369,429	418,686	467,944
Hogfish	133,136	n/a	86,539	99,852	113,166	126,479
Goliath grouper	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 4-27. Recommended ABC values for unassessed snapper grouper species using the South Atlantic Council's SSC approach under **Alternative 7 (Preferred)**.
The table excludes species that would be removed from the FMU (**Action 1**). OFL is unknown.

Species Common Name	Alt. 7 (Preferred) ABC (lbs ww) = Median or 3rd Highest Landings (1999-2008)
Yellowedge grouper	30,221[1]
Blueline tilefish	592,602[4]
Silk Snapper	27,519[1]
Misty grouper	2,863[3]
Sand tilefish	8,823[3]
Queen snapper	9,344[3]
Black snapper	382[2,3]
Blackfin snapper	4,154[3]
Almaco jack	291,922[2]
Banded rudderfish	152,999[2]
Lesser amberjack	10,568[2]
Gray snapper	894,019[2]
Lane snapper	153,466[2]
Cubera snapper	31,772[2]
Dog snapper	7,523[3]
Mahogany snapper	160[3]
White grunt*	635,899[1]
Sailors choice	35,266[3]
Tomtate	70,948[3]
Margate	34,662[2,3]
Red hind	25,885[2]
Rock hind	37,569[2]
Yellowmouth grouper	4,661[3]
Yellowfin grouper	9,258[3]
Coney	2,589[3]
Graysby	17,856[3]
Jolthead porgy	42,533[3]
Knobbed porgy	61,194[3]
Saucereye porgy	4,205[3]
Scup	8,999[3]
Whitebone porgy	30,684[3]
Atlantic spadefish	282,841[2]
Blue runner	1,289,941[2]
Bar jack	20,520[3]
Gray triggerfish*	672,565[2]
Nassau grouper	0
Goliath grouper	0
Scamp	492,572[1]
Hogfish	147,638[2]

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]ABC based on median landings (1999-2008) as per

South Atlantic SSC; [2]ABC based on 3rd highest landings (1999-2008) as per South Atlantic SSC; [3]ABC proxy value based on the South Atlantic SSC's ABC control rule, to be discussed by the South Atlantic SSC at a later date; and [4]ABC based on modified approach as per South Atlantic SSC.
Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Alternative 4 and its subalternatives would set ABC to a percentage of the yield at maximum fishing mortality threshold (MFMT) for assessed species. **Subalternative 4a**, the most conservative subalternative under **Alternative 4**, would set ABC = yield at 65%MFMT, which is equivalent to about 93.6%OFL. **Subalternative 4b** would set ABC = yield at 75%MFMT, which is equivalent to 97.1%OFL. **Subalternative 4c** would be the least conservative alternative under **Alternative 4** and would set ABC = yield at 85%MFMT, which is equivalent to about 98.9%OFL. Stock assessments have provided values for the yield at 65%, 75%, and 85% of MFMT for many of these species when the stock is at the biomass associated with the MSY (B_{MSY}); however, values are not available for these species at current biomass levels.

For assessed species, **Alternative 5** would consider the probability of overfishing in determining ABC. **Alternative 5** would establish ABCs based on the SSC's ABC control rule for assessed species, which has four dimensions included in the control rule framework: Assessment information; characterization of uncertainty; stock status; and productivity/susceptibility of the stock. Each dimension would contain tiers that can be evaluated for each stock to determine a numerical score. The uncertainty buffer, or difference between OFL and ABC, would be expressed in terms of a reduction in the "probability of overfishing", or "P*". The adjustment score provided by the tiers and dimensions represents the amount by which P* is reduced to obtain the critical value for P*. Therefore, the key product of the control rule is the sum of scores for all dimensions that is used as an adjustment factor calculate the critical value for P*. The scoring provides a maximum P* adjustment of 40% and a minimum of 0% that results in critical values for P* ranging from 10% to 50%. These critical values are then used to determine the actual ABC from projection tables that provide the level of annual yield that corresponds to a particular P*.

Setting ABC equal to OFL implies a P* equal to 50%, where 50% represents the chance of overfishing occurring. Reducing P* will reduce ABC and provide a reduction in the probability of overfishing occurring. The relationship between the amount of reduction in P* and the resulting reduction in ABC is determined by the shape of the distribution of yield about the management parameters. For a given reduction in P*, broad distributions (suggesting higher uncertainty) will result in larger reductions in ABC whereas narrower distributions (suggesting lower uncertainty) will result in smaller reductions in ABC.

For unassessed species, the South Atlantic Council would adopt the South Atlantic Council SSC's ABC control rule but establish an interim ABC=median landings from 1999-2008 (**Table 4-26**) until the SSC's control rule can be fully applied. It is noted the South Atlantic Council's SSC changed their ABC control rule recommendation for unassessed species at their April 2011 meeting. The SSC's ABC control rule recommendation for unassessed species is addressed in **Alternative 7 (Preferred)**. The following text is from the August 16-17, 2010 SSC meeting where ABC control rules for unassessed species was discussed.

There was initial discussion on definition of "unassessed stocks" and "data poor" stocks. These terms are not synonyms as unassessed stocks can span data poor to data rich spectrum. Data poor

and data rich are relative terms that are useful within a region/council and breakdown when used between councils due to changes in data quality and quantity by region. The South Atlantic SSC currently has four members that are part of an ad hoc committee that worked to address the data situations where only reliable catch series (ORCS) data are available for a given species. Steve Cadrin, Luiz Barbieri, Andy Cooper, and Jim Berkson have all been participating on this committee since last fall. Jim Berkson gave an update on their progress and provided the SSC with the proposed approach being developed by ad hoc committee

Proposed approach for ORCS considers the following tiers:
Level 1 tier *- data exist to assess stock. Enough information for some form of assessment (e.g. surplus production model), but because of lack of resources, stock has not been assessed. Recommendation is to do stock assessment.*
Level 2 tier *- depletion based stock reduction analysis (DBSRA) – (developed by Dick and MacCall) Can be done if you have your entire catch history for a fishery. Requires some level of "informed expert judgment".*
Level 3 tier *- depletion-corrected average catch (DCAC) (MacCall 2009. Done when you have only a limited # of years of catch data for a fishery. Requires a higher level of "informed expert judgment" than Level 2 tier.*
Level 4 tier*- ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC*

Dr. Berkson discussed Restrepo's method as a potential tool to estimate ABCs for Level 4 tier stocks. Two main components of the approach are often overlooked: - time period considered is based on experts' judgment of when the stock was, or is, stable. - The scalar that is multiplied with landings is based on expert opinion of stock status (e.g., B/Bmsy ratio; use 0.75 if stock biomass is likely at or above Bmsy).

There was concern within the SSC about Restrepo's method because of the assumption that landings during the stable period represent OFL. John Boreman noted that this approach was developed in a time that 50% probability of overfishing was OK, now we have to stop overfishing and our reference is different. Steve Cadrin provided an example from New England red crab where long-term average landings were determined to more closely resemble ABC than OFL. There was general agreement among SSC members that the landings stream during a period when a stock is considered stable represent ABC and not OFL; in this scenario, OFL is an unknown value above ABC that cannot be provided to the council under this tier.

NOAA general counsel, Mike McLemore, was concerned that no OFL would be provided. Discussion between the SSC and Mr. McLemore focused on what the SSC was responsible for providing to the Council under NS1. It became clear that the recommending an ABC was the main goal, and providing this recommended value without an estimate of OFL was acceptable in situations where only catch series data were available, provided the SSC "explains its reasoning and judgment "-M. McLemore.

Alternative 5, which would adopt the SSC's ABC control rule for assessed species, would establish a buffer between the OFL and ABC based on a probability of overfishing occurring specific to the stock being assessed. The SSC's P* approach has been applied to all recent SEDAR stock

assessments for snapper grouper species that have been determined to not be overfished. For overfished species, the SSC stated at their April 2010 meeting that "… a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates in the rebuilding plan." For unassessed species, no OFL would be specified. Instead, an ABC would be specified based on the quality and availability of data for the different species. Since the ABC would be specific to the stock, the ABC from **Alternative 5** could be greater or less than the ABC that would result from **Alternatives 2-4**. Therefore, the associated biological effects could be greater or less, but they would be considered to be appropriate for the stock.

Similar to **Alternative 5**, **Alternative 6** would specify an ABC control rule based on the South Atlantic Council's SSC control rule for assessed species. However, for unassessed species, the Gulf of Mexico Council SSC's ABC control rule would be used (**Table 4-23**). **Alternative 6** would follow Tier 3a of the Gulf of Mexico's Council SSC's ABC control rule. According to **Table 4-23**, the ABC control rule described for Tier 3a would be used in situations where landings are small relative to stock biomass and recent historical landings are without trend. Tier 3a would be used for species where no assessment is available, but landings data exist, and the probability of exceeding the OFL in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the OFL and ABC.

For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council's SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternatives 2** and **3** (along with its subalternatives) capture the range of ABCs that provide a buffer between the ABC and OFL described in Tier 3b.

The Gulf of Mexico Council SSC's ABC control rule for unassessed species (**Table 4-23**) would result in a higher allowable catch than an ABC control rule based on median landings 1999-2008 (**Table 4-26**). Therefore, the biological effect of **Alternative 6** would likely be less than **Alternative 5**.

Alternative 7 (Preferred) would establish ABCs for assessed species, based on the South Atlantic Council's SSC ABC control rule **(Table 4-22)**. For unassessed species, ABCs would be based on the approach in **Table 4-24**. The South Atlantic Council's SSC intends to re-evaluate the unassessed species' portions of their ABC control rule (including values for those species the Council voted *not* to remove from the FMU on August, 9, 2011) in the near future to assess whether modifications are necessary. In April 2011, the SSC recommended ABC values for unassessed species, which are higher for all species compared with those in **Alternatives 1 (No Action)** through **5**, except for those in **Alternative 6** (**Table 4-28a** and **4-28b)**. The biological effects of **Alternative 7 (Preferred)** may be similar to **Alternative 5**, since the South Atlantic Council's SSC took into account many different sources of uncertainty in their ABC recommendations. As mentioned, the South Atlantic Council's SSC will periodically evaluate the performance of their ABC control rule and determine when and how it needs to be modified.

Table 4-28a. Gulf of Mexico Council SSC's ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic jurisdiction]. Tier 3a from **Table 4-23**.

Species Common Name	OFL (Mean + 2 SD)	Mean + 0.5 SD	Mean + 1 SD (Default)	Mean + 1.5 SD
Yellowedge grouper	52,025	35,458	40,980	46,503
Blueline tilefish	747,365	392,193	510,584	628,975
Silk Snapper	69,988	42,887	51,921	60,954
Misty grouper	4,518	2,813	3,381	3,950
Sand tilefish	18,775	10,576	13,309	16,042
Queen snapper	17,090	10,095	12,427	14,759
Black snapper	604	309	407	506
Blackfin snapper	6,113	3,626	4,455	5,284
Almaco jack	366,092	261,828	296,583	331,338
Banded rudderfish	212,007	147,439	168,962	190,485
Lesser amberjack	17,566	11,114	13,264	15,415
Gray snapper	1,104,046	875,775	951,865	1,027,955
Lane snapper	184,619	140,153	154,975	169,797
Cubera snapper	54,401	30,935	38,757	46,579
Dog snapper	15,697	7,763	10,408	13,053
Mahogany snapper	3,020	1,192	1,802	2,411
White grunt*	773,769	675,044	707,952	740,860
Sailors choice	49,021	28,946	35,638	42,329
Tomtate	100,360	74,989	83,446	91,903
Margate	59,750	35,930	43,870	51,810
Red hind	30,162	24,771	26,568	28,365
Rock hind	47,791	35,886	39,854	43,823
Yellowmouth grouper	9,704	4,722	6,383	8,044
Yellowfin grouper	33,789	15,197	21,395	27,592
Coney	3,956	2,259	2,825	3,390
Graysby	29,763	19,075	22,638	26,200
Jolthead porgy	63,190	43,307	49,934	56,562
Knobbed porgy	76,545	56,714	63,325	69,935
Saucereye porgy	5,937	3,821	4,526	5,232
Scup	14,904	8,572	10,682	12,793
Whitebone porgy	39,634	28,016	31,889	35,761
Atlantic spadefish	577,785	347,101	423,996	500,890
Blue runner	1,534,169	1,116,354	1,255,626	1,394,897
Bar jack	27,908	16,316	20,180	24,044
Gray triggerfish*	873,883	641,940	719,255	796,569
Scamp	642,258	522,282	562,274	602,266
Hogfish	208,964	152,939	171,614	190,289
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

Note: ABC = 0 (landings only) for Speckled hind and Warsaw grouper.

Table 4-28b. Gulf of Mexico Council SSC's ABC control rule alternatives applied to average landings and standard deviation (1999-2008) for unassessed South Atlantic snapper grouper species [all landings from South Atlantic jurisdiction]. Tier 3b from **Table 4-23**.

Species Common Name	OFL (Mean)	85% OFL	75% OFL (Default)	65% OFL
Yellowedge grouper	29,936	25,445	22,452	19,458
Blueline tilefish	273,802	232,732	205,352	177,971
Silk Snapper	33,854	28,776	25,390	22,005
Misty grouper	2,244	1,908	1,683	1,459
Sand tilefish	7,844	6,667	5,883	5,098
Queen snapper	7,763	6,599	5,822	5,046
Black snapper	211	179	158	137
Blackfin snapper	2,798	2,378	2,098	1,818
Almaco jack	227,074	193,013	170,305	147,598
Banded rudderfish	125,917	107,029	94,438	81,846
Lesser amberjack	8,963	7,618	6,722	5,826
Gray snapper	799,685	679,732	599,764	519,795
Lane snapper	125,331	106,531	93,998	81,465
Cubera snapper	23,113	19,646	17,335	15,023
Dog snapper	5,119	4,351	3,839	3,327
Mahogany snapper	583	496	438	379
White grunt*	642,136	545,816	481,602	417,388
Sailors choice	22,255	18,916	16,691	14,466
Tomtate	66,533	56,553	49,900	43,246
Margate	27,990	23,791	20,992	18,193
Red hind	22,974	19,528	17,231	14,933
Rock hind	31,918	27,130	23,938	20,746
Yellowmouth grouper	3,062	2,603	2,296	1,990
Yellowfin grouper	9,000	7,650	6,750	5,850
Coney	1,694	1,440	1,270	1,101
Graysby	15,513	13,186	11,635	10,083
Jolthead porgy	36,679	31,177	27,509	23,841
Knobbed porgy	50,104	42,588	37,578	32,568
Saucereye porgy	3,115	2,648	2,336	2,025
Scup	6,461	5,492	4,846	4,200
Whitebone porgy	24,144	20,522	18,108	15,693
Atlantic spadefish	270,206	229,675	202,655	175,634
Blue runner	977,083	830,520	732,812	635,104
Bar jack	12,452	10,584	9,339	8,094
Gray triggerfish*	564,626	479,932	423,470	367,007
Scamp	482,290	409,946	361,717	313,488
Hogfish	134,264	114,125	100,698	87,272
Nassau grouper	0	0	0	0
Goliath grouper	0	0	0	0

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.
Note: ABC = 0 landings for Speckled hind and Warsaw grouper.

Establishing an ABC control rule for snapper grouper species would not directly affect the protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.1.4.2 Economic Effects

Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 4** are indirect.

In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects. In most cases, **Alternative 1 (No Action)** is expected to cause the least disruption to operations in the snapper grouper fishery. Specifically, **Alternative 1 (No Action)** would allow current harvest levels to continue and thus the greatest landings and ex-vessel revenue to the commercial sector and greatest consumer and producer surplus to the recreational sector relative to the other alternatives. In turn, **Alternative 1 (No Action)** is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects. However, legally, **Alternative 1 (No Action)** is not a feasible alternative. Conversely, **Subalternative 3a** would restrict harvest levels the most, cause the most disruption to operations in the snapper grouper fishery, generate the lowest landings and ex-vessel revenue to the commercial sector and lowest consumer and producer surplus to the recreational sector, and thus is expected to result in the greatest short-term adverse economic effects and the greatest potential long-term positive economic effects relative to the other alternatives.

Under **Alternative 2,** the ABC would be set equal to the OFL and therefore is not as risk averse as the other alternatives, with the exception of **Alternative 1 (No Action)**. As such, in theory, it is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects relative to **Alternatives 3-7**. However, since the OFL is unknown for the unassessed species that do not already have ABCs established by the South Atlantic Council's SSC, it is not a functional alternative.

Of the various **Alternative 3** subalternatives, **Subalternative 3d** is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects. Like **Alternative 3**, **Alternative 4** also accounts for scientific uncertainty and is expected to result in greater short-term adverse economic effects and the smaller potential long-term positive economic effects relative to **Alternative 1 (No Action)** and **Alternative 2**. However, since MFMT values at current biomass levels are not available for the unassessed species that do not already have ABCs, it is difficult to determine whether **Alternative 4** would have greater or lesser short-term adverse economic effects and potential long-term positive economic effects relative to the other alternatives.

Alternative 5 is expected to generate lesser short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 3** and **Alternative 6** (Tier 3b) but greater short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 6** (Tier 3a), and **Alternative 7 (Preferred).** Under **Alternative 6**, using the default ABC buffer level for Tier 3a (mean + 1 SD) is expected to generate the least short-term adverse economic effects and the smallest potential long-term positive economic effects of all the functional and legally feasible alternatives considered with the exception of **Alternative 7 (Preferred)**. Under **Alternative 6**, using the default ABC buffer level for Tier 3b (75% OFL) would generate almost the same short-term adverse economic effects and potential long-term positive economic effects as **Subalternative 3b**, which are greater than those under **Subalternative 3a** but less than those under **Subalternative 3c**, **Subalternative 3d**, **Alternative 5 , Alternative 6** (Tier 3a), and **Alternative 7 (Preferred)**.

Comparing the expected economic effects of **Alternative 5**, **Alternative 6** (Tier 3a), and **Alternative 7 (Preferred)** is not as straightforward and differs depending on the species considered. For yellowedge grouper, silk snapper, scamp, and white grunt, the ABC is equivalent under **Alternative 5** and **Alternative 7 (Preferred)**, because the South Atlantic Council's SSC did not change their ABC recommendations for these species, but less than what it would be under **Alternative 6** (Tier 3a). Conversely, for the other unassessed species without ABCs, which represent the majority in terms of number of species and total landings, the ABCs under **Alternative 7 (Preferred)** are greater than they would be under **Alternative 5** and **Alternative 6** (Tier 3a) and thus **Alternative 7 (Preferred)** is expected to generate less short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 5** and **Alternative 6** (Tier 3a). However, for all species, the ABCs are greater under **Alternative 6** (Tier 3a) relative to **Alternative 5** and thus **Alternative 6** (Tier 3a) is expected to generate less short-term adverse economic effects and potential long-term positive economic effects relative to **Alternative 5** .

To summarize, the ranking of alternatives with respect to generating the least short-term adverse economic effects and potential long-term positive economic effects is as follows: **Alternative 1 (No Action), Alternative 2, Alternative 7 (Preferred)**, **Alternative 6** (Tier 3a), **Alternative 5** , **Subalternative 3d**, **Subalternative 3c**, **Subalternative 3b** and **Alternative 6** (Tier 3b), and **Subalternative 3a**. **Alternative 4** is excluded from this overall ranking of alternatives for previously explained reasons. These conclusions must be used with caution as the cumulative economic effects of reduced harvests from all these species is difficult to determine. If the ACL is restrictive as a result of the selected ABC and the harvest of all species is subsequently reduced, the effects on fishing behavior will differ across vessels depending on their physical and operational characteristics. Such behavioral changes cannot be predicted using the currently available science.

4.1.4.3 Social Effects

Setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from the implementation of the ABC and any subsequent reduction through other alternatives setting ACLs and ACTs/AMs. **Alternative 1 (No Action)** does not establish an ABC control rule and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing

in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur inducing management and rebuilding which might cause more volatility in the fishery. **Alternative 3** would be the most restrictive and moving from **Subalternative 3a to 3c** establishes a less restrictive threshold. Using a percentage of the MFMT in **Alternative 4** would be less restrictive than **Alternative 3** and only slightly more restrictive than **Alternative 2**. In **Alternative 5**, the use of the SSC control rule for assessed species and median landings for unassessed species will have similar impacts as previous alternatives but may have fewer negative social effects as thresholds are near recent harvest levels using median landings. In **Alternative 6,** the use of the Gulf of Mexico Council's ABC control rule offers higher landing levels under Tier 3a while Tier 3b is closer to the thresholds in **Alternative 5**. With the revised approach in **Alternative 7 (Preferred)** thresholds are often higher than **Alternative 5** for most species (although some would see a lower threshold). In most cases, the social effects would likely be tied to the buffer imposed in setting ACL and whether or not that buffer imposed a reduction in current harvest levels.

One of the difficulties in understanding what the social effects would be is that the cumulative effect of reduced harvest from the combination of all these different species is difficult to ascertain. If a restrictive ABC level is chosen and harvests for all species are reduced, how those reductions will affect fishing behavior will depend upon individual fishing behaviors and sector makeup. These effects can differ dramatically from one region to another or from state to state depending upon the species that are predominant in that area and the composition of the respective fishing sector. For the Deepwater Complex many of the social effects would accrue to fishing communities in North Carolina where a larger proportion of landings are made (see **Table 3-28**). For the Jacks Complex, landings are more evenly spread throughout the South Atlantic states and therefore any reduction in harvest would have a more dispersed impact (see **Table 3-36**). Species included in the Grunts Complex are landed predominantly in South Carolina and communities there would likely see more effects of any changes (see **Table 3-40**). The communities identified within each state in **Section 3.8.3.3** that have a high local quotient for their respective species would likely be the communities affected the most by any harvest reductions.

4.1.4.4 Administrative Effects

The establishment of an ABC Control Rule is a purely administrative process. The rule is developed by the South Atlantic Council's SSC for consideration by the South Atlantic Council. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.1.4.5 Council Conclusions

The SSC's final ABC Control Rule document (**Appendix Q**) states:

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACLs became available during the period that the SSC discussed the ABC Control Rule and helped direct the final version. Although

the SSC believes their proposed Control Rule is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P that determines MSY and OFL is considered and incorporated, the Committee recognizes that the rule may require modification in the future as final guidance on MSRA implementation becomes available.*

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation of the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule.

At their April 2011 meeting, the SSC discussed ABC levels for unassessed species in the Comprehensive ACL Amendment:

The SSC discussed the use of standard deviation as a means to adjust ABC above the median landings in the Gulf of Mexico Fishery Management Council's ABC Control Rule. The issue that concerned the group the most was that by using this method the landings-based ABC would be higher with higher uncertainty (i.e., higher variability in landings) and lower with less uncertainty. Additionally, the use of standard deviation could suggest a level of statistical rigor that would not necessarily be there. Using a percentile of the landings values would be a more uniform application that is not as impacted by the variation in the data or landings sampling error. Given 10 years of data, and being consistent with the 75th percentile (25% of the landings value exceed that value) the SSC recommended using the 3rd highest point or the 80th percentile of the data. This recommendation was integrated into a decision tree developed for landings-only stocks.

The "decision tree" was incorporated into an alternative for the South Atlantic Council's consideration, which was subsequently chosen as the preferred. The South Atlantic Council understands the limitations of the South Atlantic Council's SSC's ABC control rule and is prepared to make adjustments as needed in the future. In particular, the South Atlantic Council is aware of various approaches proposed for situations in which only catch data are available. NOAA released a Technical Memorandum in May 2011— *Calculating Acceptable Biological Catch For Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* — that presents various methodologies. The South Atlantic Council's SSC intends to review the information included in this document and revise their Control Rule as needed. Once the SSC finalizes Level 4 of their Control Rule, it will be applied to all South Atlantic Council managed stocks. The recommended ABC values in this document, therefore, are considered interim values until the SSC finalizes their ABC control rule.

The Snapper Grouper Advisory Panel (AP) recommended setting ABC = 85% OFL for snapper grouper species in the Comprehensive ACL Amendment. However, the South Atlantic Council's SSC since stated that OFL values are unknown for all unassessed species. Hence the South Atlantic

Council did not consider this alternative a viable approach. The Snapper Grouper AP also recommended that trends in landings be examined on a species-by-species basis to set ABCs.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded that **Alternative 7** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.5 Action 5: Specify Allocations for Snapper Grouper Species That Do not Currently have Allocations

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat). When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Alternative 1 (No Action). Retain the current allocations (**Table 4-29**). Do not specify allocations for those species where no allocations have been specified.

Table 4-29. Allocations for snapper grouper species established in other amendments. Allocations are specified for wreckfish and black grouper in **Actions 9** and **14**, respectively.

	Allocations	
	Commercial	**Recreational**
Black sea bass	43%	57%
Gag	51%	49%
Golden tilefish	97%	3%
Red porgy	50%	50%
Snowy grouper	95%	5%
Vermilion snapper	68%	32%
Red grouper (proposed in 24)	44%	56%

Alternative 2 (Preferred). Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified (current values are shown in **Table 4-30**.)

Alternative 3. Specify allocations for species that do not currently have allocations among three sectors, commercial, recreational, and for-hire, using the following equation:
Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history = average landings 1986-2008, current trend = average landings 2006-2008 for this amendment. The

commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1986-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 5. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1986-1998. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 6. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 1999-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 7. Specify allocations for species that do not currently have allocations between two sectors, commercial and recreational using data from 2006-2008. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

4.1.5.1 Biological Effects

Alternative 1 (No Action) would retain the allocations that are currently in place for black sea bass, gag, golden tilefish, red porgy, snowy grouper, and vermilion snapper (**Table 4-29**), but would not specify commercial or recreational allocations for the remaining species or species groups in the Snapper Grouper FMP. If allocations were not specified then it would not be possible to identify the ACL for each of the sectors. Only a single ACL could be established for both sectors and options for an AM would be limited.

Table 4-30. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4**, **5**, **6**, and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**. Allocations will be established for red grouper in Amendment 24. Allocations for wreckfish and black grouper are addressed in **Actions 9** and **14**, respectively.

Species or Species Complex	**Preferred Alternative 2**		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Deepwater Complex	**Comm**	**Rec**	Comm	Private	For-Hire	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Yellowedge grouper	96.19%	3.81%	96.19%	3.14%	0.67%	94.00%	6.00%	98.48%	1.52%	88.28%	11.72%	99.64%	0.36%
Blueline tilefish	47.39%	52.61%	47.39%	16.94%	35.67%	73.25%	26.75%	94.69%	5.31%	57.03%	42.97%	38.11%	61.89%
Silk Snapper	73.14%	26.86%	73.14%	2.02%	24.84%	74.17%	25.83%	67.34%	32.66%	84.95%	15.05%	71.34%	28.66%
Misty grouper	70.91%	29.09%	70.91%	28.69%	0.39%	47.26%	52.74%	15.11%	84.89%	98.33%	1.67%	99.97%	0.03%
Sand tilefish	16.22%	83.78%	16.22%	52.77%	31.00%	16.82%	83.18%	8.59%	91.41%	23.62%	76.38%	15.86%	84.14%
Queen snapper	93.12%	6.88%	93.12%	0.69%	6.19%	87.95%	12.05%	78.18%	21.82%	97.76%	2.24%	100.00%	0.00%
Black snapper	91.52%	8.48%	91.52%	8.37%	0.11%	86.46%	13.54%	82.36%	17.64%	100.00%	0.00%	100.00%	0.00%
Blackfin snapper	31.68%	68.32%	31.68%	37.90%	30.42%	34.56%	65.44%	21.09%	78.91%	46.51%	53.49%	29.33%	70.67%
Jacks Complex													
Almaco jack	51.53%	48.47%	51.53%	14.87%	33.60%	51.06%	48.94%	40.18%	59.82%	47.08%	52.92%	51.77%	48.23%
Banded rudderfish	25.25%	74.75%	25.25%	14.11%	60.64%	28.08%	71.92%	25.21%	74.79%	26.33%	73.67%	23.20%	76.80%
Lesser amberjack	46.62%	53.38%	46.62%	17.28%	36.10%	67.06%	32.94%	79.68%	20.32%	52.75%	47.25%	28.79%	71.21%
Snappers Complex													
Gray snapper	20.00%	80.00%	20.00%	46.87%	33.13%	29.59%	70.41%	39.85%	60.15%	18.72%	81.28%	11.87%	88.13%
Lane snapper	12.21%	87.79%	12.21%	54.14%	33.64%	16.95%	83.05%	21.90%	78.10%	10.32%	89.68%	6.15%	93.85%
Cubera snapper	19.75%	80.25%	19.75%	44.45%	35.80%	16.25%	83.75%	16.12%	83.88%	16.58%	83.42%	25.55%	74.45%
Dog snapper	9.41%	90.59%	9.41%	75.83%	14.76%	15.72%	84.28%	27.37%	72.63%	11.13%	88.87%	6.66%	93.34%
Mahogany snapper	5.05%	94.95%	5.05%	84.71%	10.25%	10.95%	89.05%	47.80%	52.20%	6.43%	93.57%	2.17%	97.83%
Grunts Complex													
White grunt	32.67	67.33%	32.67	27.00	40.33%	35.79	64.21%	37.01	62.99%	33.68%	66.32%	29.22%	70.78%

Species or Species Complex	**Preferred Alternative 2**		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
	%		%	%		%		%					
Sailors choice	0.00%	100.00 %	0.00%	62.66 %	37.34%	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %
Tomtate	0.00%	100.00 %	0.00%	30.80 %	69.20%	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %	0.00%	100.00 %
Margate	19.83 %	80.17%	19.83 %	29.01 %	51.16%	21.73 %	78.27%	28.83 %	71.17%	13.78%	86.22%	17.57%	82.43%
Shallow-Water Groupers Complex													
Red hind	73.28 %	26.72%	73.28 %	16.88 %	9.84%	76.03 %	23.97%	77.55 %	22.45%	73.71%	26.29%	70.28%	29.72%
Rock hind	62.54 %	37.46%	62.54 %	11.97 %	25.49%	55.19 %	44.81%	40.43 %	59.57%	65.33%	34.67%	67.17%	32.83%
Yellowmouth grouper	1.35%	98.65%	1.35%	52.97 %	45.69%	2.86%	97.14%	2.62%	97.38%	2.95%	97.05%	0.69%	99.31%
Yellowfin grouper	40.78 %	59.22%	40.78 %	54.48 %	4.75%	46.16 %	53.84%	42.62 %	57.38%	53.00%	47.00%	37.57%	62.43%
Coney	23.26 %	76.74%	23.26 %	64.79 %	11.95%	49.31 %	50.69%	70.56 %	29.44%	1.29%	98.71%	0.25%	99.75%
Graysby	14.48 %	85.52%	14.48 %	34.06 %	51.46%	32.29 %	67.71%	55.76 %	44.24%	18.77%	81.23%	2.64%	97.36%

Table 4-30. Continued. Percentage of ACL that would be allocated to the commercial and recreational sectors under **Alternative 2 (Preferred)**, and **Alternatives 4, 5, 6,** and **7** as well as commercial, private, and for-hire sectors under **Alternative 3**.

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Porgies Complex	**Comm**	**Rec**	Comm	Private	For-Hire	Comm	Rec	Comm	Rec	Comm	Rec	Comm	Rec
Jolthead porgy	4.05%	95.95%	4.05%	55.82%	40.13%	3.77%	96.23%	2.24%	97.76%	5.84%	94.16%	4.29%	95.71%
Knobbed porgy	54.12%	45.88%	54.12%	5.59%	40.30%	51.58%	48.42%	50.02%	49.98%	55.16%	44.84%	58.89%	41.11%
Saucereye porgy	0.01%	99.99%	0.01%	43.41%	56.58%	0.01%	99.99%	0.01%	99.99%	0.00%	100.00%	0.00%	100.00%
Scup	0.00%	100.00%	0.00%	19.70%	80.30%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%
Whitebone porgy	0.96%	99.04%	0.96%	51.36%	47.69%	1.70%	98.30%	2.54%	97.46%	0.01%	99.99%	0.01%	99.99%
Individual ACLs													
Atlantic spadefish	12.90%	87.10%	12.90%	43.98%	43.13%	15.06%	84.94%	14.46%	85.54%	15.74%	84.26%	10.87%	89.13%
Greater amberjack	40.66%	59.34%	Data not available by mode			42.79%	57.21%	42.53%	57.47%	43.32%	56.68%	37.35%	62.65%
Blue runner	14.60%	85.40%	14.60%	29.24%	56.16%	15.51%	84.49%	15.30%	84.70%	15.67%	84.33%	14.00%	86.00%
Bar jack	32.58%	67.42%	32.58%	21.25%	46.17%	17.42%	82.58%	6.88%	93.12%	35.53%	64.47%	59.42%	40.58%
Gray triggerfish	45.39%	54.61%	45.39%	27.74%	26.87%	47.46%	52.54%	48.80%	51.20%	45.55%	54.45%	43.63%	56.37%
Warsaw grouper	17.79%	82.21%	17.79%	53.23%	28.97%	21.17%	78.83%	23.75%	76.25%	10.62%	89.38%	5.73%	94.27%
Mutton snapper[1]	17.02%	82.98%	Data not available by mode			25.75%	74.25%	30.07%	69.93%	19.24%	80.76%	9.84%	25.75%
Scamp	69.36%	30.64%	69.36%	9.86%	20.78%	71.78%	28.22%	77.06%	22.94%	65.52%	34.48%	67.14%	32.86%
Goliath grouper	43.77%	56.23%	43.77%	44.36%	11.86%	51.80%	48.20%	53.32%	46.68%	0.00%	100.00%	0.00%	100.00%
Nassau grouper	9.52%	90.48%	9.52%	68.69%	21.79%	9.52%	90.48%	10.04%	89.96%	0.01%	99.99%	n/a	n/a
Speckled hind	65.59%	34.41%	65.59%	5.82%	28.59%	73.97%	26.03%	76.60%	23.40%	60.08%	39.92%	40.95%	59.05%
Hogfish	33.03%	66.97%	33.03%	62.16%	4.81%	37.56%	62.44%	42.31%	57.69%	30.43%	69.57%	28.30%	71.70%
Yellowtail snapper[1]	52.56%	47.44%	Data not available by mode			53.53%	46.47%	47.22%	52.78%	64.46%	35.54%	51.38%	48.62%
Red snapper	28.07%	71.93%	28.07%	41.90%	30.04%	33.35%	66.65%	40.34%	59.66%	26.38%	73.62%	24.07%	75.93%

Note: Greater amberjack were not identified to species in the commercial data prior to 1992; thus, commercial landings from SEDAR-15 and recreational landings from the ACL dataset were deemed 'best available' per the SEFSC. For the other amberjacks (banded rudderfish, almaco jack, lesser amberjack), no commercial landings data were available for 1986-1991; thus, the commercial average was computed from 1992-2008. All unclassified grunt landings were assigned to white grunt. All unclassified triggerfish landings were assigned to gray triggerfish.

[1] Post-stratifies MRFSS data for Monroe County to the South Atlantic.

Alternatives 2 (Preferred)-5 would divide the ABC specified in **Action 4** (which equals the ACL as specified in **Action 6**) between the recreational and commercial sectors (**Table 4-30**). There is little difference in the biological effects among the five alternatives, since the total ABCs/ACLs are expected to be harvested.

Alternative 2 (Preferred) would divide allocations between the recreational and commercial sectors based on historical landings information (average landings) from 1986-2008 and 2006-2008, and therefore consider past and present participation. **Alternative 3** would be similar to **Alternative 2 (Preferred)** with the exception that the allocations for the recreational sector would be divided into private recreational and for-hire recreational components (**Table 4-30**). The commercial allocation under **Alternatives 2 (Preferred)** and **Alternative 3** would be identical. Sector specific ACLs would be based on allocations. Therefore, there is a greater chance that the ACLs would be exceeded for private recreational and for-hire recreational sectors under **Alternative 3** than for private recreational and for-hire recreational combined under **Alternative 2 (Preferred).** Furthermore, estimates of recreational landings could be less certain for rarely encountered species or species groups when recreational data are divided into sectors.

Alternative 4, which would set allocations based on data from 1986 to 2008, is almost identical to **Alternative 2 (Preferred)**, which uses landings data from 1986-2008 and 2006-2008, and therefore would be considered to have similar biological effects. **Alternative 5**, which is based on data from 1986-1998, would generally allocate a larger portion of the ACL to the commercial sector than allocation alternatives that include more recent landings information. Allocation **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than alternatives that include data from earlier years (**Table 4-30**).

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-7** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2 (Preferred)-7** on sea turtles and smalltooth sawfish are unclear. If these allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery, the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.5.2 Economic Effects

Alternative 1 (No Action) would maintain the allocations that are currently in place for certain species but would not specify commercial or recreational allocations for the remaining species or species groups in the snapper grouper FMP.

Alternative 2 (Preferred) would divide allocations between the recreational and commercial sectors based on historical landings information (average landings) from 1986-2008 and 2006-2008. **Alternative 3** would be similar to **Alternative 2 (Preferred)** with the exception that the allocations for the recreational sector would be divided into private recreational and for-hire recreational components. The commercial allocation under **Alternative 2 (Preferred)** and **Alternative 3** would be identical.

Alternative 4, which would set allocations based on data from 1986 to 2008, is also similar to **Alternative 2 (Preferred)**, which uses landings data from 1986-2008 and 2006-2008. **Alternative 5**, which is based on data from 1986-1998, would generally allocate a larger portion of the ACL to the commercial sector than other allocation alternatives that base their allocation formula on more recent landings information. **Alternatives 6** and **7**, which use landings data from 1999-2008 and 2006-2008, respectively, would allocate a greater proportion of the ACL to the recreational sector than other alternatives, which base their allocation formula on data from earlier years.

To summarize, **Alternatives 2 (Preferred)** through **7** would specify allocation shares for the commercial and recreational sector based on historical landings information. **Alternatives 2 (Preferred)**, **3**, and **4** base their allocation formula on a longer time series, and thus relatively more historical data, whereas **Alternatives 5**, **6**, and **7** base their allocation formula on a shorter time series and thus more recent data. Broadly speaking, since recreational participation has increased in recent years, **Alternatives 5**, **6**, and **7** tend to place a higher weight towards the recreational sector relative to **Alternatives 2 (Preferred)**, **3**, and **4 (Table 4-30).** The actual allocation will differ by species. **Alternatives 5**, **6**, and **7** will likely generate less disruption to the snapper grouper fishery relative to **Alternatives 2 (Preferred)**, **3**, and **4** since these more closely capture the status quo.

Tables 4-31a and **4-31b** show the maximum changes in anticipated landings and gross revenue to the commercial sector and consumer surplus to the recreational sector under the various alternatives relative to **Alternative 1 (No Action)**. These annual figures assume that the fleets are willing and able to harvest the entire ACL.[7] Producer surplus from the commercial sector is the appropriate welfare measure for the commercial sector. Producer surplus is the amount of money commercial fishermen receive for the fish they sell over and above what it costs them to harvest it. However, estimates of producer surplus are not currently available. Estimates of gross revenue losses overestimate the losses of producer surplus because they do not account for harvesting costs. Consumer surplus and producer surplus are the appropriate welfare measures for the recreational sector, though the latter only applies to the for-hire component of the recreational sector. Consumer surplus is the amount of money anglers would be willing-to-pay for the fish they harvest over and above the costs of harvesting those fish. Producer surplus is typically approximated by net operating revenue (NOR) and represents the difference between the money for-hire operators receive on fishing trips and the cost of taking those trips. Since the allocation of fish between the private recreational and for-hire components of the recreational sector is unknown, NOR estimates cannot be provided.

[7] Gross revenue was estimated by multiplying the dockside price times the commercial allocation. Consumer surplus was estimated by multiplying the appropriate willingness-to-pay estimate times the recreational allocation.

As noted above, the statistics offered in **Tables 4-31a** and **31b** should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple allocation weights. For example, as commercial allocations become more binding, then a number of commercial operations may change their catch mix. Similarly, as recreational allocations become more binding, participation rates may also change. Presently, the actual behavioral response is unknown. In addition, the resulting net benefits will depend on the regulatory framework in place (e.g., individual transferable quota, limited entry, trip limits in the commercial sector or bag limits, size limits, or seasonal closures in the recreational sector) and compliance with ACLs, which is also unknown.

Table 4-31a. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5.**

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)
DW Complex							
Yellowedge grouper	18,654	(72,190)	18,654	(66,343)	(5,847)	16,555	(64,067)
Blueline tilefish	(24,193)	190,253	(24,193)	36,021	154,232	214,840	(1,689,481)
Silk Snapper	(1,358)	5,588	(1,358)	4,137	1,452	(520)	2,140
Misty grouper	(2,389)	10,212	(2,389)	10,080	131	(4,332)	18,521
Sand tilefish	2,047	(3,506)	2,047	1,950	(5,457)	2,122	(3,635)
Queen snapper	(354)	1,375	(354)	(4,948)	6,323	(1,711)	6,654
Black snapper	370	(2,188)	370	(1,515)	(673)	335	(1,977)
Blackfin snapper	(744)	3,376	(744)	(3,071)	6,447	(456)	2,068
Jacks Complex							
Almaco jack	(13,176)	36,216	(13,176)	1,651	34,566	(14,419)	39,633
Banded rudderfish	(5,248)	17,832	(5,248)	(1,293)	19,125	(2,127)	7,228
Lesser amberjack	(379)	987	(379)	862	125	1,651	(4,297)
Snappers Complex							
Gray snapper	91,573	(485,673)	91,573	(337,390)	(148,283)	268,242	(1,422,661)
Lane snapper	20,196	(96,355)	20,196	(119,294)	22,939	36,839	(175,758)
Cubera snapper	(3,590)	20,862	(3,590)	20,579	283	(5,680)	33,010
Dog snapper	113	(1,010)	113	(5,684)	4,674	692	(6,204)
Mahogany snapper	20	(58)	20	230	(288)	55	(161)
Porgies Complex							
Jolthead porgy	(885)	1,788	(885)	8,502	(6,714)	(1,026)	2,074
Knobbed porgy	(208)	519	(208)	(10,234)	10,753	(1,729)	4,316
Saucereye porgy	0	(1)	0	(1,327)	1,326	0	(1)
Scup	0	0	0	3,169	(3,169)	0	0
Whitebone porgy	105	(692)	105	(10,447)	9,755	190	(1,255)

Table 4-31a. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)
Grunts Complex							
White grunt	29,332	(61,329)	29,332	(59,225)	(2,104)	52,545	(109,863)
Margate	1,246	(3,247)	1,246	(358)	(2,889)	1,866	(4,863)
Sailors choice	0	0	0	9,303	(9,303)	0	0
Tomtate	0	39	0	(26,960)	26,999	0	39
SW Groupers Complex							
Red hind	(608)	2,656	(608)	(3,150)	5,807	1,388	(6,059)
Rock hind	(5,191)	16,583	(5,191)	(4,657)	21,240	(15,787)	50,435
Coney	1,508	(7,285)	1,508	(7,293)	8	3,221	(15,560)
Graysby	6,754	(23,950)	6,754	(17,320)	(6,630)	17,758	(62,975)
Yellowmouth grouper	(6,758)	23,828	(6,758)	846	22,983	(6,513)	22,963
Yellowfin grouper	9,586	(45,768)	9,586	(2,849)	(42,920)	10,867	(51,884)
Individual ACLs							
Atlantic spadefish	1,349	(8,048)	1,349	(15,548)	7,500	3,861	(23,037)
Greater amberjack	4,579	(11,201)	Data not available by mode	Data not available by mode	Data not available by mode	46,441	(113,607)
Blue runner	(33,076)	87,004	(33,076)	(26,153)	113,157	(22,149)	58,259
Bar jack	(2,037)	4,845	(2,037)	3,713	1,132	(5,241)	12,466
Gray triggerfish	20,820	(36,907)	20,820	(81,767)	44,860	40,090	(71,067)
Warsaw grouper	0	0	0	0	0	0	0
Mutton snapper	21,735	(97,721)	Data not available by mode	Data not available by mode	Data not available by mode	105,512	(474,392)
Scamp	4,606	(15,314)	4,606	(160,569)	145,255	48,725	(161,991)
Goliath grouper	0	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0	0
Speckled hind	0	0	0	0	0	0	0

Table 4-31a. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 2-4** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Preferred Alternative 2		Alternative 3			Alternative 4	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)
Hogfish	25,114	(97,645)	25,114	(126,947)	29,302	43,879	(170,607)
Yellowtail snapper	(913,557)	3,838,879	Data not available by mode	Data not available by mode	Data not available by mode	(859,159)	3,610,293
Red snapper	0	0	0	0	0	0	0

Table 4-31b. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5.**

Species or Species Complex	Alternative 5		Alternative 6		Alternative 7	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)
DW Complex						
Yellowedge grouper	20,843	(80,660)	11,076	(42,865)	21,955	(84,966)
Blueline tilefish	413,064	(3,248,298)	64,937	(510,661)	(110,021)	865,195
Silk Snapper	(6,118)	25,187	8,325	(34,273)	(2,841)	11,694
Misty grouper	(6,973)	29,813	(136)	579	(1)	3
Sand tilefish	1,083	(1,856)	2,980	(5,106)	2,002	(3,429)
Queen snapper	(4,277)	16,634	867	(3,371)	1,454	(5,654)
Black snapper	306	(1,806)	430	(2,542)	430	(2,542)
Blackfin snapper	(1,805)	8,184	740	(3,357)	(980)	4,444

Table 4-31b. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Alternative 5		Alternative 6		Alternative 7	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)
Jacks Complex						
Almaco jack	(42,667)	117,276	(24,737)	67,994	(12,576)	34,566
Banded rudderfish	(5,297)	17,996	(4,061)	13,797	(7,506)	25,502
Lesser amberjack	2,905	(7,559)	229	(597)	(2,150)	5,596
Snappers Complex						
Gray snapper	457,065	(2,424,114)	68,031	(360,812)	(58,141)	308,362
Lane snapper	54,240	(258,779)	13,533	(64,565)	(1,123)	5,356
Cubera snapper	(5,759)	33,470	(5,481)	31,850	(126)	733
Dog snapper	1,761	(15,778)	271	(2,429)	(140)	1,252
Mahogany snapper	276	(806)	28	(82)	3	(8)
Porgies Complex						
Jolthead porgy	(1,814)	3,668	38	(76)	(761)	1,538
Knobbed porgy	(2,666)	6,654	418	(1,045)	2,656	(6,630)
Saucereye porgy	0	(1)	0	0	0	0
Scup	0	0	0	0	0	0
Whitebone porgy	285	(1,882)	(2)	14	(3)	20
Grunts Complex						
White grunt	61,593	(128,780)	36,880	(77,111)	3,687	(7,709)
Margate	4,180	(10,893)	(726)	1,892	510	(1,329)
Sailors choice	0	0	0	0	0	0
Tomtate	0	39	0	39	0	39

Table 4-31b. Continued. Changes in gross revenue to the commercial sector and consumer surplus to the recreational sector under **Alternatives 5-7** relative to **Alternative 1 (No Action)** for **Action 5**.

Species or Species Complex	Alternative 5		Alternative 6		Alternative 7	
	Comm benefits minus Alt 1 benefits (gross revenue, $)	Rec benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)	Private benefits minus Alt 1 benefits (consumer surplus, $)	For-Hire benefits minus Alt 1 benefits (consumer surplus, $)	Comm benefits minus Alt 1 benefits (gross revenue, $)
SW Groupers Complex						
Red hind	2,493	(10,884)	(301)	1,312	(2,789)	12,178
Rock hind	(37,079)	118,458	(1,159)	3,701	1,491	(4,763)
Coney	4,619	(22,312)	64	(310)	(5)	23
Graysby	32,255	(114,383)	9,404	(33,349)	(562)	1,995
Yellowmouth grouper	(6,552)	23,101	(6,499)	22,914	(6,865)	24,204
Yellowfin grouper	10,024	(47,856)	12,493	(59,648)	8,822	(42,118)
Individual ACLs						
Atlantic spadefish	3,159	(18,849)	4,648	(27,734)	(1,006)	6,000
Greater amberjack	41,472	(101,452)	57,015	(139,474)	(60,618)	148,287
Blue runner	(24,665)	64,879	(20,183)	53,089	(40,325)	106,069
Bar jack	(7,469)	17,765	(1,414)	3,363	3,636	(8,650)
Gray triggerfish	52,469	(93,010)	22,362	(39,641)	4,487	(7,955)
Warsaw grouper	0	0	0	0	0	0
Mutton snapper	147,016	(660,998)	43,063	(193,615)	(47,284)	212,595
Scamp	144,689	(481,031)	(65,168)	216,656	(35,754)	118,865
Goliath grouper	0	0	0	0	0	0
Nassau grouper	0	0	0	0	0	0
Speckled hind	0	0	0	0	0	0
Hogfish	63,590	(247,242)	14,326	(55,699)	5,458	(21,219)
Yellowtail snapper	(1,215,757)	5,108,758	(241,057)	1,012,949	(980,621)	4,120,689

4.1.5.3 Social Effects

By establishing sector allocations there could likely be some changes in fishing behavior and impacts to the social environment. The mere act of separating a particular ACL into two or three sectors has the perception of creating scarcity in that limits have been imposed on each individual sector. Each subsequent division will drive perceptions of scarcity and likely change the fishing behavior of those within a particular sector. Because there has been an initial allocation between the commercial and recreational sectors for some snapper grouper species, **Alternative 1 (No Action)** may have few negative social effects. With **Alternative 2 (Preferred)**, the use of the more recent data provides more benefit to the recreational sector with a slight increase in allocation, as the recreational sector has increased participation over time as reflected in recent harvesting trends which are factored into the equation with this alternative which uses data from two time periods trying to capture both historical and current participation. Using the same time series, the difference with **Alternative 3** is the splitting of the recreational sector into two allocations, which may provide the charter and headboat sectors with more stability and the possibility to plan with a known quantity of fish. However, as mentioned previously, there can be many different social effects that result as further allocations are divided and perceptions are formed. There has been significant resistance to further splitting the recreational sector and allocating to the private and charter sectors with protests occurring at many levels. Comments on the amendment have also trended toward no sector separation within the recreational component. The other alternatives are variations of the same with the allocations according to different time series used. Again, the more recent time periods favor the recreational sector as in **Alternatives 4, 6,** and **7** for most species; although for some there is little change. **Alternative 4** tends to allocate more to the commercial sector as it uses only the longest time series alone. **Alternative 5** tends to provide more allocation to the commercial sector using the oldest time series. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. As discussed in **Action 3**, communities within those states where harvest of a particular species or complex is more predominant, will also be affected by any subsequent shift in allocation.

4.1.5.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2 (Preferred)** through **7** would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

4.1.5.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, they still find themselves arguing over the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources and has chosen to apply it to many of its managed fisheries. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Alternative 2** as their preferred approach to establish allocations for species in the snapper grouper complex.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred allocation alternative.

The SSC did not have any recommendations on sector allocations.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded balancing long-term catch history with recent catch history is the most fair and equitable way to allocate snapper grouper species. Hence, **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.6 Action 6: Establish Annual Catch Limits (ACLs) and Optimum Yield (OY) for the Snapper Grouper Fishery

Alternative 1 (No Action). Retain existing ACLs and OYs for snapper grouper species or species groups. Do not specify ACLs for species that already have them.

Table 4-32. Annual Catch Limits and OY information in place for snapper grouper species.

Species	ACLs In Place	OY Information in Place
Black grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	To be established in Action 14 of Comprehensive ACL Amendment.
Black sea bass	309,000 lbs gw comm. (364,620 lbs ww) 409,000 lbs gw (rec.)	Yield @ 75% MFMT (Amendment 15A) 2,324,196 lbs gw (2,742,551 lbs ww) when stock is at B_{MSY}
Gag	352,940 lbs gw comm. (416,469 lbs ww) 340,060 lbs gw rec. (401,271 lbs ww) IN ADDITION Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,636 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Yield @ 75% MFMT (Amendment 16) 1,238,000 lbs gw (1,460,840 lbs ww) when stock is at B_{MSY}
Golden tilefish	282,819 lbs comm. (316,757 lbs ww) 1,578 fish rec.	Yield @ 75% MFMT (Amendment 15B) 291,566 lbs gw (326,554 lbs ww)
Red grouper	Comm Aggregate ACL (black, red, gag) = 662,403 lbs gw (781,635 lbs ww) Rec Aggregate ACL = 648,663 lbs gw (765,422 lbs ww)	Will be specified in Amendment 24
Snowy grouper	82,900 lbs gw comm. (97,822 lbs ww) 523 fish rec.	Yield @ 75% MFMT (Amendment 15A) 255,747 lbs gw (301,781 lbs ww) when stock is at B_{MSY}
Speckled hind	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Vermilion snapper	315,523 lb gw (350,231 lbs ww) Jan-June; comm. 302,523 lbs gw (335,801,lbs ww) July-Dec; comm. 307,315 lbs gw (341,120 lbs ww) recreational	Yield @ 75% MFMT (Amendment 16) 2,306,731 lbs gw (2,560,471 lbs ww) When stock at B_{MSY}, biomass and MSY values determined unreliable from assessment. (Value from Vermilion Snapper Update Assessment 2007)
Warsaw grouper	0 (landings only) comm. and rec.	Yield @F40%SPR (Amendment 11) No value specified
Red snapper	0 (landings only) comm. and rec.	Yield @ 98% MFMT (Amendment 17A) 2,184,685 lbs gw (2,425,000 lbs ww) when stock is at B_{MSY}

Table 4-32. Continued. Annual Catch Limits and OY information in place for snapper grouper species.

Species	ACLs In Place	OY Information in Place
Red porgy	190,050 lbs gw comm. (197,652 lbs ww) Recreational ACL specified in Action 6 Table 4-34 of Comprehensive ACL Amendment	Yield @ 75% MFMT (Amendment 15A) 584,711 lbs gw (608,099 ww) when stock is at B_{MSY}
Greater amberjack	1,169,931 lbs gw comm.(1,216,782 lbs ww) Recreational ACL specified in Action 6 Table 4-34 of Comprehensive ACL Amendment	Specified in Action 6, Table 4-34 of Comprehensive ACL Amendment

Alternative 2 (Preferred). Establish ACLs for species as needed where ACL = OY = ABC (Current values by species are shown in **Table 4-33**. Individual ACLs are summed to get the complex ACLs and allocated to get the sector ACLs shown in **Table 4-34**.)

Alternative 3. Establish ACLs for species as needed where ACL = OY = 90% of the ABC.

Alternative 4. Establish ACLs for species as needed where ACL = OY = 80% of the ABC.

Table 4-33. ACLs and OYs for species based on preferred **Alternative 2** and **Alternatives 3** and **4**. The numbers below reflect the preferred ABC values as per **Table 4-27**.

Species Common Name	**ACL=OY=100% of ABC** **Preferred Alternative 2**	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
Yellowedge grouper	**30,221**	27,199	24,177
Blueline tilefish	**592,602**	533,342	474,082
Silk Snapper	**27,519**	24,767	22,015
Misty grouper	**2,863**	2,577	2,290
Sand tilefish	**8,823**	7,941	7,058
Queen snapper	**9,344**	8,409	7,475
Black snapper	**382**	344	306
Blackfin snapper	**4,154**	3,739	3,323
Almaco jack	**291,922**	262,730	233,538
Banded rudderfish	**152,999**	137,699	122,399
Lesser amberjack	**10,568**	9,511	8,454
Gray snapper	**894,019**	804,617	715,215
Lane snapper	**153,466**	138,119	122,773
Cubera snapper	**31,772**	28,595	25,418

Table 4-33. Continued. ACLs and OYs for species based on preferred **Alternative 2** and **Alternatives 3** and **4**.

Species Common Name	**ACL=OY=100% of ABC** **Preferred Alternative 2**	ACL=OY=90% of ABC Alternative 3	ACL=OY=80% of ABC Alternative 4
Dog snapper	**7,523**	6,770	6,018
Mahogany snapper	**160**	144	128
White grunt*	**635,899**	572,309	508,719
Sailors choice	**35,266**	31,739	28,213
Tomtate	**70,948**	63,853	56,758
Margate	**34,662**	31,196	27,730
Red hind	**25,885**	23,297	20,708
Rock hind	**37,569**	33,812	30,055
Yellowmouth grouper	**4,661**	4,195	3,729
Yellowfin grouper	**9,258**	8,333	7,407
Coney	**2,589**	2,330	2,071
Graysby	**17,856**	16,070	14,284
Jolthead porgy	**42,533**	38,279	34,026
Knobbed porgy	**61,194**	55,074	48,955
Saucereye porgy	**4,205**	3,785	3,364
Scup	**8,999**	8,099	7,199
Whitebone porgy	**30,684**	27,615	24,547
Atlantic spadefish	**282,841**	254,557	226,273
Black grouper[1,2]	**245,595**	221,036	196,476
Blue runner	**1,289,941**	1,160,947	1,031,953
Bar jack	**20,520**	18,468	16,416
Gray triggerfish*	**672,565**	605,309	538,052
Scamp	**492,572**	443,315	394,058
Hogfish	**147,638**	132,874	118,110
Yellowtail snapper[1]	**2,173,875**	1,956,488	1,739,100
Greater amberjack	**1,968,000**	1,771,200	1,574,400
Mutton snapper[1]	**926,600**	833,940	741,280
Red porgy	**395,304**	355,774	316,243

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1] Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper, yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Recommended ABC for 2012. See **Table 4-48** for ABC projections for 2013-2015. ACL = 0 landings for Speckled hind and Warsaw grouper. ACL = 0 for Goliath and Nassau grouper.

Table 4-34. Annual catch limits and optimum yield (lbs whole weight) by sectors as set in this amendment.
ACLs based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). ACLs for black grouper, yellowtail snapper, and mutton snapper based on applying ABCs in **Actions 13, 18**, and **19**, respectively, to preferred allocation alternative in **Action 5**. The ACL for wreckfish is specified in **Action 10** and allocations are identified in **Action 11**. The ACL for red grouper will be re-examined in Amendment 24.

Deepwater Complex	Comm.	Rec.
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	343,869	332,039
Jacks Complex	**Comm.**	**Rec.**
Almaco jack Banded rudderfish Lesser amberjack	193,999	261,490
Snappers Complex	**Comm.**	**Rec.**
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	204,552	882,388
Porgies Complex	**Comm.**	**Rec.**
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	35,129	112,485
Grunts Complex	**Comm.**	**Rec.**
White grunt* Margate Sailor's choice Tomtate	214,624	562,151

Shallow-Water Groupers Complex	Comm.	Rec.
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	49,488	48,329
Individual ACLs	**Comm.**	**Rec.**
Atlantic Spadefish	36,476	246,365
Bar Jack	6,686	13,834
Black grouper[1,2]	90,575	155,020
Blue Runner	188,329	1,101,612
Goliath Grouper	0	0
Gray Triggerfish*	305,262	367,303
Greater Amberjack[3]	800,163	1,167,837
Hogfish	48,772	98,866
Mutton Snapper[1]	157,743	768,857
Nassau Grouper	0	0
Red porgy[3]	197,652	197,652
Scamp	341,636	150,936
Wreckfish	237,500	12,500
Yellowtail Snapper[1]	1,142,589	1,031,286
Speckled hind	0 landings	0 landings
Warsaw grouper	0 landings	0 landings

*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level. [1]Per SSC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for black grouper yellowtail snapper and mutton snapper are found in **Actions 13, 18** and **19**, respectively. [2] Based on 2012 ABC recommendation. See **Table 4-48** for 2013-2015. [3] Assessed species, but with no established recreational ACL. Recreational ACLs are being established in this amendment.

4.1.6.1 Biological Effects

The Magnuson-Stevens Act requires that by 2010, FMPs for fisheries determined by the Secretary of Commerce (Secretary) to be subject to overfishing establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (2010b) specified ACLs for species subject to overfishing (**Table 4-32**). NMFS guidelines define the following terms:

- Overfishing limit (OFL) means "the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish."

- Acceptable biological catch (ABC) means "a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and should be specified based on the ABC control rule."

- ACL means "the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures." Setting the ACL provides an opportunity to divide the total ACL into sector-specific ACLs.

- Annual catch target (ACT) means "an amount of annual catch of a stock or stock complex that is the management target of the fishery. NMFS guidelines indicate that specifying an ACT is optional and up to the discretion of the Council. A stock or stock complex's ACT should usually be less than its ACL and results from the application of the ACT control rule. If sector-ACLs have been established, each one should have a corresponding sector-ACT."

- Catch is the total quantity of fish, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.

- Accountability measures (AMs) means "management controls that prevent ACLs or sector-ACLs from being exceeded (in-season AMs), where possible, and correct or mitigate overages if they occur."

- Optimum yield (OY) is defined as "(A) the amount of fish which 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; (B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery."

Alternative 1 (No Action) would retain the current regulations established for snapper grouper species, which include ACLs for species experiencing overfishing (**Table 4-32**). The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species, which triggers some sort of AM to ensure overfishing does not occur. Therefore commercial ACLs are in place for red porgy and greater amberjack in the form of commercial quotas along with ACLs for species experiencing overfishing (**Table 4-32**). However, recreational ACLs have not been specified for these species. Furthermore, ACLs are not specified for other species or species groups in the snapper grouper fishery management unit. Since the Magnuson-Stevens Act requires ACLs for all fisheries in FMPs by 2011, except fisheries for species with annual life cycles, **Alternative 1 (No Action)** would not meet these requirements.

Alternatives 2 (Preferred)-4 would set OY equal to the ACL. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The NS1 guidelines discuss the relationship of OFL to MSY and ACT (ACL) to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the MSY and OFL is unknown for stocks which have not undergone stock assessments, the South Atlantic Council's SSC has established an ABC control that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed MSY/OFL level. Setting OY equal to ACL would provide greater assurance that OY is achieved, overfishing is prevented, and the long-term average biomass is near or above B_{MSY}.

Alternative 2 (Preferred) would set the ACL/OY equal to the ABC. The ACL would be divided into sector-specific ACLs based on the South Atlantic Council's preferred allocation alternative in **Action 5** (**Table 4-30**).

Alternatives 2 (Preferred)-4 would set the ACL/OY for species not previously considered in Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) (**Table 4-34**). Amendment 24 is considering an ACL for red grouper. ACLs for wreckfish and black grouper are addressed in **Actions 10 and 15**, respectively.

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL/OY and ABC, with

Alternative 4 setting the most conservative ACL at 80% of the ABC. Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above B_{MSY}. However, the South Atlantic Council's SSC ABC control rule takes into account scientific uncertainty. The NS1 guidelines indicated ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. The preferred alternative in **Action 8** would establish an ACT for the recreational sector.

Table 4-34 illustrates ACLs based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). **Action 3** would establish complex ACLs, which would be based on the sum of the individual ACLs included in that complex. When a complex ACL is exceeded, all species in that complex would be subject to AMs.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2 (Preferred)-4** on sea turtles and smalltooth sawfish are unclear. If these allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to protected species, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction between sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.6.2 Economic Effects

The establishment of ACLs is intended to reduce the risk of overfishing for those snapper grouper species that do not currently have them. For those stocks requiring biological protection, ACLs constrain existing catch levels to increase the long-run abundance of these stocks.

By constraining current harvest levels, ACLs may lead to short-run reductions in gross revenue for the commercial sector, but may also generate higher long-run gross revenue as annual allowable harvest levels are raised due to the recovery of overfished stocks and/or to the reduction of the risk of overfishing. As the long-run abundance of these stocks increases, the potential for economic benefits and the likelihood of achieving OY is improved. However, the magnitude of the actual economic benefits as well as whether and when OY is achieved will depend on the regulatory framework in place (e.g., individual transferable quota versus limited entry in commercial sector or bag limits versus season length in the recreational sector) and the continued compliance with the ACLs.

Alternative 1 (No Action) is expected to result in the greatest short-term gross revenue and consumer surplus to the commercial and recreational sectors, respectively, but will also likely generate the smallest long-term gross revenue and consumer surplus to the commercial and recreational sectors, respectively, since this alternative maintains harvests levels at their average 2005-2009 levels. These current harvest levels may prevent some of the stocks from achieving higher long-run abundance levels. This alternative runs the greatest risk for overfishing.

Alternatives 2 (Preferred), **3**, and **4** would establish ACLs for those snapper grouper species that do not currently have an ACL. With the exception of yellowtail snapper, all of the proposed ACLs would be set below the 2005-2009 average harvest levels.

Tables 4-35 through **4-37** show the anticipated forgone gross revenue to the commercial fleet and forgone consumer surplus to the recreational fleet relative to **Alternative 1 (No Action)**. These annual figures presume that the commercial and recreational fleets can harvest the entire ACL. The statistics offered in these tables should be considered upper bounds on the potential economic effects since it is uncertain how fishing practices would change following the adoption of multiple snapper grouper ACLs, particularly those for overfished and/or less productive species. For example, if commercial fishing firms could readily re-organize their product mix, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if commercial fishing firms had the flexibility to modify the composition of their catches, then they could reduce their overall snapper grouper landings, switch to other fishing gears, or exit the fishery altogether depending on how restrictive the ACLs are. Thus, the resulting benefits will be a function of the actual behavioral response, which is presently unknown. Similarly, the recreational consumer surplus estimates offered in **Tables 4-35** through **4-37** should be considered upper bounds because it is unlikely that, as the number of lbs caught decreases, recreational participation and consumer surplus would decrease at the same rate. Again, the resulting benefits will be a function of the actual behavioral response, which is presently unknown.

Contrary to **Alternative 2 (Preferred)**, **Alternatives 3** and **4** would create a buffer between the ACL and the ABC. **Alternatives 3** (90% of the ABC) and **4** (80% of the ABC) provide greater insurance against the risk of overfishing than **Alternative 2 (Preferred)** and thus are more conservative. **Alternatives 3** and **4** presumably will achieve higher long-run stock abundances than **Alternative 2 (Preferred)**, which could allow for higher ACLs in the long-run. Thus, **Alternatives 3** and **4** are anticipated to generate larger long-run economic benefits (i.e., higher gross revenue for the commercial sector and higher consumer surplus in the recreational sector) relative to **Alternative 2 (Preferred)**.

Table 4-35. ACLs for snapper grouper species where ACL=OY=ABC, **Alternative 2 (Preferred)** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Yellowedge grouper	30,221	29,070	1,151	92,152	14,118	5,924	33,060	(55,273)
Blueline tilefish	592,602	280,842	311,760	438,114	3,824,576	99,303	53,276	799,259
Silk Snapper	27,519	20,129	7,390	59,983	90,663	5,591	11,104	22,872
Misty grouper	2,863	2,030	833	5,827	10,219	1,029	565	10,214
Sand tilefish	8,823	1,431	7,392	2,047	18,110	(1,635)	2,047	(7,511)
Queen snapper	9,344	8,700	643	24,448	7,029	4,258	10,949	3,952
Black snapper	382	350	32	647	354	(1,705)	(864)	(13,536)
Blackfin snapper	4,154	1,316	2,838	3,171	31,021	2,067	1,204	17,131
Almaco jack	291,922	150,439	141,483	133,891	346,104	42,784	8,378	81,633
Banded rudderfish	152,999	38,633	114,366	27,816	279,769	35,070	2,330	77,872
Lesser amberjack	10,568	4,927	5,641	4,631	13,800	456	(163)	1,540
Gray snapper	894,019	178,818	715,201	368,365	7,813,943	154,063	139,272	944,571
Lane snapper	153,466	18,744	134,722	42,924	1,471,907	58,348	28,837	499,900
Cubera snapper	31,772	6,274	25,498	11,795	278,578	13,046	2,727	126,680
Dog snapper	7,523	708	6,815	863	74,489	1,064	219	9,672
Mahogany snapper	160	8	152	30	1,661	(307)	0	(3,354)
White grunt	635,899	207,751	428,148	243,068	1,047,366	(8,954)	26,323	(76,941)
Sailors choice	35,266	-	35,266	-	86,401	16,027	0	39,266
Tomtate	70,948	-	70,948	-	173,557	4,277	0	10,498
Margate	34,662	6,873	27,789	6,460	68,083	12,320	3,099	22,107
Red hind	25,885	18,969	6,916	53,303	84,844	5,154	10,125	19,019
Rock hind	37,569	23,494	14,075	90,216	172,671	3,115	2,719	29,523
Yellowmouth grouper	4,661	63	4,598	219	56,417	(8,269)	(19,137)	(33,991)
Yellowfin grouper	9,258	3,776	5,483	9,703	67,276	5,754	9,659	24,492
Coney	2,589	602	1,987	1,529	24,376	136	1,509	(5,623)
Graysby	17,856	2,585	15,270	8,945	187,366	3,207	7,147	14,008

Table 4-35. Continued. ACLs for snapper grouper species where ACL=OY=ABC, **Alternative 2 (Preferred)** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Jolthead porgy	42,533	1,720	40,812	2,082	99,837	1,566	(775)	5,398
Knobbed porgy	61,194	33,115	28,079	32,453	68,688	23,576	12,375	26,782
Saucereye porgy	4,205	0	4,205	-	10,302	2,230	0	5,464
Scup	8,999	-	8,999	-	22,047	488	0	1,195
Whitebone porgy	30,684	293	30,390	108	74,343	9,620	106	22,832
Atlantic spadefish	282,841	36,476	246,365	14,955	602,674	(2,067)	1,249	(12,511)
Blue runner	1,289,941	188,329	1,101,612	175,146	2,694,837	290,815	13,867	674,936
Bar jack	20,520	6,686	13,834	6,886	33,894	9,794	2,222	18,710
Gray triggerfish	672,565	305,262	367,303	421,261	898,523	(63,626)	(17,062)	(125,400)
Scamp	492,572	341,636	150,936	1,260,636	1,851,642	30,444	82,236	100,074
Hogfish	147,638	48,772	98,866	137,049	1,080,164	4,500	28,525	(61,748)
Yellowtail snapper	2,173,875	1,142,657	1,031,218	2,970,908	11,266,592	970,957	821,432	7,156,453
Greater amberjack	1,968,000	866,792	1,101,208	866,792	2,693,849	375,484	223,001	373,013
Mutton snapper	926,600	157,743	768,857	383,314	8,400,166	365,051	181,889	3,170,581
Red porgy	395,304	197,652	197,652	304,384	484,247	154,762	116,297	194,148
DW Complex	675,908	343,869	332,039	608,378	3,925,956	675,908	95,297	720,863
Jacks	455,489	193,999	261,490	166,501	639,674	455,489	10,708	161,045
Snappers	1,086,940	204,552	882,388	421,571	9,640,582	1,086,940	168,648	1,577,472
Porgies	147,614	35,129	112,485	35,261	275,234	147,614	12,327	113,200
Grunts	776,774	214,624	562,151	250,155	1,375,313	776,774	30,048	(5,164)
SW Groupers	97,817	49,488	48,329	169,843	592,955	97,817	17,950	47,434

Table 4-36. ACLs for snapper grouper species where ACL=OY=90%ABC, **Alternative 3** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Yellowedge grouper	27,199	26,163	1,036	82,937	12,706	2,901	23,845	(56,685)
Blueline tilefish	533,342	252,758	280,584	394,303	3,442,118	40,043	9,465	416,801
Silk Snapper	24,767	18,116	6,651	53,985	81,596	2,839	5,106	13,806
Misty grouper	2,577	1,827	750	5,244	9,197	743	(18)	9,192
Sand tilefish	7,941	1,288	6,653	1,842	16,299	(2,517)	1,842	(9,322)
Queen snapper	8,409	7,830	579	22,004	6,326	3,323	8,504	3,249
Black snapper	344	315	29	582	319	(1,743)	(928)	(13,572)
Blackfin snapper	3,739	1,184	2,554	2,854	27,919	1,651	887	14,029
Almaco jack	262,730	135,395	127,334	120,502	311,494	13,591	(5,011)	47,023
Banded rudderfish	137,699	34,770	102,929	25,034	251,792	19,770	(451)	49,895
Lesser amberjack	9,511	4,434	5,077	4,168	12,420	(601)	(626)	160
Gray snapper	804,617	160,936	643,681	331,528	7,032,549	64,661	102,435	163,176
Lane snapper	138,119	16,870	121,250	38,631	1,324,716	43,001	24,545	352,709
Cubera snapper	28,595	5,647	22,948	10,616	250,720	9,868	1,548	98,822
Dog snapper	6,770	637	6,134	777	67,040	312	133	2,223
Mahogany snapper	144	7	137	27	1,494	(323)	(3)	(3,520)
White grunt	572,309	186,976	385,334	218,761	942,629	(72,544)	2,016	(181,678)
Sailors choice	31,739	-	31,739	-	77,761	12,500	0	30,626
Tomtate	63,853	-	63,853	-	156,201	(2,818)	0	(6,858)
Margate	31,196	6,186	25,010	5,814	61,275	8,854	2,453	15,298
Red hind	23,297	17,072	6,224	47,973	76,359	2,565	4,795	10,535
Rock hind	33,812	21,144	12,668	81,194	155,404	(642)	(6,303)	12,256
Yellowmouth grouper	4,195	57	4,138	197	50,775	(8,735)	(19,158)	(39,632)
Yellowfin grouper	8,333	3,398	4,935	8,733	60,548	4,829	8,689	17,764
Coney	2,330	542	1,788	1,376	21,939	(123)	1,356	(8,060)

Table 4-36. Continued. ACLs for snapper grouper species where ACL=OY=90%ABC, **Alternative 3** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Graysby	16,070	2,327	13,743	8,051	168,630	1,422	6,253	(4,728)
Jolthead porgy	38,279	1,548	36,731	1,874	89,854	(2,687)	(983)	(4,585)
Knobbed porgy	55,074	29,804	25,271	29,207	61,819	17,456	9,130	19,913
Saucereye porgy	3,785	0	3,784	-	9,272	1,810	0	4,434
Scup	8,099	-	8,099	-	19,842	(412)	0	(1,009)
Whitebone porgy	27,615	264	27,351	98	66,909	6,551	95	15,398
Atlantic spadefish	254,557	32,829	221,728	13,460	542,406	(30,351)	(246)	(72,778)
Blue runner	1,160,947	169,497	991,450	157,632	2,425,353	161,821	(3,648)	405,453
Bar jack	18,468	6,017	12,451	6,197	30,504	7,742	1,533	15,320
Gray triggerfish	605,309	274,735	330,573	379,135	808,670	(130,882)	(59,188)	(215,253)
Scamp	443,315	307,472	135,843	1,134,572	1,666,478	(18,814)	(43,828)	(85,090)
Hogfish	132,874	43,895	88,980	123,344	972,148	(10,264)	14,821	(169,764)
Yellowtail snapper	1,956,488	1,028,391	928,096	2,673,817	10,139,933	753,570	524,341	6,029,794
Greater amberjack	1,771,200	780,113	991,087	780,113	2,424,464	178,684	136,322	103,628
Mutton snapper	833,940	141,968	691,972	344,983	7,560,150	272,391	143,557	2,330,564
Red porgy	355,774	177,887	177,887	273,946	435,823	115,232	85,859	145,723
DW Complex	608,317	309,482	298,835	547,540	3,533,360	608,317	34,459	328,267
Jacks	409,940	174,599	235,341	149,851	575,706	409,940	(5,942)	97,077
Snappers	978,246	184,097	794,149	379,414	8,676,524	978,246	126,491	613,414
Porgies	132,852	31,616	101,236	31,735	247,711	132,852	8,800	85,677
Grunts	699,097	193,161	505,936	225,139	1,237,782	699,097	5,033	(142,695)
SW Groupers	88,036	44,540	43,496	152,858	533,660	88,036	966	(11,861)

Table 4-37. ACLs for snapper grouper species where ACL=OY=80%ABC, **Alternative 4** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Yellowedge grouper	24,177	23,256	921	73,722	11,295	(121)	14,630	(58,097)
Blueline tilefish	474,082	224,674	249,408	350,491	3,059,661	(19,218)	(34,347)	34,344
Silk Snapper	22,015	16,103	5,912	47,987	72,530	87	(892)	4,739
Misty grouper	2,290	1,624	666	4,661	8,175	457	(601)	8,170
Sand tilefish	7,058	1,145	5,913	1,637	14,488	(3,399)	1,637	(11,133)
Queen snapper	7,475	6,960	514	19,559	5,623	2,389	6,059	2,546
Black snapper	306	280	26	517	283	(1,782)	(993)	(13,607)
Blackfin snapper	3,323	1,053	2,271	2,537	24,817	1,236	570	10,927
Almaco jack	233,538	120,351	113,186	107,113	276,884	(15,601)	(18,400)	12,412
Banded rudderfish	122,399	30,907	91,493	22,253	223,816	4,470	(3,233)	21,918
Lesser amberjack	8,454	3,941	4,513	3,705	11,040	(1,658)	(1,089)	(1,220)
Gray snapper	715,215	143,054	572,161	294,692	6,251,155	(24,741)	65,599	(618,218)
Lane snapper	122,773	14,995	107,778	34,339	1,177,526	27,655	20,252	205,519
Cubera snapper	25,418	5,019	20,398	9,436	222,863	6,691	368	70,964
Dog snapper	6,018	566	5,452	691	59,591	(440)	46	(5,226)
Mahogany snapper	128	6	122	24	1,328	(339)	(6)	(3,686)
White grunt	508,719	166,201	342,519	194,455	837,892	(136,134)	(22,291)	(286,414)
Sailors choice	28,213	-	28,213	-	69,121	8,974	0	21,986
Tomtate	56,758	-	56,758	-	138,846	(9,913)	0	(24,213)
Margate	27,730	5,498	22,231	5,168	54,467	5,388	1,807	8,490
Red hind	20,708	15,175	5,533	42,642	67,875	(23)	(536)	2,051
Rock hind	30,055	18,795	11,260	72,173	138,137	(4,399)	(15,325)	(5,011)
Yellowmouth grouper	3,729	50	3,678	175	45,134	(9,201)	(19,180)	(45,274)
Yellowfin grouper	7,407	3,020	4,386	7,762	53,821	3,903	7,718	11,036
Coney	2,071	482	1,589	1,223	19,501	(382)	1,203	(10,498)

Table 4-37. Continued. ACLs for snapper grouper species where ACL=OY=80%ABC, **Alternative 4** for **Action 6**.

Species	Total landings (lbs, ww)	Comm landings (lbs, ww)	Rec landings (lbs, ww)	Comm benefits (gross revenues, $)	Rec. benefits (consumer surplus, $)	Tot landings minus Alt 1 tot. landings	Comm benefits (Alt 2 minus Alt 1, gross revenues ($))	Rec benefits (Alt 2 minus Alt 1, gross revenues ($))
Graysby	14,284	2,068	12,216	7,156	149,893	(364)	5,358	(23,465)
Jolthead porgy	34,026	1,376	32,650	1,665	79,870	(6,940)	(1,192)	(14,569)
Knobbed porgy	48,955	26,492	22,463	25,962	54,951	11,337	5,885	13,045
Saucereye porgy	3,364	0	3,364	-	8,242	1,389	0	3,403
Scup	7,199	-	7,199	-	17,637	(1,312)	0	(3,214)
Whitebone porgy	24,547	235	24,312	87	59,475	3,483	84	7,963
Atlantic spadefish	226,273	29,181	197,092	11,964	482,139	(58,635)	(1,742)	(133,045)
Blue runner	1,031,953	150,664	881,289	140,117	2,155,870	32,827	(21,162)	135,969
Bar jack	16,416	5,348	11,067	5,509	27,115	5,690	845	11,931
Gray triggerfish	538,052	244,209	293,843	337,009	718,818	(198,139)	(101,315)	(305,105)
Scamp	394,058	273,309	120,749	1,008,509	1,481,314	(68,071)	(169,892)	(270,255)
Hogfish	118,110	39,017	79,093	109,639	864,132	(25,028)	1,116	(277,781)
Yellowtail snapper	1,739,100	914,126	824,974	2,376,727	9,013,273	536,182	227,250	4,903,135
Greater amberjack	1,574,400	693,434	880,966	693,434	2,155,079	(18,116)	49,643	(165,757)
Mutton snapper	741,280	126,194	615,086	306,652	6,720,133	179,731	105,226	1,490,548
Red porgy	316,243	158,122	158,122	243,507	387,398	75,701	55,421	97,299
DW Complex	540,726	275,095	265,631	486,702	3,140,765	540,726	(26,379)	(64,328)
Jacks	364,391	155,200	209,192	133,201	511,739	364,391	(22,592)	33,110
Snappers	869,552	163,641	705,910	337,256	7,712,465	869,552	84,334	(350,644)
Porgies	118,091	28,103	89,988	28,209	220,187	118,091	5,274	58,153
Grunts	621,419	171,699	449,721	200,124	1,100,250	621,419	(19,983)	(280,227)
SW Groupers	78,254	39,591	38,663	135,874	474,364	78,254	(16,018)	(71,157)

4.1.6.3 Social Effects

Establishing an ACL for individual species or species groups that presently do not have them will have social effects similar to those under **Action 3**. As discussed previously, choosing a more restrictive ACL such as **Alternative 4** would likely have more negative effects in the short-term than would **Alternative 3** or **Alternative 2 (Preferred).** The overall effects would also be tied to other actions and how they combine to affect a particular sector. But it is likely that **Alternatives 3 and 4** could have negative social effects as reductions in current harvest levels may occur. Those reductions could trigger species switching behavior which could further trigger AMs in other fisheries. At this time, we do not have the capability to conduct an analysis to predict how that behavior would change. Under **Alternative 1 (No Action)** there may likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the later alternatives and would not further compound any negative effects of reduced harvest from other alternatives.

4.1.6.4 Administrative Effects

Specifying an ACL or sector ACLs and OY alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act for some species, and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-4** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.6.5 Council Conclusions

The OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ACL would provide greater insurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. The ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. Annual catch limits (ACLs), in coordination with AMs, must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, however, the South Atlantic Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 7** and **8**). Similarly, the South Atlantic

Council chose to set ACL equal to OY to prevent a situation in which the OY from a fishery was not being achieved.

The Snapper Grouper Advisory Panel (AP) supported the Council's preferred alternative.

The SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.7 Action 7: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Commercial Sector for Species in the Snapper Grouper FMU

Alternative 1 (No Action). Do not specify new commercial AMs for the following species:

Yellowedge grouper	Blueline tilefish	Silk snapper	Almaco jack	Banded rudderfish	Lesser amberjack
Gray snapper	Lane snapper	Cubera snapper	White grunt	Atlantic spadefish	Greater amberjack
Red hind	Rock hind	Scamp	Hogfish	Yellowtail snapper	Blue runner
Gray triggerfish	Mutton snapper	Misty grouper	Queen snapper	Sand tilefish	Black snapper
Yellowmouth grouper	Yellowfin grouper	Coney	Graysby	Bar jack	Dog snapper
Mahogany snapper	Sailors choice	Tomtate	Margate		

Alternative 2. Specify individual Annual Catch Targets (ACT) for the species above.

Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Subalternative 2b. The individual ACT equals 90% of the individual ACL. The complex ACT equals 90% of the complex ACL.

Subalternative 2c. The individual ACT equals 80% of the individual ACL. The complex ACT equals 80% of the complex ACL.

Alternative 3 (Preferred). For the species above, if an ACL (i.e., individual or complex) is met or is projected to be met, all subsequent purchase and sale is prohibited and harvest and/or possession is limited to the bag limit for the species covered by that ACL. For example, if a complex ACL is met or projected to be met, all purchase and sale of all the species in the complex is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). For the species above, if an ACL (i.e., individual or complex) is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

4.1.7.1 Biological Effects

Magnuson-Stevens Act NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to AMs in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as Councils revise their FMPs they use the same terms as set forth in the NS1 guidelines. Current snapper grouper regulations include some species-specific size limits, seasonal closures, bag limits, trip limits, quotas, and

certain prohibited gear types. For many snapper grouper species an AM is in place that closes the commercial sector when a commercial quota is projected to be met. However, for many other species and species groups included in this amendment, there are no previously specified measures that could be considered AMs. Therefore, AMs for snapper grouper species and/or species groups outlined in previous actions must be specified pursuant to Magnuson-Stevens Act requirements.

There are several types of AMs that may be applied in the snapper grouper fishery. In-season AMs are those that are triggered during the fishing season, typically before an ACL is exceeded or when it is projected to be met. Some examples of in-season AMs include quota closures, trip or bag limit changes, gear restrictions, or catch shares. Post-season AMs would be triggered if the ACL is exceeded and would typically be implemented the following fishing season. Post-season AMs could include seasonal closures, reduced trip or bag limits, or shortening of the fishing season implemented in the subsequent year. Ideally, a combination of in-season and post-season AMs would be used to first prevent the ACL or ACT from being exceeded, and then provide a mechanism to correct for an overage if one should occur. Implementing a post-season AM in addition to an in-season AM would reduce the risk of overfishing since there would be two layers of protection against unsustainable harvest rates. It is important to note that the new framework procedure for setting ACLs in the snapper grouper fishery in Amendment 17B (SAFMC 2010b), would allow for timely adjustments to be made to AMs if the South Atlantic Council and NOAA Fisheries Service determine a change is needed.

The efficacy of in-season AMs is largely reliant upon in-season monitoring of landings, which may be especially difficult for the recreational sector. The MRFSS and the newly implemented MRIP uses random survey methods and may not capture data on species that are infrequently encountered. Therefore, in-season tracking of snapper grouper landings in the recreational sector would be based on the MRFSS program and state landings reports. An additional obstacle to tracking recreational harvest in-season is that there is a lag time between when the fish are landed and when those landings are reported in the landings database. This lag time means that projections of when the ACL is expected to be met would need to be employed. Landings projections are not always 100% accurate, thus using such estimates could lead to an in-season AM being triggered prematurely, or not soon enough causing an ACL overage.

The South Atlantic Council could choose one or more post-season AMs to supplement any of the in-season AMs. This would be the most administratively burdensome scenario; however, if an ACL overage were to occur after an in-season AM has been implemented, a post-season AM would be available to the Regional Administrator (RA) as a means to correct an overage and prevent overfishing. Post-season AMs would allow all landings for a particular season to be reported before any harvest restriction measures would take effect. This method of accountability alone may correct for one year's or several years' overages; however, it does little to prevent an overage from occurring again unless it is chosen in conjunction with an in-season AM.

The NS1 guidelines recommend the use of ACTs in systems of AMs so that an ACL is not exceeded. For fisheries without in-season management control to prevent the ACL from being exceeded, AMs may utilize ACTs that are set below ACLs so that catches do not exceed the ACLs. If an ACT is specified as part of the AMs for snapper grouper, an ACT control rule that accounts for management uncertainty may be utilized for setting the ACT. The objective for establishing an ACT and related AMs is that the ACL not be exceeded.

Accountability measures are also designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. Such AMs include prohibited retention of species once the sector annual catch target is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACL in the subsequent fishing season to account for overages.

Since the ACT is typically set lower and would be reached sooner than the ACL for any given species, using an ACT rather than the ACL as a trigger for AMs in the recreational sector may prevent an ACL overage. This more conservative approach, would likely help to ensure that recreational data uncertainties do not cause or contribute to excessive ACL overages for vulnerable species. Using recreational ACTs rather than the ACLs to trigger recreational AMs may not eliminate ACL overages completely; however, using such a strategy for the recreational sector may reduce the need to compensate for very large overages, which could benefit the biological and socioeconomic environments.

The updated framework procedure included in Amendment 17B (SAFMC 2010b) allows for the timely establishment and adjustment of ACTs (and ACLs) if the South Atlantic Council and NOAA Fisheries Service determine they are necessary.

The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. According to the guidelines:

> *…if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness (74 FR 3178).*

If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. As stated previously, the updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. It is anticipated that this performance standard will be applied to all species and all

systems of ACLs and AMs established in this amendment in accordance with NS1 guidelines.

Because there are currently management measures in place that could be considered AMs for only some of the snapper grouper species in this amendment, **Alternative 1 (No Action)** would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

Alternative 2 invokes the concept of establishing a commercial sector ACT, which would be set lower than the commercial sector ACL, except under **Subalternative 2a (Preferred)**. **Subalternative 2a (Preferred)** would not set a commercial sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (90% and 80% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. Establishing an ACT that is 90% or 80% of the commercial ACL would also reduce the probability that post-season AMs that are meant to correct for an ACL overage would be needed.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of snapper grouper species in quantities exceeding the ACL, and thus provide a disincentive to target snapper grouper species once the ACL has been reached. **Alternative 3 (Preferred)** could serve as a complement to **Alternative 4 (Preferred)** in that it would correct for an ACL overage post-season if one were to occur during the fishing season. Because the ACL for unassessed species is equal to the ABC, which would cap landings at a level to ensure overfishing did not occur (**Table 4-33**), it is possible the season for those species could be shortened under **Alternative 3 (Preferred)** since the ACL could be projected to be met earlier in the season than under the status quo conditions for species where there would be no restriction on the amount of commercial harvest. For assessed species, the greater the uncertainty associated with calculating the probability of overfishing, the more precautionary the value of the ABC and subsequent ACL, and the higher the probability the ACL would be met earlier in the season triggering the in-season AM under **Alternative 3 (Preferred)**. The biological benefits of a shortened fishing season for those species or species groups would depend on the exact reduction of the season length, and subsequent changes to fishing behavior. If a commercial fishing season is shortened due to triggering the **Alternative 3 (Preferred)** AM, regulatory discards may not necessarily increase since fishermen would still be allowed to retain the bag limit.

Alternative 4 (Preferred) could complement **Alternative 3 (Preferred)** because it would correct for an ACL overage in the post-season if such an event were to occur. **Alternative 4 (Preferred)** would reduce the commercial sector ACL in the following season by the amount of the overage if the species is overfished. The ACL can be reduced by the amount taken in excess the year before, and may shorten the season if the

lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards if no level of harvest is permitted after the ACL is reached. However, under **Alternative 3 (Preferred)**, fishermen would still be able to retain bag limit quantities of fish, which may reduce the number of regulatory discards that would otherwise result from a shortened season. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.7.2 Economic Effects

Action 7 considers alternatives that would establish accountability measures (AMs) for the snapper grouper species harvested by the commercial sector that currently lack such measures. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the commercial sector is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) would not establish an AM for the commercial sector of the snapper grouper fishery. This alternative has the most potential to cause the greatest economic dislocation in the long-run since the absence of an AM could either increase the risk of overfishing or result in overfished snapper grouper stocks, which would require lower ACLs in the future. **Alternative 2** considers alternatives for establishing an ACT. Specifically, **Subalternative 2a (Preferred)** sets no ACT and thus creates no

buffer between the ACT and the ACL, **Subalternative 2b** sets the ACT at 90% of the ACL and thus creates a 10% buffer, while **Subalternative 2c** sets the ACT at 80% of the ACL and thereby creates a 20% buffer.

Table 4-38 shows the anticipated changes in annual landings and gross revenue of the proposed three subalternatives under **Alternative 2** assuming the commercial fleet can harvest the entire ACT. This table shows that the anticipated forgone landings and gross revenue increase as the ACTs become more conservative. The estimates in **Table 4-38** should be considered upper bounds since the adoption of ACTs across multiple species could bring about a change in fishing practices if they are used to establish additional management measures in the future, which may prevent the fleet from harvesting all of the ACTs. If fishing firms can easily re-organize their catch mix as the ACTs become increasingly restrictive, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if fishing firms have limited flexibility to modify the composition of their catches as ACTs become more binding, then fishermen may either reduce their harvests of snapper grouper species, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional management measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place. Management regimes that favor harvesting privileges, like catch shares, are relatively more likely to generate larger net economic benefits in the long-run relative to a regulated open or limited access regime.

Alternative 3 (Preferred) may generate lower short-run gross revenue in the commercial sector, but will still be bound by the estimated gross revenue changes in **Table 4-35**, since this alternative theoretically prevents the commercial sector from harvesting snapper grouper species in quantities exceeding their respective ACLs. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could result in commercial sector ACL reductions and gross revenue losses in the following year under **Alternative 4 (Preferred)**.

Alternative 4 (Preferred) calls for reducing the commercial sector ACL in the following season by the amount of the overage if the species is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of

these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Table 4-38. Commercial ACTs as a proportion of the ACLs under **Subalternatives 2b** and **2c** relative to **Subalternative 2a** for **Action 7**.

Species and/or Species Complex	Alternative 2b (ACT=90% of comm ACL)		Alternative 2c (80% of comm ACL)	
	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)
Atlantic Spadefish	(3,648)	(1,496)	(7,295)	(2,991)
Bar Jack	(669)	(689)	(1,337)	(1,377)
Black grouper	(15,964)	(50,924)	(31,927)	(101,848)
Blue Runner	(18,833)	(17,515)	(37,666)	(35,029)
Goliath Grouper	0	0	0	0
Gray Triggerfish	(30,526)	(42,126)	(61,052)	(84,252)
Greater Amberjack	(86,679)	(86,679)	(173,358)	(173,358)
Hogfish	(4,877)	(13,705)	(9,754)	(27,410)
Mutton Snapper	(15,774)	(38,331)	(31,549)	(76,663)
Nassau Grouper	0	0	0	0
Red porgy	(19,765)	(30,438)	(39,530)	(60,877)
Scamp	(34,164)	(126,064)	(68,327)	(252,127)
Wreckfish	(23,750)	(54,863)	(47,500)	(109,725)
Yellowtail Snapper	(114,266)	(297,091)	(228,531)	(594,182)
Deep-Water				
Yellowedge grouper				
Blueline tilefish				
Silk snapper				
Misty grouper	(34,387)	(60,838)	(68,774)	(121,676)
Queen snapper				
Sand tilefish				
Black snapper				
Blackfin snapper				
Jacks				
Almaco Jack				
Banded Rudderfish	(19,400)	(16,650)	(38,800)	(33,300)
Lesser Amberjack				
Snappers				
Cubera snapper				
Gray snapper				
Lane snapper	(20,455)	(42,157)	(40,910)	(84,314)
Dog snapper				
Mahogany snapper				
Porgies				
Jolthead porgy				
Knobbed porgy				
Saucereye porgy	(3,513)	(3,526)	(7,026)	(7,052)
Whitebone porgy				
Scup				

Table 4-38. Continued. Commercial ACTs as a proportion of the ACLs under **Subalternatives 2b** and **2c** relative to **Subalternative 2a** for **Action 7**.

Species and/or Species Groups	Alternative 2b (ACT=90% of comm ACL)		Alternative 2c (80% of comm ACL)	
	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm benefits minus Alt 2a comm benefits (gross revenue, $)
Grunts				
White grunt Margate Sailor's choice Tomtate	(21,462)	(25,015)	(42,925)	(50,031)
Shallow-Water Groupers				
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	(4,949)	(16,984)	(9,898)	(33,969)

4.1.7.3 Social Effects

The setting of AMs or ACTs can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest, either during the current season or the next. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. **Alternative 1 (No Action)** would have few short-term social impacts as it would not impose further restrictions on commercial harvest, but could have long-term negative social effects if a particular species is jeopardized through continued harvest. With **Alternative 2** and its subalternatives a buffer could be imposed which would reduce the harvest threshold further from the ACL. **Subalternative 2a** (**Preferred)** would not impose that buffer and is less restrictive than **Subalternative 2b** or **2c**. Therefore there is an increasing possibility of negative short-term social effects going from **Subalternatives 2a (Preferred)** to **2c**. Some of those effects are similar to other thresholds being met and may involve switching to other species or discontinuing fishing altogether. Although these are common responses to closures, it is not known how commercial fishermen may respond if closures are anticipated for several different species or groups. There could be a domino effect as one closure forces them to switch to another species which closes as thresholds are met with the added fishing pressure.

When comparing the payback that is implemented in **Alternative 4** (**Preferred)**, it would further assist with rebuilding where **Alternative 3** (**Preferred)** alone would not. However, when combined with **Alternative 3** (**Preferred)** there is an in-season

accountability measure that provides some protection from continued overages during the fishing season. Therefore, with **Alternatives 3 (Preferred)** and **4 (Preferred)** combined there should be sufficient protection with some beneficial social effects through the payback provisions because they do allow accountability when specified for a particular sector. While payback does incur short-term negative social impacts, the long-term benefits of stock protection should contribute to the overall benefits as stock status should remain at sustainable levels.

4.1.7.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

4.1.7.5 Council Conclusions

Annual Catch Targets (ACTs) refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial snapper grouper fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT. Quota monitoring in the commercial fishery and the AMs that the South Atlantic Council is proposing to implement through this amendment (see below), are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of snapper grouper species in quantities exceeding the ACL, and thus provide a disincentive to target snapper grouper species once the ACL has been reached. After the ACL has been met or is projected to be met (either for an individual species or for a species complex as established under **Action 3** of this amendment), then all harvest would be limited to the recreational bag limit. **Alternative 4 (Preferred)** would then correct for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision. However, the latter would only apply if the species was overfished. The South Atlantic Council chose to make this distinction to be

consistent with how they chose to address paybacks in other FMPs (i.e., Coastal Migratory Pelagic species). The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Snapper Grouper Advisory Panel (AP) expressed their support for the South Atlantic Council's preferred approach to set AMs for the commercial sector.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Subalternative 2a (Preferred)** and **Alternatives 3** and **4 (Preferreds)** best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.8 Action 8: Specify Accountability Measures (AMs)/Annual Catch Targets (ACTs) for the Recreational Sector for Species in the Snapper Grouper FMU

I. Types of Recreational AMs Under Consideration

1) ACTs
2) In-season AMs to prevent the ACL from being exceeded (i.e., closing fishery)
3) Post-season AMs
   - Payback provisions applied in a year following an ACL overage
   - Actions to prevent the ACL from being exceeded in the year following an ACL overage (i.e., shortening the following season, changing a bag limit).

II. Council Decision Process for Choosing Recreational AMs

The South Atlantic Council is employing a four-pronged approach to assessing the AM alternatives for the recreational sector (**Figure 4-1**). First, the South Atlantic Council determines whether or not to specify an ACT. The ACT alone would not trigger any corrective action but would be the target harvest level. Second, the South Atlantic Council determines what years of landings would be used to determine whether or not an ACL overage has occurred. Next, the South Atlantic Council determines whether in-season action would be taken if the ACL is met or projected to be met. Lastly, the South Atlantic Council decides whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each step of the decision process creates the recreational AM. The resultant AM would be applied separately to species that have been assigned ACLs as part of a species complex, and to snapper grouper species that have been assigned individual ACLs (See **Tables 4-39** and **4-40**).

Step 1. Determine if an ACT will be specified.
Step 2. Specify an AM trigger, by determining whether data from a single year, a three-year running mean (average), or a modified mean would be used to determine if an ACL has been exceeded.
Step 3. Determine whether an in-season action would be taken to prevent an ACL from being exceeded.
Step 4. Determine whether post-season action would be taken to correct for an ACL overage, or to prevent future ACL overages from occurring.

Figure 4-1. Decision process for choosing preferred AM alternatives for the recreational sector of the snapper grouper fishery.

Table 4-39. Species that are part of Species Complex ACLs that require recreational AMs

Deepwater Complex	Jacks Complex	Snappers Complex	Grunts Complex	Porgies Complex	Shallow-water Grouper Complex
Yellowedge grouper	Almaco jack	Gray snapper	White grunt	Jolthead porgy	Red hind
Blueline tilefish	Banded rudderfish	Lane snapper	Sailors choice	Knobbed porgy	Rock hind
Silk snapper	Lesser amberjack	Cubera snapper	Tomtate	Saucereye porgy	Yellowmouth grouper
Misty grouper		Dog snapper	Margate	Scup	Yellowfin grouper
Sand tilefish		Mahogany snapper		Whitebone porgy	Coney
Queen snapper					Graysby
Black snapper					
Blackfin snapper					

*AMs for these species would be applied on a species complex basis.

Table 4-40. Species that have been assigned individual ACLs and require recreational AMs

Snapper Grouper Species With Individual ACLs
Atlantic spadefish
Greater amberjack
Scamp
Red porgy
Hogfish
Yellowtail snapper
Blue runner
Gray triggerfish
Mutton snapper
Bar jack

*AMs for species in this table would be applied on an individual basis.

III. Recreational AM Alternatives

Alternative 1 (No Action). Do not specify new recreational AMs for the following species:

Deep-water Complex	Jacks Complex	Snappers Complex	Grunts Complex	Porgies Complex	Deep-water Grouper & Tilefish Complex
Yellowedge grouper	Almaco jack	Gray snapper	White grunt	Jolthead porgy	Red hind
Blueline tilefish	Banded rudderfish	Lane snapper	Sailors choice	Knobbed porgy	Rock hind
Silk snapper	Lesser amberjack	Cubera snapper	Tomtate	Saucereye porgy	Yellowmouth grouper
Misty grouper		Dog snapper	Margate	Scup	Yellowfin grouper
Sand tilefish		Mahogany snapper		Whitebone porgy	Coney
Queen snapper					Graysby
Black snapper					
Blackfin snapper					

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.

Subalternative 2b. The ACT equals 85% of the ACL.

Subalternative 2c. The ACT equals 75% of the ACL.

Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Note: Current values for ACTs and Percent Standard Error (PSE) are shown in **Tables 4-41** and **4-42**, respectively.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceeds the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred) *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

Why would an ACL change?

An ACL could change for the following reasons:

(1) From a rebuilding plan that specifies increasing ACLs.
(2) Based on new ABC recommendations from the SSC, including those from an updated stock assessment.
(3) From payback provisions if implemented.
(4) From a re-estimate of data.

Table 4-41. Recreational ACTs (lbs whole weight) to be established in this amendment as per **Subalternative 2d (Preferred)** in **Action 8**.
ACTs are based on **Alternative 4 (Preferred)** in **Action 3** (species groupings), **Alternative 7 (Preferred)** in **Action 4** (ABC control rule), **Alternative 2 (Preferred)** in **Action 5** (allocations), and **Alternative 2 (Preferred)** in **Action 6** (ACLs and OY). ACT for black grouper can be found in **Action 17**.

Deepwater Complex	Rec. ACT
Yellowedge grouper Blueline tilefish Silk snapper Misty grouper Queen snapper Sand tilefish Black snapper Blackfin snapper	205,516
Jacks Complex	**Rec. ACT**
Almaco jack Banded rudderfish Lesser amberjack	186,972
Snappers Complex	**Rec. ACT**
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	775,001
Porgies Complex	**Rec. ACT**
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	74,933
Grunts Complex	**Rec. ACT**
White grunt* Margate Sailor's choice Tomtate	466,864

Shallow-Water Groupers Complex	Rec. ACT
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	33,082
Individual ACTs	**Rec. ACT**
Atlantic Spadefish	177,382
Bar Jack	9,936
Blue Runner	892,305
Gray Triggerfish*	312,208
Greater Amberjack[2]	992,662
Hogfish	71,184
Mutton Snapper[1]	668,937
Red porgy[2]	160,098
Scamp	96,599
Yellowtail Snapper[1]	897,219

Source: Average PSE's from MRFSS (2005-2009).
*Includes unclassified grunts and triggerfishes because commercial landings of gray triggerfish are not identified to species and only one state identifies white grunt to species level.

[1] Per SSC ABC recommendation from assessment. Note: This is based on the ACL for the South Atlantic only. Alternatives to divide the ABC into Gulf of Mexico and South Atlantic jurisdictions for yellowtail snapper and mutton snapper are found in **Actions 18** and **19**, respectively. [2] Assessed species, but with no established recreational ACL. Recreational ACLs are being established in this amendment
Note: Nassau grouper and Goliath grouper are not included in the table above since these are prohibited species, and ACL = 0.

Table 4-42. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Almaco Jack	24
Atlantic Spadefish	28
Banded Rudderfish	33
Bank Sea Bass	32
Bar Jack	28
Black Grouper	39
Black Margate	30
Black Sea Bass	13
Black Snapper	n/a
Blackfin Snapper	16
Blue Runner	19
Blueline Tilefish	39
Bluestriped Grunt	16
Coney	21
Cottonwick	n/a
Crevalle Jack	21
Cubera Snapper	36
Dog Snapper	16
French Grunt	2
Gag	18
Golden Tilefish	49
Goliath Grouper	0
Grass Porgy	n/a
Gray Snapper	10
Gray Triggerfish	15
Graysby	39
Greater Amberjack	15
Hogfish	28
Jolthead Porgy	34
Knobbed Porgy	35

Table 4-42. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
Lane Snapper	19
Lesser Amberjack	77
Longspine Porgy	14
Mahogany Snapper	0
Margate	16
Misty Grouper	n/a
Mutton Snapper	13
Nassau Grouper	0
Ocean Triggerfish	59
Porkfish	26
Puddingwife	26
Queen Snapper	0
Queen Triggerfish	0
Red Grouper	31
Red Hind	40
Red Porgy	19
Red Snapper	21
Rock Hind	42
Rock Sea Bass	50
Sailors Choice	41
Sand Tilefish	33
Saucereye Porgy	8
Scamp	36
Schoolmaster	16
Scup	34
Sheepshead	11
Silk Snapper	25
Smallmouth Grunt	n/a
Snowy Grouper	41
Spanish Grunt	0
Speckled Hind	4
Tiger Grouper	n/a
Tomtate	23
Vermilion Snapper	15
Warsaw Grouper	2

Table 4-42. Continued. Average Percent Standard Error (PSE) for MRFSS by species during 2005-2009.

Species	PSE
White Grunt	14
Whitebone Porgy	34
Wreckfish	0
Yellowedge Grouper	20
Yellowfin Grouper	0
Yellowmouth Grouper	6
Yellowtail Snapper	13

4.1.8.1 Biological Effects

Alternative 1 (No Action) would not specify recreational AMs for species addressed in this action and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous action. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty.

Subalternative 2d (Preferred) would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the Percent Standard Error (PSE) from the recreational fishery, whichever is greater (**Table 4-41**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-42**) in **Subalternative 2d**, more precaution is taken with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average ACLs in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For

example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings could help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the 3-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions. Therefore, the average could create a lag and mask what is actually happening in the landings.

Subalternative 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% confidence interval could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives since it would remove high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose to not have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a time lag (45 days) from the end of a wave and when recreational data become available. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. Since **Subalternative 5b** was not selected as a preferred alternative, the magnitude of the ACL overage would simply compare the landings from a particular fishing year to the ACL. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. There would be

an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

If the ACL is continually exceeded, additional AMs may need to be implemented to reduce harvest pursuant to NS 1 guidelines for performance standards. Under the updated framework procedure implemented through Amendment 17B (SAFMC 2010b), the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the South Atlantic Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.8.2 Economic Effects

Action 8 considers alternatives that would establish AMs for the snapper grouper species harvested by the recreational sector that currently lack such measures. Accountability measures are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS 1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the recreational sector is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the snapper grouper stocks from their present levels, which would in turn allow these stocks to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects

on fishing participants. Direct economic effects on fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) would not establish an AM for the recreational sector of the snapper grouper fishery. This alternative has the most potential to cause the greatest economic dislocation in the long-run since the absence of an ACT could either increase the risk of overfishing or result in overfished snapper grouper stocks, which would require lower ACLs in the future. **Alternative 2** considers alternatives for establishing an ACT which would, in general, establish the recreational ACTs as a proportion of the ACL. Specifically, **Subalternative 2a** sets no ACT and thus creates no buffer between the ACT and the ACL, which would be the least conservative of the four alternatives considered. **Subalternative 2b** sets the ACT at 85% of the ACL and thus creates a 15% buffer, **Subalternative 2c** sets the ACT at 75% of the ACL and thereby creates a 25% buffer, while **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater.

Table 4-43 shows that the more conservative the ACTs, the higher the potential short-term forgone losses in landings and consumer surplus (e.g., **Subalternative 2c** generates higher short-term losses in consumer surplus for all species relative to **Subalternative 2b**. These estimates assume the recreational sector can harvest the ACT. These short-run losses are expected to be offset in the long run when stock abundance is anticipated to increase. Higher stock abundances are expected to increase harvest and thus consumer surplus, and also reduce the long-run harvesting costs in the for-hire sector, though the latter effect cannot be shown with available data. However, these results indicate that while **Subalternative 2d (Preferred)** is more conservative and thus generates the highest potential short-term losses in landings and consumer surplus for most species relative to **Subalternative 2b** and some species relative to **Subalternative 2c**, it is not always the most conservative and thus does not always generate the highest potential short-term losses in landings and consumer surplus.

The estimates in **Table 4-43** should be considered upper bounds since the adoption of ACTs across multiple species could bring about a change in fishing practices if they are used to establish additional management measures in the future, which may prevent the recreational sector from harvesting all of the ACTs. If recreational fishermen can easily re-organize their catch mix as the ACTs become increasingly restrictive, then they could potentially offset any forgone revenue by harvesting other species. On the other hand, if recreational fishermen have limited flexibility to modify the composition of their catches as ACTs become more binding, then they may either reduce their harvests of snapper grouper species, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional management measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place.

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)**, **3c**, **3d**, and **3e**

is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for the applicable snapper grouper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Subalternative 3e**. As such, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due to inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternative 5d (Preferred)** and **Subalternative 5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5d** are expected to be greater than under **Subalternative 5e** in the short term**.**

Under **Subalternative 5f** and **Subalternative 5g**, a post-season AM (i.e., reducing the length of the fishing season or payback) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c-5e.** Because the probability that a post-season AM will be required is greater under **Subalternative 5f** and **Subalternative 5g** relative to **Subalternatives 5c-5e**, the expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c-5e** in the short term.

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher

probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**. The payback that would be implemented under **Subalternative 5g** would further assist with protecting the stocks whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

Table 4-43. Recreational ACTs as a proportion of the ACLs under **Subalternatives 2c** and **2d** relative to **Subalternative 2b** for **Action 8**.

Species and/or Species Groups	Alternative 2c (ACT=75% of rec ACL)		Alternative 2d (ACT using PSE rule)	
	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)
Atlantic Spadefish	(17,738)	(43,393)	(23,060)	(56,410)
Bar Jack	(994)	(2,434)	(1,310)	(3,208)
Black grouper	(5,243)	(64,337)	(12,584)	(154,409)
Blue Runner	(89,231)	(218,282)	(35,692)	(87,313)
Gray Triggerfish	(31,221)	(76,374)	0	0
Greater Amberjack	(93,603)	(228,977)	0	0
Hogfish	(7,118)	(77,772)	(9,254)	(101,103)
Mutton Snapper	(66,891)	(730,814)	13,378	146,163
Red porgy	(16,010)	(39,224)	(6,404)	(15,690)
Scamp	(9,660)	(118,505)	(20,286)	(248,861)
Wreckfish	(1,250)	0	1,875	0
Yellowtail Snapper	(89,716)	(980,193)	17,943	196,039
Deepwater Complex				
Yellowedge grouper				
Blueline tilefish				
Silk snapper				
Misty grouper	(20,552)	(242,997)	(10,276)	(121,499)
Queen snapper				
Sand tilefish				
Black snapper				
Blackfin snapper				
Jacks Complex				
Almaco Jack				
Banded Rudderfish	(18,697)	(45,738)	(55,468)	(135,691)
Lesser Amberjack				

Table 4-43. Continued. Recreational ACTs as a proportion of the ACLs under **Subalternatives 2c** and **2d** relative to **Subalternative 2b** for **Action 8**.

Species and/or Species Groups	Alternative 2c (ACT=75% of rec ACL)		Alternative 2d (ACT using PSE rule)	
	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)	Rec landings minus Alt 2b rec landings (lbs, ww)	Rec benefits minus Alt 2b rec benefits (consumer surplus, $)
Snappers Complex				
Cubera snapper Gray snapper Lane snapper Dog snapper Mahogany snapper	(77,500)	(846,732)	(17,050)	(186,281)
Porgies Complex				
Jolthead porgy Knobbed porgy Saucereye porgy Whitebone porgy Scup	(7,493)	(18,335)	(10,467)	(25,610)
Grunts Complex				
White grunt Margate Sailor's choice Tomtate	(46,686)	(114,219)	(40,104)	(98,114)
Shallow-Water Groupers Complex				
Red hind Rock hind Coney Graysby Yellowfin grouper Yellowmouth grouper	(3,308)	(40,588)	(3,182)	(39,039)

4.1.8.3 Social Effects

Alternative 1 (No Action) would not establish ACTs or AMs for the recreational sector for the applicable snapper grouper species, which may have negative social effects if stocks are not sufficiently protected through other management. With continued harvest and no ACTs or AMs there could be long-term negative effects on the stock, which would eventually impose negative social effects. **Subalternatives 2a-2d (Preferred)** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is the most conservative of the alternatives.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if, for some reason, landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Subalternative 4a (Preferred)** which would not specify an in-season AM and could have beneficial social effects as there would be no closure when the ACL is projected to be met as in **Subalternative 4b**. However, without a closure there is a chance that continued fishing may impose stricter AMs on next year's harvest if such alternatives are chosen.

Post-season accountability measures are considered under Alternative 5 with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in

Subalternative 5d (Preferred). Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5g** payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.1.8.4 Administrative Effects

Under **Action 8**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. The administrative impacts of this action are expected to be similar to those for **Action 7**. However, collecting data for the recreational fishery may be more administratively burdensome than for the commercial fishery. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Reauthorized Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This alternative, like **Alternative 5** to specify the post-season AM, will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.1.8.5 Council Conclusions

The South Atlantic Council used a four-stepped approach to assess the AM alternatives for the recreational sector. First, the South Atlantic Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action but is used to determine what management is necessary. Second, the Council determined the approach to decide whether or not an ACL overage has occurred. Next, the Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following

year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The Council reasoned that the level of management uncertainty for the recreational component of the snapper grouper fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would add a larger buffer for species that are not so common in the landings. For such species the PSEs are large, indicating higher uncertainty in the data. Hence using the PSE in the formula to set the ACT further accounts for uncertainty. On the contrary, when estimates for a species are robust, the PSEs are very small, and consequently the buffer to account for uncertainty would be reduced accordingly. Hence the South Atlantic Council concluded that **Preferred Subalternative 2d** best met the need to account for management uncertainty in the recreational snapper grouper fishery for the species that currently lack AMs. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in the future.

The Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the South Atlantic Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Preferred Subalternative 3b**).

The Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the recreational landings, the Council chose not to implement in-season AMs (**Preferred Subalternative 4a**). In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, the Council chose to focus on post-season AMs for the recreational sector. **Alternative 5** and its subalternatives specify methodologies for specifying post-season AMs that would be implemented if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the Regional Administrator would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Snapper Grouper Advisory Panel (AP) supported **Subalternative 3d** (modified mean approach) as a way to determine when overages of the ACL have occurred. However, the AP made this recommendation during their April 2011 meeting and consequently did not receive further evaluation of the various approaches as the South Atlantic Council did during their June 2011 meeting.

The SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives under this action best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2 Snapper Grouper Fishery Management Plan (wreckfish)

Acceptable Biological Catch Control Rule and ABC for Wreckfish

The South Atlantic Council's SSC met in April 2010 to discuss ABC Control Rules for unassessed species. After extensive discussion of wreckfish issues, the SSC determined the ABC was unknown and that the South Atlantic Council should consider an annual catch limit that did not exceed 200,000 lbs. One of the issues discussed was that the management system of individual quotas tied to portions of the allowable harvest level potentially alters the relation between the recommended harvest and the realized harvest. Effort is reduced in the fishery, to the extent that recent landings are confidential because fewer than 3 dealers have been in operation in recent years. Landings are reduced and recent trends in landings, even if such landings could be publicly disseminated, are possibly not representative of fishery productivity.

The SSC discussed setting an ABC for wreckfish during their August 2010 meeting. The SSC stated that the 2001 assessment (Vaughan et al. 2001) indicated depletion at higher historical levels of effort and that the catch reductions appeared to have come mainly from gear restrictions, spawning season closure, and individual transferable quota (ITQ) implementation. Since stock size cannot be projected, an estimate of the overfishing limit from the 2001 assessment could not be produced. A Depletion-Based Stock Reduction Analysis (DBSRA) or Depletion-Corrected Average Catch (DCAC) estimate (**Table 4-22**) could be calculated, but recent landings are confidential, therefore the SSC was not able to perform the calculations to produce these estimates. The SSC agreed the 2001 assessment was dated and did not apply to current landings and conditions. The SSC concluded that a control rule based on catch-only data should be used even though a stock assessment exists for wreckfish.

In the absence of a current assessment, using a catch-only scenario at "moderate" historical catch (see **Section 1.4**), it is possible that increasing catch will result in overfishing. The SSC reached consensus that catch-only analysis was appropriate because it was inappropriate to use an old assessment applied to new catch data for catches coming from potentially different fishing conditions than at the time of the assessment. Although an estimate of F_{MSY} exists, it cannot be applied to current stock biomass. A recent estimate of fishing mortality (F) is close to F_{MSY}, so increasing F could lead to overfishing if there were increases in catch. Even though B_{MSY} is unknown, fishing at F_{MSY} on a stock that is below B_{MSY} is acceptable for a stock that is not overfished. Therefore, the SSC recommended setting the ABC at the average historical catch (1997-recent) of 250,000 lbs whole weight in September 2010. Due to confidentially of data, a more precise level could not be set. This level of harvest would cap the fishery where it is, consistent with the "moderate" level of historical catch in Methot's table for catch-only scenarios. The SSC also recommended conducting DCAC or DBSRA analysis in the next year to compare with the current catch-only recommendation.

4.2.1 Action 9: Specify Allocations for Wreckfish Fishery

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat).]

Alternative 1 (No Action). Do not specify allocation. In this scenario, the total allowable catch (TAC) is essentially allocated 100% to the commercial sector.

Alternative 2. Divide allocations as 90% Commercial and 10% Recreational.

Alternative 3 (Preferred). Divide allocations as 95% Commercial and 5% Recreational.

Alternative 4. Allocate 100% of the allowable catch to the commercial sector.

4.2.1.1 Biological Effects

Alternative 1 (No Action) would not establish allocations for wreckfish. If an allocation is not specified then it would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for an AM would be limited.

There has been recent interest in some recreational fishing for wreckfish, particularly by the for-hire sector. Currently, regulations to fish for, possess, and sell wreckfish require a person be a shareholder under the wreckfish ITQ program with coupons allocating annual pounds, have a wreckfish vessel permit, and posses a federal commercial South Atlantic snapper grouper permit. If a shareholder has a wreckfish permit, but no federal commercial permit for South Atlantic snapper grouper species, that person cannot sell wreckfish and must adhere to the aggregate snapper grouper bag limit, which includes wreckfish.

Wreckfish usually occur in very deep water (400-600 m) and far offshore. The wreckfish is fished over the Blake Plateau in areas of moderate to strong current using heavy-duty hydraulic reels spooled with 1/8 inch thick cable (Sedberry 2003). The fishing end of the cable is weighted with 50-200 lbs and 3 to 20 large circle hooks baited with squid are attached. The hooks are paid out until they reach the bottom and then reeled up a few feet to prevent snagging. The boat maintains low speed headed into the current during fishing. The fishery off the southeastern United States occurs over a complex bottom feature that has over 100 m of topographic relief, known as the Charleston Bump, that is located 130-160 km southeast of Charleston, South Carolina, at 31°30’N and 79°00’W on the Blake Plateau (Sedberry et al. 2001). Wreckfish landed in the southeastern United States average 15 kg (33 lbs) and 100 cm TL (39 inches TL) (Sedberry et al. 1994).

Alternatives 2-3 (Preferred) would divide the ABC between the recreational and commercial sectors. **Alternative 2** would provide 90% (225,000 lbs whole weight) to the

commercial sector and 10% (25,000 lbs whole weight) to the recreational sector. **Alternative 3 (Preferred)** would be similar to **Alternative 2** with the exception that the allocations would be 95% (237,500 lbs whole weight) for the commercial sector and 5% (12,500 lbs whole weight) to the recreational sector. Under **Alternative 4**, 100% (250,000 lbs whole weight) would be allocated to the commercial sector, which is identical to **Alternative 1 (No Action)**. The amount of wreckfish that would be allocated to recreational fishermen would be very small. Under **Alternative 3 (Preferred)**, approximately 300-350 fish would be allocated to the recreational sector, as wreckfish weight on average between 35 and 40 lbs. However, **Alternative 3 (Preferred)** and **Alternative 2** would allow for the incidental catch of wreckfish when targeting co-occurring species.

Current permits and regulations would not allow recreational fishermen to retain wreckfish unless they possess a federal snapper grouper permit, wreckfish permit, wreckfish shares, and coupons to land wreckfish. At their December 2010 meeting, the South Atlantic Council approved a motion to exempt recreational fishermen from this requirement.

ACLs would be based on allocations. Estimates of recreational landings are generally less certain for rarely encountered species in a survey-based system like MRFSS. Therefore, there is a greater chance that ACLs would be exceeded for the recreational sector under allocations specified in **Alternatives 2** and **3 (Preferred)** than for the commercial sector. In this situation, alternatives that allocate a greater portion of the catch to the commercial sector could have a greater biological benefit. However, if all landings (commercial and recreational) are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2-4** would be very similar. Furthermore, a recreational allocation could help mitigate bycatch mortality in this fishery. Currently, recreational fishermen have to discard any wreckfish they catch, and since the species inhabits deep water, discarded fish do not survive.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If the alternatives perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.1.2 Economic Effects

Ideally, when assessing the economic performance of the various alternatives, comparable welfare measures should be used. In well-behaved quota markets, coupon prices reflect expected net returns from harvesting a unit of quota in the current period. In the case of the wreckfish, the absence of an active market for coupons (allocation) precludes the estimation of reliable coupon (lease) prices to derive estimates of producer surplus in the commercial sector. Thus, for the evaluation of the alternatives for **Action 9**, estimates of gross revenue losses in the commercial sector are used to estimate welfare changes in the commercial sector, which as pointed out earlier overestimate producer surplus estimates. As in the analysis for **Action 5**, consumer surplus estimates are used to estimate welfare changes in the recreational sector. Since wreckfish cannot currently be retained in the recreational sector, there are no willingness-to-pay estimates for recreationally caught wreckfish. Thus, a willingness-to-pay estimate for South Atlantic grouper is used since it represents the best available proxy.

Alternative 1 (No Action) allows some opportunities for participation by the recreational sector if fishermen own wreckfish shares, a wreckfish permit, and fish under the bag limit. **Alternative 2** provides a 10% allocation to the recreational sector, **Alternative 3 (Preferred)** provides a 5% allocation to the recreational sector, while **Alternative 4** would not provide any allocation to the recreational sector.

Table 4-44 shows the relative anticipated changes in landings, gross revenue, and consumer surplus under the assumption that both the commercial and recreational sectors are able to harvest their assigned allocation, which is a reasonable assumption since the commercial allocation is being reduced by 88% and the recreational allocation is very small.

Alternative 1 (No Action) and **Alternative 4** provide the commercial sector with the greatest economic benefits, as measured by gross revenue, relative to **Alternative 2** and **Alternative 3 (Preferred)** because it gives the entire ACL to the commercial sector. **Alternative 1 (No Action)** and **Alternative 4** are basically equivalent with respect to their economic effects since the commercial sector would implicitly or explicitly receive the entire ACL under these alternatives, respectively, consistent with current and historical practice. On the other hand, the recreational sector would benefit the most under **Alternative 2**, followed by **Alternative 3 (Preferred)**.

Quantifying economic benefits of each of the alternatives to the commercial sector is complicated by the fact that the decrease in the TAC from 2 million lbs to 250,000 lbs decreases the annual poundage each shareholder can land by 87.5% under the ITQ Program that was implemented under Snapper Grouper Amendment 5 (SAFMC 1991). That is, each fisherman's wreckfish shares, which dictate the annual pounds that can be landed by that individual, will be reduced by 87.5%. If a fisherman wants to harvest more than this amount, the shareholder needs to purchase additional wreckfish shares or annual pounds from another wreckfish shareholder. Without purchase of additional shares or annual pounds, all of the alternatives will result in very small landings of wreckfish, if any at all since most fishermen have stated that they do not have the funds

to purchase additional shares. Therefore, **Alternatives 1 (No Action)-4** differ little for the commercial sector since all alternatives will likely result in even smaller landings than currently are harvested, if any landings are made at all. However, if one or more of the highliners in the fishery are able to purchase additional shares or annual pounds, the fishery may continue and there would be a greater difference between the alternatives. **Alternatives 2** and **3 (Preferred)** make this situation worse for the commercial sector and require the purchase of even more shares or pounds. Under all alternatives, total commercial landings are expected to decline significantly.

Table 4-44. Changes in wreckfish landings, gross revenue and consumer surplus for **Action 9**.

	Changes in comm. landings (ww)	**Changes in rec landings (ww)**	**Changes in gross revenue ($)**	**Changes in consumer surplus ($)**
Alt 2 minus alt 1	(25,000)	25,000	(57,750)	61,250
Alt 3 minus alt 1	(12,500)	12,500	(28,875)	30,625
Alt 4 minus alt 1	0	0	0	0

4.2.1.3 Social Effects

Alternative 1 (No Action) would establish an overall ACL within the wreckfish component of the snapper grouper fishery with an allocation for the commercial sector only. This would not allow for a recreational fishery as the ITQ program only allows for transfer of quota to someone within the program. A commercial fisherman without a snapper grouper permit must adhere to the bag limit. Because there has been increasing interest within the recreational sector in being allowed to harvest this species, other alternatives offer benefits to the recreational sector for harvest. The different allocation alternatives vary with **Alternative 2** allowing the most allocation to the recreational fishery and **Alternative 3 (Preferred)** offering the least. **Alternative 4** would keep all allocation with the commercial fishery. Again, with any allocation regime, the social effects will depend upon other alternatives and whether or not further harvest restrictions are implemented. While there may be benefits to allowing recreational harvest, dividing the allocation in combination with other actions could result in harvest restrictions that have negative effects upon the commercial sector. The commercial wreckfish fishery is small with only a few harvesters, but if there is a significant decrease in harvest thresholds as anticipated, there could be more negative social effects that accrue to the commercial fishery with the allocation to the recreational fishery. However, the recreational fishery has and may see further restrictions for other species, which would make reallocation of wreckfish a possible alternative when other species are not available and therefore would have positive social outcomes for that sector that may not impose too many negative social outcomes on the commercial sector if the recreational allocation does not dramatically change the commercial allocation and harvesting capability.

4.2.1.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2** through **4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. **Alternative 3 (Preferred)** would not result in an administrative burden greater than the other action alternatives.

4.2.1.5 Council Conclusions

Current permits and regulations do not allow recreational fishermen to retain wreckfish unless they possess a federal snapper grouper permit, wreckfish permit, wreckfish shares, and coupons to land wreckfish under the Wreckfish ITQ Program.

In recent years the South Atlantic Council has heard, from both commercial and recreational fishermen, of an increased incidence of wreckfish encounters. Since wreckfish are caught in very deep water, all incidentally caught wreckfish die and must be released dead since only wreckfish shareholders who fulfill all the other requirements above are allowed to keep the fish. By establishing a small allocation for the recreational sector the South Atlantic Council is attempting to curb some bycatch mortality by allowing fishermen to retain fish that would otherwise die. The allocation, when applied to the ABC and considering that, on average, a wreckfish weighs 40 lbs whole weight, amounts to approximately 313 fish.

At their November 2010 meeting, the Snapper Grouper Advisory Panel (AP) stated their support for the South Atlantic Council's preferred allocation of 95% commercial and 5% recreational. AP members stated that in South Florida and the Florida Keys wreckfish are a viable resource for charter captains since they can be found close to shore and "deep-dropping" is popular. Further north, off the Carolinas, juveniles and small adults may be encountered near wrecks and there are reports of encounters with wreckfish off Virginia and northern North Carolina. The Snapper Grouper AP reasoned that a recreational allocation does not significantly impact the commercial sector since the commercial sector is managed under an ITQ program and there are currently very few active vessels.

At their April 2011 meeting, while the Snapper Grouper AP still supported the preferred sector allocations, the Snapper Grouper AP cautioned that if it was the South Atlantic Council's intent to create a bycatch allowance, then it should be stated as such since specifying a recreational allocation would encourage targeting wreckfish and thus create more discards. Some Snapper Grouper AP members also expressed their concern over the creation of a directed recreational fishery for such a small number of fish.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 3** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2.2 Action 10: Establish an Annual Catch Limit (ACL) and Optimum Yield (OY) for Wreckfish

Alternative 1 (No Action). Do not establish an Annual Catch Limit (ACL) for wreckfish.

Alternative 2 (Preferred). ACL = OY = ABC.

Alternative 3. ACL = OY = 90% of the ABC.

Alternative 4. ACL = OY = 80% of the ABC.

4.2.2.1 Biological Effects

The Magnuson-Stevens Act required that by 2010, FMPs for fisheries determined by the Secretary to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) specified ACLs for species subject to overfishing.

Alternative 1 (No Action) would retain the current regulations established for wreckfish, which includes a total allowable catch (quota) equal to 2 million lbs whole weight. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing does not occur. Therefore ACLs are in place for wreckfish in the form of a total allowable catch (TAC). However, the South Atlantic Council's SSC specifies OFL. Further, an ABC of 250,000 lbs whole weight was specified by the SSC in August 2010,

which is significantly less than the current TAC/ACL. The NS1 guidelines state the ACL must be less than OFL. Therefore, retention of the status quo TAC/ACL is not a viable option.

Alternatives 2 (Preferred)-4 would set OY equal to the ACL. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex, or fishery. The NS1 guidelines discuss the relationship of OFL to MSY and ACT (ACL) to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the MSY and OFL are unknown for wreckfish, the South Atlantic Council's SSC has established an ABC control rule that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed MSY/OFL level. Setting OY equal to ACL would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above B_{MSY}.

Alternative 2 (Preferred) would set the ACL equal to the ABC. The NS1 guidelines indicate the ACL may typically be close to the ABC. The South Atlantic Council chose to allocate the ACL between two sectors (commercial and recreational) as their preferred alternative under **Action 9** (95% of allocation to the commercial sector and 5% to the recreational sector). Under **Alternative 2 (Preferred)**, and with an ABC equal to an ACL of 250,000 lbs whole weight, the ACL for the commercial sector would be 237,500 lbs whole weight and the ACL for the recreational sector would be 12,500 lbs whole weight. If all landings (commercial and recreational) are tracked closely, with mandatory reporting of wreckfish in both sectors, then the biological effects of **Alternatives 2 (Preferred)-4** would be very similar.

Alternatives 3 and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 4** setting the most conservative ACL at 80% (200,000 lbs whole weight) of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. Scientific uncertainty was taken into consideration in the South Atlantic Council's SSC recommendation for ABC. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2 (Preferred)-4** on sea turtles and smalltooth sawfish would likely be beneficial. Since the SSC's recommended ABC is so much less than the current TAC for wreckfish, **Alternatives 2 (Preferred)-4** will likely lead to a reduction in effort. If these alternatives do reduce the overall amount of effort in the fishery, the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.2.2 Economic Effects

Alternative 1 (No Action) will likely generate the least long-run economic benefits relative to the other alternatives since it fails to adopt an ACL, which would increase the risk of overfishing. **Alternative 2 (Preferred)**, **Alternative 3** and **Alternative 4** use ACLs as a means to hedge against the risk of overfishing.

Alternative 2 (Preferred) would set the ACL equal to the ABC most likely generating the least forgone economic benefits in the short-run (relative to **Alternatives 3** and **4**) and the lowest long-run benefits. **Alternative 3** and **Alternative 4** will generate the highest short-run forgone economic benefits but will likely generate the highest long-term economic benefits.

Table 4-45 shows that the relative anticipated changes in landings, gross revenue, and consumer surplus under the assumption that both the commercial and recreational fleets are able to harvest their assigned allocation. The reader should be cautioned that the use of gross revenue tends to overestimate producer surplus since gross revenue does not account for harvesting costs.

Table 4-45. Changes in landings, gross revenue and consumer surplus under **Alternatives 3** and **4** relative to **Alternative 2** for **Action 10**.

	Changes in comm. landings (wwt)	**Changes in rec landings (wwt)**	**Changes in gross revenue ($)**	**Changes in consumer surplus ($)**
Alt 3 minus alt 2	(23,750)	(1,250)	(54,863)	(3,063)
Alt 4 minus alt 2	(47,500)	(2,500)	(109,725)	(6,125)

4.2.2.3 Social Effects

Establishing an ACL for wreckfish will have social effects similar to the discussions under other actions which establish ACLs. As discussed previously, choosing a more restrictive ACL like **Alternative 4** would likely have more negative effects in the short term than would **Alternative 3**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the other alternatives and would likely have more positive social effects. It should be pointed out that this is a significant reduction from the current harvesting threshold. However, the wreckfish fishery has seen a decline in participation and harvest levels have not been close to the previous total allowable catch level. With a reduction that comes in **Alternative 2 (Preferred)** there could be some negative social impacts if latent effort were to enter the fishery and reduce landings for current participating vessels.

4.2.2.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would retain the current regulations established for wreckfish, which includes a total allowable catch equal to 2 million lbs whole weight. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-4** are minimal and would not differ much among the three alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.2.2.5 Council Conclusions

Optimum Yield (OY) is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. An ACL cannot exceed the ABC and may be set annually or on a multiyear basis. Annual catch limits in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, including wreckfish, the South Atlantic Council chose to set ACL equal to ABC. Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from a fishery was not being achieved.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternative.

The South Atlantic Council's SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) expressed concerns that setting an ACL that is so much lower than the previous TAC (2 million lbs whole weight) will cause problems and recommended that the South Atlantic Council consider involving the LEAP in the process as they consider changes to the current ITQ program. Furthermore, the LEAP recommended that the South Atlantic Council consider a Vessel Monitoring System (VMS) requirement for this fishery.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2.3 Action 11: Specify Accountability Measures (AM) for the Wreckfish Fishery

Alternative 1 (No Action). Do not specify AMs for a recreational sector of the wreckfish fishery. Do not add new AMs for the commercial sector of the wreckfish fishery. Currently, the commercial sector for wreckfish is managed under an ITQ system, whereby permitted fishery participants are only allowed to harvest the poundage of wreckfish associated with the shares issued to them each year.

Decision 1. Specify an ACT?

The specification of a recreational ACT for wreckfish was moved to the rejected alternatives appendix.

Decision 2. What is the AM trigger?

Alternative 2. Specify the AM trigger.

- **Subalternative 2a**. Do not specify an AM trigger.
- **Subalternative 2b (Preferred).** If the *annual landings* exceed the ACL in a given year.
- **Subalternative 2c.** If the *mean landings* for the past three years exceed the ACL.[1, 2]
- **Subalternative 2d.** If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of

available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 2e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

The specification of a commercial and recreational in-season AM for wreckfish (closing recreational fishery when ACL met) was moved to the rejected alternatives appendix.

Decision 4. Is there a post-season AM?

Alternative 3. Specify the recreational post-season AM.

Subalternative 3a. Do not specify a recreational post-season AM.

Subalternative 3b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 3c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 3d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 3e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 3f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 3g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

4.2.3.1 Biological Effects

Alternative 1 (No Action) would continue the currently managed quota system, with 100% of the ACL allocated to the commercial sector and no recreational ACLs. Theoretically, when the commercial quota is reached the fishery would be closed. However, the quota is very high when compared to actual annual landings. The fishery has never harvested their full quota and therefore, has never undergone a quota closure. In essence, there is no actively utilized AM in place that would restrict harvest to the status quo quota, or the preferred ACL alternative of 250,000 lbs whole weight. At the December 2010 meeting the South Atlantic Council chose a preferred alternative in **Action 9** to allocate 5% of the ACL to the recreational sector, and consequently is considering alternatives to hold that sector accountable for maintaining harvest levels at or below the sector ACL. Applying sector-specific AMs prevents both sectors from being penalized when only one sector has exceeded their assigned ACL. Because the proposed ACL is lower than the status quo quota greater biological benefits may be expected if commercial fishing is prohibited once this much lower harvest threshold is reached. A discussion of possible AMs for the recreational sector.

As is the case for many fisheries, accurate in-season monitoring of ACLs can be very difficult for the recreational sector. The challenges associated with monitoring in-season harvest in recreational fisheries often leads to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded. With the exception of **Subalternative 2a**, **Alternative 2** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 2b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 2c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average ACLs in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with

an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternative 2d is similar to **Subalternative 2c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 2e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% confidence interval could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 2c-2e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 2d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift. The biological benefits would increase in order from **Subalternatives 2e-2b (Preferred).**

With the exception of **Subalternative 3a**, which would not specify a post-season AM, **Alternative 3** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 3b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012

would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If **Subalternative 3b** is not selected as a preferred alternative, the magnitude of the ACL overage would simply compare the landings from a particular fishing year to the ACL. If the ACL is exceeded, **Subalternatives 3c-3e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 3c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 3d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 3e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 3f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. In contrast, under **Subalternative 3g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 3d (Preferred) and **3f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 3c-3e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 3f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

If the ACL is continually exceeded, additional AMs may need to be implemented to reduce harvest pursuant to NS1 guidelines for performance standards. Under the updated framework procedure implemented through Amendment 17B, the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the South Atlantic Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-3** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-3** and the associated subalternatives are unclear. If they perpetuate the existing amount

of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.3.2 Economic Effects

Action 11 considers alternatives that would establish accountability measures (AMs) for the recreational sector of the wreckfish fishery. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

Establishing AMs for the recreational sector of the wreckfish fishery is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could increase the wreckfish stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, AMs would potentially result in indirect economic effects on recreational fishing participants. Direct economic effects on recreational fishing participants would only occur in the future if and when the AMs are triggered.

Under **Alternative 1 (No Action)**, AMs would not be established for the recreational sector of the wreckfish fishery. **Alternative 2** considers alternatives for establishing an AM trigger. **Subalternative 2a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 2b (Preferred)**, **2c**, **2d**, and **2e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while the ACL is the least likely to be exceeded under **Subalternative 2e**. Assuming these same relative probabilities apply to wreckfish, **Subalternative 2b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 2b (Preferred)**, followed by **Subalternative 2c** and **Subalternative 2d**, while such effects are the least under **Subalternative 2e**.

Alternative 3 considers alternatives for establishing a post-season AM. **Subalternative 3a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 3b** would not generate any indirect economic effects

as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. In general, it is highly likely that **Subalternatives 3c** to **3g** will generate some adverse indirect economic effects in the short term because the recreational ACL for wreckfish is so small (12,500 lbs ww). **Subalternative 3c** may generate the same indirect economic effects in the short term as **Subalternative 3d (Preferred)** and **Subalternative 3e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 3d** are expected to be greater than under **Subalternative 3e** in the short term**.**

Under **Subalternative 3f** and **Subalternative 3g**, a post-season AM (i.e., reducing the length of the fishing season or payback) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternative 3c, Subalternative 3d (Preferred)** and **Subalternative 3e.** Because the probability that a post-season AM will be required is greater under **Subalternative 3f** and **Subalternative 3g** relative to **Subalternatives 3c-3e**, the expected adverse indirect economic effects resulting from **Subalternative 3f** and **Subalternative 3g** are also expected to be greater than under **Subalternative 3c-3e** in the short term.

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 3g** relative to **Subalternative 3f.** The payback that would be implemented under **Subalternative 3g** would further assist with protecting the stock whereas **Subalternative 3f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

4.2.3.3 Social Effects

Because the commercial sector is managed under an ITQ system, AMs are built into the system, although other AMs could be added. **Alternative 1 (No Action)** would specify no new AMs for the commercial fishery or any AMs for the recreational fishery, which may have negative social effects if the stock is made unsustainable over time as a result.

Under **Alternative 2,** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 2a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 2b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon landing as in **Subalternative 2c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock

status. An even longer time frame for "smoothing out" landings is used in **Subalternative 2d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 2e**, which could impose negative social effects as harvest levels are well below averages in most years.

Post-season AMs are considered under **Alternative 3** with several different subalternatives. **Subalternative 3a** could have negative social effects if stocks status is affected by the lack of any accountability measures. **Subalternative 3b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and likely have fewer negative social effects than **Subalternative 3c**, which uses only the next year for monitoring. **Subalternative 3d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 3e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 3f** may have more negative social effects alone as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 3d (Preferred)**. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 3g** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.2.3.4 Administrative Effects

Under **Action 11**, the alternatives for specifying ACTs and AMs for the wreckfish fishery are explained using a step-wise process for ease of understanding. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives specify the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 3** and associated subalternatives specify the post-season AMs. These will likely have an increased administrative burden associated with enforcement, monitoring, rule-making, and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.2.3.5 Council Conclusions

Accountability Measures for the commercial and recreational components of the snapper grouper fishery were specified under **Actions 7** and **8**, respectively. For wreckfish, the ITQ program currently in place serves as the AM for the commercial sector so the South Atlantic Council chose not to implement any changes to the commercial sector AMs in this amendment. The wreckfish ITQ program is being addressed under Amendment 20 the Snapper Grouper FMP (currently in development).

Since the South Atlantic Council chose to specify a recreational allocation for the wreckfish component of the snapper grouper fishery, recreational AMs needed to be specified. However, no data on recreational landings currently exist, so setting an ACT was removed from consideration. The South Atlantic Council chose to adopt a similar approach to that for other snapper grouper species (see **Action 8**): AMs would be triggered if the annual landings exceeded the ACL in a given year; if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence of increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary.

The Snapper Grouper Advisory Panel (AP) did not have a recommendation for this action.

The South Atlantic Council's SSC did not have a recommendation on AMs for the wreckfish fishery.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.2.4 Action 12: Establish Management Measures for Wreckfish

Alternative 1 (No Action). Retain the January 15-April 15 spawning season closure. Wreckfish is included in the 20-fish snapper grouper aggregate bag limit. The TAC/ACL for wreckfish is 2 million lbs.

Recreational Sector

Alternative 2. Remove wreckfish from the 20 fish aggregate snapper grouper bag limit.

Alternative 3 (Preferred). Implement a one-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 4. Implement a one-wreckfish per angler per day bag limit for the recreational fishery.

Alternative 5. Implement a 5-wreckfish per vessel per day bag limit for the recreational fishery.

Alternative 6 (Preferred). Establish a July-August recreational season.

Alternative 7. Establish a May-June recreational season.

Alternative 8. Exempt the recreational sector from having to have commercial permits (snapper grouper and wreckfish), wreckfish shares, and coupons to land wreckfish.

4.2.4.1 Biological Effects

Alternative 1 (No Action) would retain the January 15-April 15 spawning season closure for wreckfish in the commercial sector.

Wreckfish spawn from December through May, with a peak during February and March (Wyanski and Meister 2002). Larvae develop into pelagic juveniles as they drift in a northeasterly direction with the Gulf of Mexico Stream and approach eastern North Atlantic islands Azores and Madeira (Sedberry et al. 1996; Sedberry 2003). This migration may take 4 to 7 months, and a complete circuit of the North Atlantic (from Blake Plateau to eastern Atlantic and back) could be completed in approximately 9 to 11 months (Sedberry 2003). Juveniles are pelagic and remain in surface waters for 2 to 3 years (~ 60 cm) before settling to the bottom (Sedberry et al. 1999). Wreckfish is a relatively long-lived species inhabiting deep waters (40 to 1,000 meters) on both sides of the North Atlantic Ocean (including the Mid-Atlantic Ridge), the Mediterranean, western South Pacific, and southern Indian Oceans (Carpenter 2002). The Blake Plateau/Charleston Bump area off the U.S. Atlantic coast is the only documented spawning area for wreckfish in the North Atlantic (Sedberry 2003); however, unpublished observations from fish caught on the mid-Atlantic ridge indicate that wreckfish may spawn there as well (Sedberry 2003).

Wreckfish have been targeted primarily by commercial fishermen because they occur in very deep water (400-600 meters) and far offshore. They are fished over the Blake Plateau off South Carolina in areas of moderate to strong current using heavy-duty hydraulic reels spooled with 1/8 inch thick cable (Sedberry 2003). Wreckfish landed in the southeastern United States average 15 kg (33 lbs) and 100 cm TL (39 inches TL) (Sedberry et al. 1994). **Alternative 1 (No Action)** would retain the current TAC/ACL of 2 million lbs whole weight. In August 2010, the South Atlantic Council's SSC specified an ABC of 250,000 lbs whole weight for wreckfish. With the implementation of this amendment, the TAC/ACL would be lowered to 250,000 lbs whole weight since the preferred ACL alternative under **Action 10** is ACL=OY=ABC. This is significantly lower than the current 2 million lbs whole weight, so **Alternative 1 (No Action)** would be biologically beneficial.

Alternative 1 (No Action) would also retain wreckfish in the list of species included in the 20-fish aggregate bag limit, which includes all species in the snapper grouper fishery management unit, with the exception of tomtate and blue runner. There has been recent interest in some recreational fishing for wreckfish, particularly by the for-hire sector. Currently, regulations to fish for, possess, and sell wreckfish require a person be a shareholder under the wreckfish ITQ with coupons allocating annual lbs, have a wreckfish vessel permit, and possess a federal commercial South Atlantic snapper grouper permit. If a shareholder has a wreckfish permit, but no federal commercial permit for South Atlantic snapper grouper species, that person cannot sell wreckfish and must adhere to the aggregate snapper grouper bag limit, which includes wreckfish. At their December 2010 meeting, the South Atlantic Council approved a motion to exempt recreational fishermen from this requirement.

Alternatives 2-8 address the recreational sector for wreckfish. **Alternative 2** would remove wreckfish from the 20-fish aggregate bag limit and would be consistent with an alternative in **Action 9**, which would allocate 100% of the allowable catch to the commercial sector. **Alternatives 3 (Preferred)-5** explore various recreational bag and vessel limits for wreckfish, with **Alternative 3 (Preferred)** being the most conservative alternative limiting catches to one wreckfish per vessel per day. **Alternative 4** would allow one wreckfish per angler per day to be retained, and **Alternative 5** would allow a five wreckfish per vessel per day bag limit. With landings data being confidential for the commercial fishery for most of the last decade, and an absence of recreational landings, the magnitude of harvest reductions from the alternatives cannot be quantified. Generally speaking, a reduction in harvest usually translates into positive biological benefits. Therefore, the biological effects of **Alternative 3 (Preferred)** would be expected to be more positive compared to **Alternatives 4** and **5.**

Alternatives 6 (Preferred) and **7** establish a two-month fishing season for the recreational sector. **Alternative 6 (Preferred)** would allow recreational fishermen to retain wreckfish in July and August of every year, while **Alternative 7** would allow recreational fishermen to retain wreckfish in May and June. Since the preferred allocation alternative provides a small recreational ACL of 12,500 lbs whole weight, an

abbreviated recreational fishing season may be appropriate. The negative aspects of having an established recreational fishing season for wreckfish is that incidentally captured wreckfish could not be retained and would have to be discarded outside the recreational season. Wreckfish do not survive the trauma of being brought to the surface due to the extreme water depths in which they occur.

Currently, there is a spawning season closure in place from January15-April 15 of each year. Biologically, the benefits from **Alternatives 6 (Preferred)** and **7** may not vary by much, but **Alternative 7** would allow for the recreational effort to start only two weeks after the spawning season closure ends. Alternatively, **Alternative 6 (Preferred)** would provide a longer time interval after the spawning season before the recreational fishing season began, which could provide a greater biological benefit to the fishery. **Alternative 6 (Preferred)** also provides an opportunity for recreational fishermen to fish for wreckfish in the summer, when weather conditions are more favorable offshore with more fishermen on the water who might encounter wreckfish.

The preferred alternative under **Action 9** would allocate 95% of allocation to the commercial sector and 5% to the recreational sector. Under **Action 10**, the preferred alternative (ACL=OY=ABC) would result in the ACL for the commercial sector of 237,500 lbs whole weight and the ACL for the recreational sector of 12,500 lbs whole weight. **Alternative 8** exempts the recreational sector from the constraints currently in place to retain wreckfish under the bag limit. The South Atlantic Council determined at their March 2011 meeting, that an alternative to exempt the recreational sector from requirements for the commercial sector is not needed, but should be discussed and explained within this action.

If all wreckfish caught by recreational fishermen are reported, then the biological effects of **Alternatives 2-8** could be similar. However, if only MRFSS is used to track recreational landings of wreckfish then large uncertainty would be expected in estimates of recreational landings. In this situation, **Alternative 2**, which would remove wreckfish from the 20-fish aggregate with no allowable recreational bag limit could have the greatest positive biological effect.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-8** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-8** and the associated subalternatives are unclear. If the management measures perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of

effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.2.4.2 Economic Effects

Action 12 considers seven alternatives for managing recreational harvest of wreckfish in addition to **Alternative 1 (No action)**. According to information in **Section 3.8.2**, there have been no recreational trips that targeted or harvested wreckfish in the South Atlantic between 2005 and 2009, which is consistent with current regulations prohibiting retention of wreckfish by recreational anglers who do not possess the proper commercial permits (snapper grouper and wreckfish), wreckfish shares, and coupons to land wreckfish. Since a recreational sector for wreckfish does not currently exist under the snapper grouper FMP, neither does the necessary data to conduct analysis of the expected economic effects of the various alternatives. In general, the direct and indirect economic effects of the alternatives considered under this Action are expected to be minimal given the recreational ACL of 12,500 lbs whole weight under **Alternative 3 (Preferred)** for **Action 9** and **Alternative 2 (Preferred)** for **Action 10**. However, the indirect economic benefits under **Alternative 6 (Preferred)** might be greater relative to **Alternative 7** as it may be safer to fish in July and August than May and June.

4.2.4.3 Social Effects

Alternative 1 (No Action) would continue the spawning closure and could have few social effects on the commercial fishery, however, it would continue current management of the recreational fishery for wreckfish keeping it in the aggregate bag limit. **Alternative 2** would remove wreckfish from the aggregate bag limit, not allowing any recreational catch. The other **Alternatives 3-5** would allow the recreational sector a bag limit with the larger bag limit having positive social effects for the recreational fishery in the short term. Of those alternatives, **Alternative 3 (Preferred)** is the most restrictive allowing one wreckfish per vessel per day when compared to **Alternative 5** which would allow 5-wreckfish per vessel per day. The smaller bag limit would likely extend the season and allow for more participation within the recreational sector. **Alternative 6 (Preferred)** would establish a recreational season after the spawning closure while **Alternative 7** would establish an opening closer to the end of the spawning closure. The benefits of **Alternative 6 (Preferred)** are that recreational fishing during that time may be safer since weather conditions are calmer during those late Spring months than the earlier months with **Alternative 7**. **Alternative 8** would exempt the recreational sector from the requirement of a commercial permit, shares or coupons to land wreckfish and would reduce the administrative requirements and likely have positive social effects for that sector, although the **Alternative 3 (Preferred)** accomplishes the same.

4.2.4.4 Administrative Effects

Alternative 1 (No Action) would maintain the status quo and would not increase the administrative burden on the agency. This action requires enforcement of a spawning season closure and bag limit. **Alternative 3 (Preferred)** and **Alternative 6 (Preferred)**

would implement a bag limit and a seasonal closure different from the status quo but is not expected to change the administrative impacts associated with these management measures. Other action alternatives considered are also not expected to have a significant administrative impact. **Alternatives 2-7** would require administrative support in the form of rule making, outreach, and enforcement, but the impacts would not differ much between the action alternatives and the status quo. **Alternative 8** would likely reduce the administrative burden as it would eliminate the need for recreational fishermen to have permits, shares, and coupons.

4.2.4.5 Council Conclusions

To manage the recreational component of the wreckfish fishery, the South Atlantic Council chose to specify measures that would limit the harvest: a one-wreckfish per vessel per day limit and a July-August recreational season. The South Atlantic Council reasoned that having a short season initially (two months so that it actually corresponds with a wave) to see how many fish are actually caught in that wave would be a reasonable approach to managing a fishery that comprises a few hundred fish. Also, if no restrictions were placed on the harvest, then the likelihood of landings going over the ACL could be high. In addition, the South Atlantic Council stated their intent to no longer require recreational fishermen to have a federal commercial South Atlantic snapper grouper permit, a wreckfish permit, and ITQ shares and allocation in order to possess a wreckfish.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternative of one-fish per vessel per day.

The South Atlantic Council's SSC did not have any recommendations on management measures for wreckfish.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3 Snapper Grouper Fishery Management Plan (black grouper remaining actions; yellowtail snapper & mutton snapper jurisdictional allocations)

4.3.1 Action 13: Specify Jurisdictional Allocations for Black Grouper

The stock assessment for black grouper (SEDAR 19, 2010) treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments thus the ABC for black grouper applies across Council jurisdictions. The assessment indicated that the black grouper stock was not overfished and was not undergoing overfishing.

Alternative 1 (No Action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for black grouper ABC based on one of the following methods:

> **Subalternative 2a.** South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC (Established by using average landings from 1991-2008).
> **Subalternative 2b (Preferred).** South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC (Established by using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008).
> **Subalternative 2c.** South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC (Established by using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008).
> **Subalternative 2d.** South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC (Divide the ABC evenly between the two Councils).

4.3.1.1 Biological Effects

At the June 2010 South Atlantic Council meeting, a motion was made for Gulf of Mexico and South Atlantic staff to work together to develop alternative methods for allocating the black grouper catch between the South Atlantic and Gulf of Mexico Councils' jurisdictional areas. The stock assessment for black grouper treated the Gulf of Mexico and South Atlantic management unit as a single stock rather than providing separate assessments. The Gulf of Mexico Council received a letter dated June 10, 2010, from the South Atlantic Council accepting the Gulf of Mexico Council's ABC control rule and the ABC recommendation developed by the Gulf of Mexico Council's SSC. The ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico's SSC for 2012 is 522,543 lbs whole weight without dead discards and 654,942 lbs whole weight with dead discards (**Table 4-46**). This value is similar to the South Atlantic's SSC ABC recommendation of 610,482 lbs whole weight (landings and discards). The South

Atlantic Council ultimately chose to adopt the Gulf of Mexico's SSC recommendation since a single ABC had to be agreed to between the two Councils for the purpose of establishing jurisdictional allocations.

The Gulf of Mexico Council's SSC recommends that a five-year time stream from 2011-2015, to include landings and dead discards in whole weight as the ABC for black grouper, for a P* of 0.33 (**Table 4-46**).

Table 4-46. Black grouper landings and discard projections (lbs whole weight) for 2011-2015.
(Source: OFL projections table A3.3.4.17 of the final SEDAR 19 stock assessment report and ABC projections, R. Muller, FL FWC, FWRI, person communication).

	OFL		
Year	**Landings**	**Discards**	**Total**
2011	695,007	123,952	818,959
2012	652,810	127,396	780,206
2013	627,552	130,213	757,765
2014	619,665	130,237	749,902
2015	615,801	130,207	746,008

	ABC		
Year	**Landings**	**Discards**	**Total**
2011	523,000	126,761	649,761
2012	522,543	132,399	654,942
2013	545,595	130,978	676,574
2014	558,711	130,314	689,025
2015	564,737	130,018	694,755

Table 4-47. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Subalternatives 2a-2d** and preferred alternative for ACL of 522,543 lbs whole weight for Gulf of Mexico and South Atlantic specified for 2012 in **Table 4-46**.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	240,370	282,173
Alternative 2b (Preferred)	**245,595**	**276,948**
Alternative 2c	250,821	271,722
Alternative 2d	261,272	261,272

Table 4-48. ABCs (lbs whole weight) for South Atlantic and Gulf of Mexico by year using jurisdictional allocations specified in preferred **Subalternative 2b**.

Year	ABC	South Atlantic	Gulf of Mexico
2011	523,000	245,810	277,190
2012	522,543	245,595	276,948
2013	545,595	256,430	289,165
2014	558,711	262,594	296,117
2015	564,737	265,426	299,311

Alternative 1 (No Action) would not establish jurisdictional allocation of the black grouper ABC between the Gulf of Mexico Council and South Atlantic Council (Councils). Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between them. Since black grouper are primarily landed off Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe

County because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys.

After discussions with the SEDAR 19 (2010) analysts regarding recreational landings (MRFSS-charterboat, private, and shore mode), the recommendation was made to remove all Florida Keys landings from the Gulf of Mexico Council landings, including discards, and place them into the South Atlantic landings. Legal sized black grouper caught in the Florida Keys are more likely to have been caught from South Atlantic jurisdictional waters; however, based on the current system of MRFSS landings for Monroe County they were previously grouped into the Gulf of Mexico landings. Black grouper are probably caught in the back reef area of the Florida Keys (Gulf of Mexico Council jurisdiction), but are probably not legal size (B. Muller, FL FWC, FWRI, personal communication). The headboat fishery already accounts for Florida Keys (Monroe County) by including those landings in the South Atlantic jurisdiction (SEDAR 19, 2010). The commercial data set used to derive the jurisdictional allocations are from the Florida trip ticket program so that "area fished" could be stratified, which is particularly important for the Florida Keys. The commercial data set, which allows the Florida Keys (Monroe County) landings to be split between Council jurisdictions, is slightly higher than landings data used in the SEDAR 19 (2010) stock assessment.

Subalternative 2a would establish a jurisdictional allocation of ABC for the South Atlantic = 46% of ABC and Gulf of Mexico = 54% of ABC. These percentages were derived using average landings from 1991-2008. Recreational data collection and fish species identification were notably improved in 1991 so the time series was started in that year.

Subalternative 2b (Preferred) would establish a jurisdictional allocation of ABC for the South Atlantic = 47% of ABC and Gulf of Mexico = 53% of ABC. These percentages were derived using the same formula presented in the letter from the South Atlantic Council to the Gulf of Mexico Council: use 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008. Under **Subalternative 2b (Preferred)**, the ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico SSC for 2012 (the year when measures are likely to be implemented for the Comprehensive ACL Amendment) is 522,543 lbs whole weight (without dead discards; **Table 4-46**). Under this alternative the ABC for the South Atlantic in 2012 would be 245,595 lbs whole weight (**Table 4-47**). ABCs by year and Council area are shown in **Table 4-48**. These ABCs are consistent with what is being proposed in the Gulf of Mexico Fishery Management Council's Generic ACL Amendment. Failure to adopt the same ABC recommendation would result in inconsistent ABCs and ACLs between the two Councils.

Subalternative 2c would establish a jurisdictional allocation of ABC for the South Atlantic = 48% of ABC and Gulf of Mexico = 52% of ABC. These percentages were derived from the same formula presented in the June 10, 2010 letter, but starting the catch history in 1991 when recreational data collection and fish species identification were notably improved (use 50% of average landings from 1991-2008 + 50% of from 2006-2008).

Subalternative 2d would establish a jurisdictional allocation of ABC for the South Atlantic = 50% of ABC and Gulf of Mexico = 50% of ABC, dividing the ABC evenly between the two Councils. In recent years, commercial landings of black grouper have been similar in each Council's jurisdiction and using catch history results in percentages that are close to a 50:50 split of the ABC. For example, using catch history in 2001-2008 resulted in a jurisdictional allocation of ABC for the South Atlantic = 49% and Gulf of Mexico = 51% of the ABC. This time series was started in 2001 when the first full year in the Gulf of Mexico EEZ that different minimum size limits were adopted for both the commercial (24 inches total length, TL) and recreational (22 inches TL) sectors. The South Atlantic Council increased the minimum size limit from 20 inches TL to 24 inches TL in 1999 for both sectors. Using catch history in 1999-2008 resulted in a jurisdictional allocation of ABC for the South Atlantic = 46% of the ABC and Gulf of Mexico = 54% of the ABC, the same percentages that are listed under **Subalternative 2a**.

Landings of black grouper in the Gulf of Mexico and South Atlantic jurisdictions are shown in **Figure 4-2**.

The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Subalternatives 2a-2d** would be similar. The recent stock assessment indicates that management measures in both areas are sufficient to prevent overfishing. The South Atlantic Council has recently implemented a four-month spawning season closure for black grouper and the Gulf of Mexico Council has implemented an ITQ system for grouper species. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure black grouper does not experience overfishing.

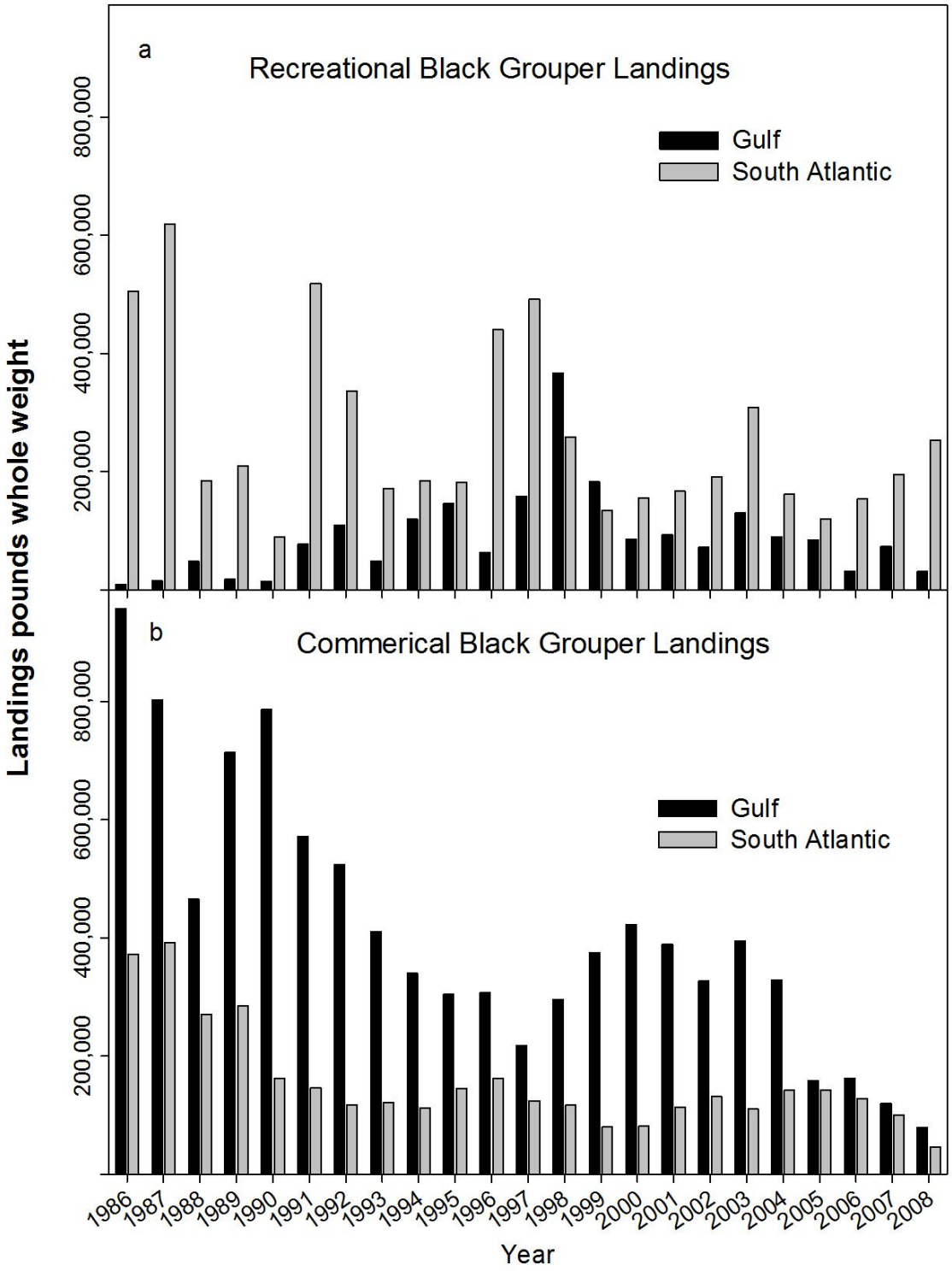

Figure 4-2. Landings of black grouper in whole weight (ww) in the Gulf of Mexico and South Atlantic jurisdictions A) recreational landings (MRFSS and headboat data combined) and B) commercial black grouper landings.
Sources: MRFSS data from T. Sminkey, NOAA Fisheries, personal communication and headboat data from SEDAR 19 (2010) Final Data Workshop Report. Commercial data from Florida's trip ticket program, B. Muller, FL FWC, FWRI, personal communication.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the South Atlantic snapper grouper and Gulf of Mexico reef fish fisheries use the same general gear types and techniques to when fishing for groupers (including black grouper), and those activities were not likely adversely affect marine mammals or *Acropora* species. **Alternative 2** and its subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternative 2** and its subalternatives are unclear. If it perpetuates the existing amount of fishing effort in the fisheries it is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fisheries as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if the alternative reduces the overall amount of effort in the fisheries the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.1.2 Economic Effects

The analysis of economic effects for the alternatives considered under **Action 13** assume the allocation of black grouper between the commercial and recreational sectors under **Alternative 2b (Preferred)** for **Action 14**, which are 36.88% commercial and 63.12% recreational. In addition, the average commercial ex-vessel price per pound for black grouper is $3.19 and the estimated recreational willingness-to-pay per pound for black grouper is $12.27 (personal communication, SEFSC). The analysis also assumes that, under **Alternative 1 (No Action)**, the distribution of black grouper landings between the South Atlantic and Gulf of Mexico Councils' jurisdictions would remain the same as it has been on average from 2005-2009. As can be seen in **Table 4-49**, relative to **Alternative 1 (No Action)**, the greatest increase in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the South Atlantic black grouper fishery would accrue under **Subalternative 2d**, followed by **Subalternative 2c**, **Subalternative 2b (Preferred)**, while **Subalternative 2a** would provide the lowest total economic benefits.

Table 4-49. Changes in South Atlantic commercial gross revenue, recreational consumer surplus, and total economic benefits for black grouper, **Action 13**. ACLs are in lbs whole weight.

Alternative	SA ABC	Gulf ABC	SA Commercial ACL	SA Recreational ACL	SA Commercial Gross Revenue	SA Recreational CS	Change in SA Gross Revenue Relative to Alt. 1	Change in SA CS relative to Alt 1	Total Change in Economic Benefits
Alternative 1	208K	315K	77K	131K	$245K	$1,612K	$0	$0	$0
Alternative 2a	241K	282K	89K	152K	$283K	$1,863K	$38K	$251K	$289K
Alternative 2b (Preferred)	**246K**	**277K**	**91K**	**155K**	**$289K**	**$1,904K**	**$44K**	**$292K**	**$336K**
Alternative 2c	251K	272K	93K	158K	$295K	$1,944K	$50K	$332K	$383K
Alternative 2d	261K	261K	96K	165K	$308K	$2,025K	$63K	$413K	$476K

4.3.1.3 Social Effects

In establishing jurisdictional allocations for black grouper the social effects are similar to any allocation choice. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects. While **Subalternatives 2a** through **2d** progressively give more allocation to the South Atlantic and are based upon different time series, it is difficult to know what the social effects would be although recent discussions have implied that more landings, especially recreational may be coming from the South Atlantic. **Subalternative 2b (Preferred)** is between the other allocation schemes and is based upon catch history from two different time periods and may account for differing harvesting patterns historically and presently. **Alternative 1 (No Action)** would likely impose administrative burdens on both Councils as they each have differing management regimes that include black grouper. Therefore, no action would likely have negative social impacts. By selecting **Subalternative 2b (Preferred)** the social effects should be positive as management of this species will be specific to each council and their regimen. However, the jurisdictional boundary does pose some problems for fishermen in the Keys as they can easily fish in both Councils' jurisdictions.

4.3.1.4 Administrative Effects

Alternative 1 (No Action) would not specify allocations and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation. Under **Subalternatives 2b (Preferred)**, **2c**, and **2d**, ABC would be almost evenly divided among the Councils. This could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored to ensure the commercial and recreational ACLs are not exceeded in each region. However, **Subalternative 2b (Preferred)** is not expected to increase administrative impacts relative to the other action alternatives.

4.3.1.5 Council Conclusions

The stock assessment for black grouper (SEDAR 19, 2010) treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments thus the ABC for black grouper applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf of Mexico and South Atlantic. Since black grouper are primarily landed off Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys. Both the South Atlantic and Gulf of Mexico Councils selected the jurisdictional allocation under **Subalternative 2b** (**Preferred)** (Gulf = 53% of the ABC and SA = 47% of the ABC (Established by

using 50% of average landings from 1986-2008 + 50% of average landings from 2006-2008)).

The alternatives that were considered by both Councils removed all Florida Keys landings from the Gulf of Mexico, including discards, and placed them with South Atlantic landings since legal sized black grouper caught in the Florida Keys are more likely to have been caught in South Atlantic jurisdictional waters. However, based on the current system of MRFSS landings for Monroe County, the landings were previously attributed to Gulf of Mexico waters. The headboat fishery already accounts for Florida Keys (Monroe County) by including those landings in the South Atlantic jurisdiction (SEDAR 19 2010). The Florida trip ticket program data set used for commercial data allows for stratification of "area fished". Landings were split in this fashion to more accurately reflect black grouper harvest in the two areas and thus provide more fair and equitable jurisdictional allocation alternatives.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred jurisdictional allocation alternative for black grouper.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Subalternative 2b (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.2 Action 14: Specify Sector Allocations for Black Grouper

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore and rental boats) as well as for-hire (charter/headboat).
When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore and rental boats).]

Note: Average landings used as "catch history" in computations. Data use the same post-stratification approach (MRFSS landings from Monroe County, Florida, re-assigned from Gulf of Mexico to South Atlantic), that was used in Action 13 (jurisdictional allocations for black grouper).

Alternative 1 (No action). Do not establish sector allocations for black grouper.

Alternative 2. Establish commercial and recreational sector allocations based on criteria outlined in subalternatives below.

Subalternative 2a. Commercial = 48.14% and recreational = 51.86% using average landings from 1986-2008.
Subalternative 2b. Commercial = 50.13% and recreational = 49.87% using average landings from 1986-1998.
Subalternative 2c. Commercial = 43.74% and recreational = 56.26% using average landings from 1999-2008.
Subalternative 2d. Commercial = 33.02% and recreational = 66.98% using average landings from 2006-2008.
Subalternative 2e (Preferred). Commercial = 36.88% and recreational = 63.12% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

Alternative 3. Establish commercial, recreational, and for-hire sector allocations based on criteria outlined in subalternatives below.

Subalternative 3a. Commercial = 48.14% , for-hire = 11.11%, and recreational = 40.75% using average landings from 1986-2008.
Subalternative 3b. Commercial = 48.14% , for-hire = 8.45%, and recreational = 41.42% using average landings from 1986-1998.
Subalternative 3c. Commercial = 43.74% , for-hire = 16.99%, and recreational = 39.27% using average landings from 1999-2008.
Subalternative 3d. Commercial = 33.02% , for-hire = 15.06%, and recreational = 51.92% using average landings from 2006-2008.
Subalternative 3e. Commercial = 36.88% , for-hire = 15.29%, and recreational = 47.83% using 50% of average landings from 1991-2008 + 50% of average landings from 2006-2008.

4.3.2.1 Biological Effects

Alternative 1 (No Action) would not specify a commercial or recreational allocation for black grouper. If an allocation is not specified then it would not be possible to identify the sector ACLs. Only a single ACL could be established for both sectors.

Subalternative 2e (Preferred) would divide the jurisdictional allocation for the South Atlantic specified in **Action 13** between the recreational and commercial sectors (**Table 4-50**).

Table 4-50. Commercial and recreational ACLs for the South Atlantic in **Alternatives 2** and **3** based on the ACL of 245,595 for 2012 specified in the preferred alternative in **Action 15**.

Alternative 2 (Preferred)	**Comm**	**Rec**	
Sub Alt 2a	118,237	127,358	
Sub Alt 2b	123,120	122,475	
Sub Alt 2c	107,434	138,161	
Sub Alt 2d	81,104	164,491	
Sub Alt 2e (Preferred)	**90,575**	**155,020**	
Alternative 3	**Comm**	**For-Hire**	**Rec**
Sub Alt 3a	118,237	27,278	100,079
Sub Alt 3b	123,120	20,748	101,727
Sub Alt 3c	107,434	41,728	96,433
Sub Alt 3d	81,104	36,990	127,501
Sub Alt 3e	90,575	37,547	117,473

Subalternatives for allocations under **Alternative 2** would divide the ACL between commercial and recreational sectors with subalternatives ranging from 33.02% commercial/66.98% recreational (**Subalternative 2d**) to 50.13% commercial/49.87% recreational (**Subalternative 2b**). Subalternatives under **Alternative 3** are similar to **Alternative 2** with the exception that the recreational sector is divided into for-hire and private recreational. Subalternatives for allocations under **Alternative 3** would range from 33.02% commercial/15.06% for-hire/51.92% private recreational (**Subalternative 3d**) to 48.14% commercial/8.45% for-hire/41.42% private recreational (**Subalternative 3b**).

The commercial allocation under options for **Alternative 2**, which contains **Subalternative 2e (Preferred)**, and **Alternative 3,** would be almost identical. Sector specific ACLs would be based on allocations. Therefore, there is a greater chance that the ACLs would be exceeded for for-hire and private recreational sectors under **Alternative 3** than for for-hire and private recreational sectors combined under

Alternative 2. Furthermore, estimates of recreational landings could be less certain when recreational data are divided into sectors.

The allocations in the various subalternatives are similar; however, subalternatives that capture early landings would allocate more to the commercial sector than the recreational sector. For example, **Subalternatives 2a-2b** and **3a-3b**, which are based on landings from 1986-2008 and 1986-1998, would allocate 48.14%-50.13%, and 48.14% to the commercial sector, respectively. In contrast, subalternatives which capture recent landings (**Subalternatives 2d, 2e (Preferred), 3d,** and **3e**) would allocate a higher percentage to the recreational sector.

Subalternative 2e (Preferred) is based on data from 1991-2008, which includes a portion of the early time period when the commercial sector dominated the catch, as well as recent data from 2006-2008 when recreational landings were higher. These percentages were derived using 50% of the average landings from 1991-2008 and 50% of the average landings from 2006-2008. The South Atlantic Council chose a start year of 1991 because recreational data collection and fish species identification were notably improved in 1991.

Table 4-51. Commercial and recreational ACLs by year based on commercial (36.88%) and recreational (63.12%) allocations specified in preferred **Subalternative 2e**.

Year	Total ACL	Comm	Rec
2012	245,595	90,575	155,020
2013	256,430	94,571	161,859
2014 (and onwards until modified)	262,594	96,844	165,750

As the allocations in the various subalternatives are fairly similar, it would be expected that there would be similar biological effects among the subalternatives contained within **Alternatives 2** and **3**. The biological effects of the different allocation alternatives would be expected to be similar if landings in various sectors could be closely monitored. The negative biological effects of **Alternative 3** would be expected to be greater than those resulting from **Alternative 2** since recreational data can be less certain when they are divided into sectors. Further, the biological effects of subalternatives that allocate more landings to the commercial sector could have a positive biological effect because there is less of a chance that a commercial ACL would be exceeded than a recreational ACL. Commercial data can often be more closely monitored as they are based on dealer reports; whereas, much of the recreational data (except headboat data) are based on survey information.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery would not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2** and **3** and the associated subalternatives

are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2** and **3** and the associated subalternatives are unclear. If the sector allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to protected species, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction between sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.2.2 Economic Effects

Alternative 2 in **Action 14** proposes five different allocations of the black grouper harvest that separate allocations for the commercial and recreational sectors. **Subalternatives 2c-2e (Preferred)** and **3c-3e** tend to favor the recreational sector relative to **Subalternatives 2a-2b** and **3a-3b** because they rely on shorter and more recent time series of data during which time an increase in recreational participation occurred. **Subalternatives 2c-2e (Preferred)** and **3c-3e** will likely generate less economic disruptions in the short term relative to **Subalternatives 2a-2b** and **3a-3b** because they more closely align with the distribution of landings between the two sectors under the status quo (i.e., **Alternative 1, No Action)**.

Ideally, when examining the economic effects of alternative allocations, estimates of marginal commercial and recreational net economic benefits under the various allocation alternatives should be considered so that scarce fish resources can be reallocated to those sectors that generate the highest net benefits to society. Economic benefits are maximized at the allocation level where the marginal net economic benefits to the commercial and recreational sectors are equal. However, marginal net economic benefits for the various alternatives are not available at this time and so the analysis relies on comparisons of gross revenue estimates in the commercial sector and consumer surplus estimates in the recreational sector. As in the case of wreckfish, an estimate of willingness-to-pay is used to generate the consumer surplus estimates. In addition, as noted before, gross revenue tends to overestimate the relative loss in terms of producer surplus, which is the more appropriate measure of welfare changes in the commercial sector.

Alternative 3 proposes five different allocations of the black grouper harvest that further separate the recreational allocation between the for-hire and private recreational sectors. As such, the potential changes in producer surplus or NOR to the for-hire sector should be measured separately in theory. However, as indicated in **Section 3.8.2**, there were no charter trips targeting black grouper and only an average of 642 charter trips per year harvesting black grouper in the South Atlantic between 2005 and 2009. Thus, it is difficult to analyze the expected economic effects of the proposed subalternatives under **Alternative 3**. However, if accurate, the data suggests the economic effects on the for-hire sector associated under the various subalternatives for **Alternative 3** will differ little.

Tables 4-52a and **4-52b** show the maximum anticipated changes in gross revenue to the commercial sector and anticipated changes in consumer surplus to the recreational sector under the various alternatives.[8] The gross revenue estimates assume the commercial fleet can harvest the entire allocation whereas the recreational consumer surplus estimates assume that the recreational sector can harvest the entire allocation and anglers' willingness-to-pay for each fish is constant.

[8] Gross revenue were estimated by multiplying the average dockside price of black grouper times the commercial allocation and consumer surplus was calculated by multiplying willingness-to-pay estimate times the recreational allocation. The willingness-to-pay estimate was derived from Carter, D.W. and C. Liese. 2011. The Economic Value of Catching and Keeping or Releasing Saltwater Sportfish in the Southeast United States. *In Review*; and Habb, T., R. Hicks, K. Schnier, and J. C. Whitehead. 2009. Angler heterogeneity and the species-specific demand for recreational fishing in the southeast United States. National Marine Fisheries Service Marine Fisheries Initiative Grant Report #NA06NMF4330055, Miami, Florida.

Table 4-52a. Changes in gross revenue and consumer surplus under **Alternative 2** for **Action 14**.

ACL Options	Comm landings minus No Action comm landings (lbs, ww)	Rec landings minus No Action rec landings (lbs, ww)	Comm gross revenues minus No Action comm gross revenues ($)	Rec consumer surplus minus No Action rec consumer surplus ($)
ACL=245,595 lbs ww				
Subalternative 2a	(10,455)	10,455	(33,978)	128,280
Subalternative 2b	(5,572)	5,572	(18,108)	68,366
Subalternative 2c	(21,258)	21,258	(69,088)	260,833
Subalternative 2d	(47,588)	47,588	(154,660)	583,902
Subalternative 2e	(38,117)	38,117	(123,880)	467,693
ACL=256,430 lbs ww				
Subalternative 2a	(10,916)	10,916	(35,477)	133,940
Subalternative 2b	(5,818)	5,818	(18,907)	71,382
Subalternative 2c	(22,196)	22,196	(72,136)	272,340
Subalternative 2d	(49,687)	49,687	(161,483)	609,662
Subalternative 2e	(39,798)	39,798	(129,345)	488,326
ACL=262,594 lbs ww				
Subalternative 2a	(11,178)	11,178	(36,330)	137,159
Subalternative 2b	(5,957)	5,957	(19,362)	73,098
Subalternative 2c	(22,729)	22,729	(73,870)	278,887
Subalternative 2d	(50,882)	50,882	(165,365)	624,317
Subalternative 2e	(40,755)	40,755	(132,454)	500,065

Table 4-52b. Changes in gross revenue and consumer surplus under **Alternative 3** for **Action 14**.

ACL Options	Comm landings minus No Action comm landings (lbs, ww)	For-hire landings minus No Action rec landings (lbs, ww)	Rec landings minus No Action rec landings (lbs, ww)	Comm gross revenues minus No Action comm gross revenues ($)	For hire consumer surplus minus No Action rec consumer surplus ($)	Rec consumer surplus minus No Action rec consumer surplus ($)	For hire operating net revenues minus No Action operating net revenues ($)
ACL=245,595 lbs ww							
Subalternative 3a	(10,454)	2,473	7,981	(33,976)	30,344	97,930	Minor since no targeted trips
Subalternative 3b	(5,572)	(4,057)	9,629	(18,108)	(49,781)	118,146	Minor since no targeted trips
Subalternative 3c	(21,258)	16,923	4,335	(69,088)	207,644	53,189	Minor since no targeted trips
Subalternative 3d	(47,588)	12,185	35,403	(154,660)	149,509	434,393	Minor since no targeted trips
Subalternative 3e	(38,117)	12,742	25,375	(123,880)	156,343	311,350	Minor since no targeted trips
ACL=256,430 lbs ww							
Subalternative 3a	(10,916)	2,582	8,333	(35,475)	31,683	102,251	Minor since no targeted trips
Subalternative 3b	(5,818)	(4,236)	10,054	(18,907)	(51,977)	123,359	Minor since no targeted trips
Subalternative 3c	(22,196)	17,669	4,526	(72,136)	216,805	55,535	Minor since no targeted trips
Subalternative 3d	(49,687)	12,722	36,965	(161,483)	156,105	453,558	Minor since no targeted trips
Subalternative 3e	(39,798)	13,304	26,494	(129,345)	163,241	325,086	Minor since no targeted trips
ACL=262,594 lbs ww							
Subalternative 3a	(11,178)	2,644	8,534	(36,328)	32,444	104,709	Minor since no targeted trips
Subalternative 3b	(5,957)	(4,338)	10,295	(19,362)	(53,226)	126,324	Minor since no targeted trips
Subalternative 3c	(22,729)	18,094	4,635	(73,870)	222,016	56,870	Minor since no targeted trips
Subalternative 3d	(50,882)	13,028	37,853	(165,365)	159,857	464,460	Minor since no targeted trips
Subalternative 3e	(40,755)	13,624	27,131	(132,454)	167,165	332,900	Minor since no targeted trips

4.3.2.3 Social Effects

By establishing sector allocations there could likely be some changes in fishing behavior and impacts to the social environment. The mere act of separating harvest into multiple sectors has the perception of creating scarcity in that limits have been imposed on each individual sector. Each subsequent division will drive perceptions of scarcity and likely change the fishing behavior of those within a particular sector. **Alternative 1 (No Action)** would maintain an overall allocation (recreational and commercial combined) and may have few social effects. However, determining accountability may become an issue if a closure were to occur. With **Alternative 2** and its subalternatives, establishing an allocation between the recreational and commercial sectors would provide accountability between the two, although monitoring the recreational may be difficult. **Subalternatives 2a and 2b** favor the commercial sector by using earlier landings. **Subalternatives 2d and 2e (Preferred)** would allocate more to the recreational sectors using more recent landings that reflect a recent increase in recreational participation for this species. The difference with **Alternative 3** is the splitting of the recreational sector into two allocations which may provide the charter and headboat sectors with more stability and the possibility to plan with a known quantity of fish. The **Subalternatives 3a-c** allocate more to the private recreational sector respectively with **Subalternative 3d** allocating the most to the for-hire sector. With **Subalternative 3e** the time series differs but the allocation scheme between the two is similar to **Subalternative 3c**. As mentioned, there can be many different social effects that result as allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains. However, with regard to **Alternative 3** and its subset of alternatives, there has been significant resistance from the private recreational component of the overall recreational sector to separate allocations. Some within the charter sector see some benefits from having a separate allocation as there may be more stability in having some accountability within each sector.

4.3.2.4 Administrative Effects

Alternative 1 (No Action) would not establish allocations and would result in the least administrative burden. Under **Subalternative 2e (Preferred)**, ABC would be more evenly divided among the commercial and recreational sectors, but require more of an administrative burden than **Alternative 1 (No Action)**. Subalternatives under **Alternative 3** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial, recreational, and for-hire portion of the allocation for overage and commercial quota purposes. However, the increase in administrative burden would not differ between the various action alternatives.

4.3.2.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, data are not available to calculate the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible due to resource and personnel limitations of NOAA Fisheries Service and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources and has chosen to apply it to many of its managed fisheries because it considers past and present participation. Furthermore, the South Atlantic Council concluded an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Subalternative 2e (Preferred)** as their preferred approach to establish allocations for black grouper.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred allocation alternative for back grouper.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that balancing long-term catch history with recent catch history is the most fair and equitable way to allocate black grouper. **Subalternative 2e (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.3 Action 15. Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Black Grouper

Alternative 1 (No Action). Retain aggregate recreational and commercial ACLs and OY for black grouper, red grouper, and gag.

Alternative 2 (Preferred). ACL = OY = ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 3. ACL = OY = 90% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Alternative 4. ACL = OY = 80% of the ABC. Specify commercial and recreational ACLs for black grouper as indicated in the table below. ACLs will not increase in a subsequent year if present year projected catch has exceeded the ACL.

Table 4-53. ACL formula, ACL, and OY value (lbs whole weight) for black grouper (without discard projections). Commercial and recreational ACL values are based on preferred allocation alternative (36.88% commercial/63.12% recreational) in **Action 14**.

Alternative	ACL Formula	Years	Total ACL (South Atlantic)	Comm ACL	Rec ACL
1 (No Action)	The group ACL for gag, black grouper, and red grouper is 662,403 gw (781,636 ww) for the commercial sector and 648,663 gw (765,422 ww) for the recreational sector. The total group ACL is 1,311,066 gw (1,547,058 ww). *				
2 (Preferred)	**ACL =ABC**	**2012**	**245,595**	**90,575**	**155,020**
		2013	**256,430**	**94,571**	**161,859**
		2014+	**262,594**	**96,844**	**165,750**
3	ACL=90% ABC	2012	221,036	81,518	139,518
		2013	230,787	85,114	145,673
		2014+	236,335	87,160	149,175
4	ACL=80% ABC	2012	196,476	72,460	124,016
		2013	205,144	75,657	129,487
		2014+	210,075	77,475	132,600

*Note: An individual ACL is currently not in place for black grouper. These values are equivalent to the expected catch resulting from the implementation of management measures for black grouper in Amendment 16 and specified in Amendment 17B. The black grouper portion of the combined gag, black, and red grouper ACL would translate to a total ACL of 140,124 lbs ww (118,749 lbs gw); 102,526 lbs ww (86,866 lbs gw) for the commercial ACL; and 37,598 lbs ww (31,868 lbs gw) for the recreational ACL.

4.3.3.1 Biological Effects

Alternative 1 (No Action) would retain the commercial and recreational aggregate ACL specified for gag, black grouper, and red grouper in Amendment 17B (SAFMC 2010b). The aggregate commercial ACL for gag, black grouper, and red grouper is 662,403 lbs gutted weight, and the aggregate recreational ACL is 648,663 lbs gutted weight. The aggregate ACL is based on expected landings from actions taken in Amendment 16 (SAFMC 2009a) and therefore does not take into consideration recent information from the black grouper stock assessment.

Alternatives 2 (Preferred)-4 would set the OY equal to the ACL. The NS 1 guidelines establish the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex, or fishery. The NS1 guidelines discuss the relationship of OFL to MSY and ACT or ACL to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing. Setting OY equal to ACL would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above B_{MSY}.

Alternatives 2 (Preferred)-4 would specify an individual ACL and OY for black grouper based on the ABC from the recent SEDAR stock assessment (SEDAR 19, 2010). Under **Alternatives 2 (Preferred)-4,** ACLs for the commercial and recreational sectors would increase through 2014 and then remain at 2014 levels until otherwise specified by the South Atlantic Council. Guidance from the Council was to adopt the ABC/ACL projections for three years and hold steady thereafter. This approach is consistent with how the Council has addressed other species in rebuilding plans. However, the ACLs would not increase the following fishing year if the total ACL is exceeded during the current year.

The ABC for the Gulf of Mexico and South Atlantic endorsed by the Gulf of Mexico SSC for 2012 is 522,543 lbs whole weight (without dead discards). The South Atlantic Council's preferred jurisdictional allocation of ABC specified in **Action 13** is 47% for the South Atlantic, resulting in South Atlantic black grouper ABC equal to 245,595 lbs whole weight. Based on the preferred allocation alternatives in **Action 14**, 63.12% of the ACL would be allocated to the recreational sector and 36.88% of the ACL would be allocated to the commercial sector. The commercial and recreational ACLs based on alternatives in this action as well as the preferred allocation alternative in **Action 14** are shown in **Table 4-53**.

Alternative 2 (Preferred) would set the ACL and OY equal to the ABC. The NS1 guidelines indicate the ACL may typically be very close to the ABC. **Alternatives 3** and **4** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 4** setting the most conservative ACL at

80% of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance overfishing would not occur. However, the South Atlantic Council's SSC has established an ABC control rule that takes into consideration scientific uncertainty to ensure catches are maintained at sustainable levels. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. Annual catch targets (ACTs), which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. A preferred alternative in **Action 17** includes an ACT for the recreational sector.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery would not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2 (Preferred)-4** are unclear. If the new ACL and OY perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to protected species, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction between sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.3.2 Economic Effects

Alternative 1 (No Action) would retain the aggregate ACL for red grouper, gag, and black grouper, which contains an implicit black grouper ACL of 140,124 lbs whole weight. **Alternatives 2**, **3,** and **4** explicitly establish an ACL specifically for black grouper. While **Alternative 2 (Preferred**) sets the black grouper ACL equal to the ABC, **Alternatives 3** and **4** create a buffer between the ACL and ABC.

Table 4-54 shows the maximum anticipated short-term changes in the commercial and recreational sector. Discounted gross revenue and consumer surplus estimates using a 3% and 5% discount rate for years 2012, 2013, and 2014 are provided, though the estimates using the two discount rates differ little. In general, the short-run economic benefits tend be higher when there is no or little buffer between the ACL and the ABC, as is the case under **Alternative 2 (Preferred**). As the ACL becomes more conservative under **Alternatives 3** and **4**, the anticipated short-term losses in economic benefits tend to increase. **Alternative 3** is preferable to **Alternative 4** in the short term, at least, since it results in a higher ACL for the commercial and recreational fisheries. Long-term economic benefits may be maximized under **Alternative 2 (Preferred**) as long as there is very little uncertainty regarding whether the ACL will be exceeded or not. If there is uncertainty, then long-term economic benefits are greatest under scenarios where a buffer is in place (**Alternatives 3** and **4**). Long-term economic benefits will depend on the ability of the ACL to increase stock abundance and reduce harvesting costs.

Table 4-54. Changes in discounted gross revenue and consumer surplus under **Alternatives 2, 3, and 4** relative to **Alternative 1 (No Action)** for **Action 15**.

Alternative	ACL Formula	Comm landings minus Alt 1 comm landings (lbs, ww)	Rec landings minus Alt 1 rec landings (lbs, ww)	Comm benefits minus Alt 1 comm benefits (discounted gross revenue, $)	Rec. benefits minus Alt 1 rec benefits (discounted consumer surplus, $)
Discount rate of 3% (3 years only- 2012, 2013 and 2014)					
Alternative 2 (Preferred)	**ACL=OY= ABC**	**189,424**	**154,822**	**537,718**	**1,760,921**
Alternative 3	ACL=OY=90% ABC	139,724	128,060	380,956	1,442,237
Alternative 4	ACL=OY=80% ABC	90,024	101,299	224,191	1,123,554
Discount rate of 5% (3 years only- 2012, 2013 and 2014)					
Alternative 2 (Preferred)	**ACL=OY= ABC**	**189,424**	**154,822**	**487,445**	**1,672,030**
Alternative 3	ACL=OY=90% ABC	139,724	128,060	333,658	1,359,393
Alternative 4	ACL=OY=80% ABC	90,024	101,299	179,867	1,046,757

4.3.3.3 Social Effects

Establishing an ACL for black grouper will have social effects similar to the discussions under other actions establishing ACLs. As discussed previously, choosing a more restrictive ACL like **Alternative 4** would likely have more negative effects in the short term than would **Alternative 3**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status as black grouper would have no specific ACL, just an ACL as part of the grouper aggregate. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2** (**Preferred)** would be less restrictive than the **Alternatives 3** and **4** and have fewer negative social effects. Although black grouper has never had an individual ACL, it has been part of the larger grouper aggregate ACL. By establishing a specific ACL for this species there could be changes in fishing behavior that may induce other social effects if target switching causes closures for black grouper or other species.

4.3.3.4 Administrative Effects

Specifying an ACL and sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would result in the least administrative burden due to the fact that the ACLs have already been implemented and fishermen are aware of them. However, the administrative impacts of specifying an ACL through **Alternatives 2 (Preferred) - 4** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures is not expected to increase from the status quo. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.3.3.5 Council Conclusions

Optimum Yield (OY) is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. ACL cannot exceed the ABC and may be set annually or on a multiyear basis. ACLs in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, including back grouper, however, the South Atlantic Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 16** and **17**). Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from a fishery was not being achieved.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternative.

The SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Preferred Alternative 2** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.4 Action 16: Establish Accountability Measures/Management Measures for the Commercial Sector for Black Grouper

Alternative 1 (No Action). Retain the existing commercial AMs for black grouper (**Table 4-55**).

Table 4-55. Current commercial regulations for black grouper.

Current Commercial Regulations	
Aggregate ACL and in-season closures	Group commercial ACL for gag, black grouper and red grouper of 662,403 lbs gutted weight. After the commercial ACL is met, all purchase and sale of the following species is prohibited and harvest and/or possession is limited to the bag limit: gag; black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: gag, black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.

Alternative 2. Specify Annual Catch Targets (ACT) for the commercial sector.

Subalternative 2a (Preferred). Do not establish a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4 (Preferred). If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage only if the species is overfished.

4.3.4.1 Biological Effects

Magnuson-Stevens Act NS 1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to AMs in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as Councils revise their FMPs they use the same terms as set forth in the NS 1 guidelines. Current snapper grouper regulations include some species-specific size limits, seasonal closures, bag limits, and certain prohibited gear types. However, for most of the species and species groups included in this amendment, there are no previously specified measures that would be considered AMs. Therefore, AMs for snapper grouper species and/or species groups outlined in previous actions must be specified pursuant to Magnuson-Stevens Act requirements.

There are several types of AMs that may be applied for black grouper (part of the snapper grouper fishery). In-season AMs are those that are triggered during the fishing season, typically before an ACL is exceeded or when it is projected to be met. Some examples of in-season AMs include quota closures, trip or bag limit changes, gear restrictions, or catch shares. Post-season AMs would be triggered if the ACL is exceeded and would typically be implemented the following fishing season. Post-season AMs could include seasonal closures, reduced trip or bag limits, or shortening of the fishing season implemented in the subsequent year. Ideally, a combination of in-season and post-season AMs would be used to first prevent the ACL from being exceeded, and then provide a mechanism to correct for an overage if one should occur. Implementing a post-season AM in addition to an in-season AM would reduce the risk of overfishing since there would be two layers of protection against unsustainable harvest rates. It is important to note that the new framework procedure in Amendment 17B (SAFMC 2010b) would allow for timely adjustments to be made to AMs if the South Atlantic Council and NOAA Fisheries Service determine a change is needed.

The efficacy of in-season AMs is largely reliant upon in-season monitoring of landings, which may be especially difficult for the recreational sector. The MRFSS and the newly implemented MRIP uses random survey methods and may not capture data on species that are infrequently encountered. Therefore, in-season tracking of black grouper landings in the recreational sector would be based on the MRFSS program and state landings reports. An additional obstacle to tracking recreational harvest in-season is that there is a 45-day lag time between when the fish are landed and when those landings are reported in the landings database after each two-month wave. This lag time means that projections of when the ACL is expected to be met would need to be employed. Landings projections are not always 100% accurate, thus using such estimates could lead to an in-season AM being triggered prematurely, or not soon enough causing an ACL overage.

The South Atlantic Council may choose one or more post-season AMs to supplement any of the in-season AMs. This would be the most administratively burdensome scenario; however, if an ACL overage were to occur after an in-season AM has been implemented, a post-season AM would be available to the RA as a means to correct an overage and prevent overfishing. Post-season AMs would allow all landings for a particular season to be reported before any harvest restriction measures would take effect. This method of accountability alone may correct for one year's or several years' overages; however, it does little to prevent an overage from occurring again unless it is chosen in conjunction with an in-season AM.

The NS1 guidelines recommend the use of ACTs in systems of AMs so that an ACL is not exceeded. For fisheries without in-season management control to prevent the ACL from being exceeded, AMs may utilize ACTs that are set below ACLs so that catches do not exceed the ACLs. If an ACT is specified as part of the AMs for black grouper, an ACT control rule that accounts for management uncertainty may be utilized for setting the ACT. The objective for establishing an ACT and related AMs is that the ACL not be exceeded.

AMs are designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely

the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. Such AMs include prohibited retention of species once the sector annual catch target is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACL in the subsequent fishing season to account for overages.

Since the ACT is typically set lower and would be reached sooner than the ACL for any given species, using an ACT rather than the ACL as a trigger for AMs in the recreational sector may prevent an ACL overage. This more conservative approach, would likely help to ensure that recreational data uncertainties do not cause or contribute to excessive ACL overages for vulnerable species. Using recreational ACTs rather than the ACLs to trigger recreational AMs may not eliminate ACL overages completely; however, using such a strategy for the recreational sector may reduce the need to compensate for very large overages, which could benefit the biological and socioeconomic environments.

The updated framework procedure included in Amendment 17B (SAFMC 2010b) allows for the timely establishment and adjustment of ACTs (and ACLs) if the South Atlantic Council and NOAA Fisheries Service determine they are necessary. Therefore, if the South Atlantic Council chooses not to implement ACTs for black grouper through this Comprehensive ACL Amendment, ACTs may be easily established and modified in the future if needed.

The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. According to the guidelines:

> *…if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness (74 FR 3178).*

If an evaluation concludes that the ACL is being chronically exceeded for black grouper, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. As stated previously, the updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations. It is anticipated that this performance standard will be applied to all species and all systems of ACLs and AMs established in this amendment in accordance with NS1 guidelines.

Alternative 1 (No Action) would retain the existing commercial AMs for black grouper (**Table 4-55**). **Alternative 2** invokes the concept of establishing a commercial sector ACT, which would be set lower than the commercial sector ACL, except under **Subalternative 2a (Preferred)**. **Subalternative 2a (Preferred)** would not set a commercial sector ACT at all. **Subalternatives 2b** and **2c** would establish an ACT as an actual harvest level that presumably once exceeded, would trigger an AM as intended under NS 1 guidelines. **Subalternatives 2b**

and **2c** would establish reduced harvest levels (90% and 80% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. Establishing an ACT that is 90% or 80% of the commercial ACL would also reduce the probability that post-season AMs that are meant to correct for an ACL overage would be needed.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus provide a disincentive to target black grouper once the ACL has been reached. **Alternative 4 (Preferred)** could serve as a complement to **Alternative 3 (Preferred)** in that it would correct for an ACL overage in the post-season if one were to occur during the fishing season but only if the species is determined to be overfished. For assessed species like black grouper, the greater the uncertainty associated with calculating the probability of overfishing, the more precautionary the value of the ABC and subsequent ACL, and the higher the probability the ACL would be met earlier in the season triggering the in-season AM under **Alternative 3 (Preferred)**. The biological benefits of a shortened fishing season for black grouper would depend on the exact reduction of the season length, and subsequent changes to fishing behavior. If a commercial fishing season is shortened due to triggering the **Alternative 3 (Preferred)** AM, regulatory discards may not necessarily increase since fishermen would still be allowed to retain the bag limit.

Alternative 4 (Preferred) could complement **Alternative 3 (Preferred)** because it would correct for an ACL overage in the post-season if such an event were to occur. **Alternative 4 (Preferred)** would reduce the commercial sector ACL in the following season by the amount of the overage if the species is overfished. The ACL can be reduced by the amount as that taken in excess the year before, and may shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards if no level of harvest is permitted after the ACL is reached. However, under **Alternative 3 (Preferred)**, fishermen would still be able to retain bag limit quantities of fish, which may reduce the number of regulatory discards that would otherwise result from a shortened season. Under this scenario **Alternative 4 (Preferred)** could be expected to provide a moderate biological benefit.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. The effects on protected species resulting from **Alternatives 2, 3 (Preferred) and 4 (Preferred)** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery, the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.4.2 Economic Effects

Action 16 considers alternatives that would potentially augment the current black grouper AMs established under Amendment 17B (SAFMC 2010b) for the commercial sector. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS-1 guidelines identify two types of AMs: in-season and post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

As discussed above, establishing AMs is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could rebuild the black grouper stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, changes to the current AMs would potentially result in indirect economic effects on commercial fishing participants. Direct economic effects on commercial fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) leaves the current AMs for the commercial black grouper sector in place. **Subalternative 2a (Preferred)** sets no buffer, **Subalternative 2b** sets the buffer at 90% of the ACL, and **Subalternative 2c** sets the buffer at 80% of the ACL. **Table 4-56** shows the anticipated changes in short-term (annual) landings and gross revenue of the proposed subalternatives. As before, the expected gross revenue assumes that the commercial fleet can harvest the entire ACT. This table shows that the anticipated landings and gross revenue decrease as the ACTs become more conservative.

Estimates in **Table 4-56** should be considered upper bounds since the adoption of multiple ACTs could bring about a change in fishing practices, which may prevent the fleet of harvesting all of the ACTs. If fishing firms can easily re-organize their catch mix as the ACTs become constraining, then they could potentially offset any forgone revenue by targeting other species. On the other hand, if fishing firms have limited flexibility to modify the composition of their catches as ACT become binding, then fishermen may reduce harvests of black grouper, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether the ACT is used to establish additional measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place. Management regimes that favor harvesting privileges, like catch shares, are relatively more likely to generate larger economic benefits in the long run relative to a regulated open or limited access regime.

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run than **Alternative 2,** but still be bound by the figures in **Table 4-56**, since this alternative is intended to prevent the commercial sector from harvesting black grouper in quantities exceeding the ACL. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in

gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which would result in commercial sector ACL reductions and gross revenue losses in the following year under **Alternative 4 (Preferred)**.

Alternative 4 (Preferred) calls for reducing the commercial sector ACL in the following season by the amount of the overage if black grouper is overfished. This alternative will likely generate adverse short-run economic effects (i.e., lower short-run gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-run economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Table 4-56. Changes in gross revenue under **Alternative 2** for **Action 16**.

Alternative	ACT Formula	Comm landings minus Alt 2a comm landings (lbs, ww)	Comm gross revenue minus Alt 2a comm gross revenue ($)
Subalternative 2a	NO ACT		
Subalternative 2b	ACT=90% ACL	3,128	9,977
Subalternative 2c	ACT=80% ACL	(5,930)	(18,916)

4.3.4.3 Social Effects

Alternative 1 (No Action) would have few negative social impacts as it would not impose further restrictions on the commercial sector retaining current accountability measures for several grouper species. A buffer could be imposed through **Alternative 2,** which might reduce the harvest threshold further from the ACL. **Subalternative 2a (Preferred)** would be less restrictive than **Subalternative 2b** or **2c** and therefore have fewer negative social effects. Once the ACL is met in **Alternative 3 (Preferred)** with harvest restricted to bag limit and no sales there should be beneficial social effects in keeping the fishery sustainable. The payback provision in **Alternative 4 (Preferred)** should provide added protection for the stock and beneficial social effects. However, with closures and restricted sales that may occur under some of these alternatives, it is anticipated that fishermen will target other species if possible. Whether that flexibility will continue to exist as ACLs and AMs are imposed on all fisheries remains to be seen.

4.3.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT (**Alternative 2** and associated subalternatives) or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular

fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4 (Preferred)** would be expected to have similar administrative impacts.

4.3.4.5 Council Conclusions

Annual Catch Targets refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left at the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial black grouper fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT. Quota monitoring in the commercial fishery and AMs the South Atlantic Council is proposing to implement through this amendment (see below), are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of black grouper in quantities exceeding the ACL, and thus provide a disincentive to target this species once the ACL has been reached. After the ACL has been met, then all harvest would be limited to the recreational bag limit. **Alternative 4 (Preferred)** would then correct for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision. However, the latter would only apply if there were indication that the species was overfished. The South Atlantic Council chose to make this distinction to be consistent with how they chose to address paybacks in other FMPs (i.e. Coastal Migratory Pelagic species). The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Snapper Grouper Advisory Panel (AP) expressed their support for the South Atlantic Council's preferred approach to setting AMs for the commercial sector.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Subalternative 2a (Preferred)** and **Alternatives 3** and **4 (Preferreds)** best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.5 Action 17: Establish Accountability Measures/Management Measures for the Recreational Sector for Black Grouper

Alternative 1 (No Action). Do not specify new recreational AMs for black grouper.

Table 4-57a. Current recreational regulations for black grouper.

Current Recreational Regulations	
Bag limit	Included in three grouper aggregate bag limit per person per day (1 may be black or gag). Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers
Minimum size limit	24 inch total length
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby, and coney.
ACL/AM	Establish a recreational ACL for gag, black grouper, and red grouper of 648,663 lbs gutted weight. If at least one of the species (gag, red grouper, or black grouper) *is overfished* and the sector ACL is projected to be met, prohibit the harvest and retention of the species or species group. If the ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the sector ACL in the following year by the amount of the overage. For black grouper compare the recreational ACL with recreational landings over a range of years. For 2010, use only 2010 landings. For 2011, use the average landings of 2010 and 2011. For 2012 and beyond, use the most recent three-year running average.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.

Subalternative 2b. The ACT equals 85% of the ACL.

Subalternative 2c. The ACT equals 75% of the ACL.

Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater.

Note: ACTs for black grouper are shown in **Table 4-57b**.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare ACL with landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing season.

Subalternative 5g. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage if the species is overfished.

Table 4-57b. The black grouper recreational ACTs for **Alternative 2**. Average PSE during 2005-2009 equals 39 (**Table 4-42**). Values are in lbs whole weight.

Year	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 2b; ACT=85%(ACL)	ACT Subalt. 2c; ACT=75%(ACL)	ACT Subalt. 2d (Preferred); ACT equals sector ACL*(1-PSE) or ACL*0.5, whichever is greater
2012	155,020	131,767	116,265	**94,562**
2013	161,859	137,580	121,394	**98,734**
2014+	165,750	140,888	124,313	**101,108**

Table 4-58. Landings (lbs gutted weight (gw) and whole weight (ww)) for black and red grouper in 2010. An ACL is currently in place for gag, and an aggregate ACL is in place for gag, black, and red grouper.

	Commercial (lbs)	Recreational (lbs gw)	Total (lbs gw)
Gag ACL *(Amend 16)*	352,940 (gw) 416,469 (ww)	340,060 (gw) 401,271 (ww)	693,000 (gw) 817,740 (ww)
Black grouper landings (2010)	37,258 (gw) 43,964 (ww)	35,222 (gw) 41,562 (ww)	72,480 (gw) 85,526 (ww)
Red grouper landings (2010)	277,337(gw) 327,258(ww)	91,508(gw) 107,979 (ww)	368,845(gw) 435,237 (ww)
Gag, black, red aggregate ACL	662,403 (gw) 781,635 (ww)	648,663 (gw) 765,422 (ww)	1,311,006 (gw) 1,546,987 (ww)

4.3.5.1 Biological Effects

A general discussion of AMs is presented for **Action 16** and is not repeated here. **Alternative 1 (No Action)** would not specify recreational AMs for black grouper and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. Like the recreational ACL, the recreational ACT would increase through 2014 and then remain constant unless otherwise specified by the South Atlantic Council. Since the recreational ACT is a function of the recreational ACL, the recreational ACT would not change unless the recreational ACL also changed. **Subalternative 2a** would not set a recreational sector ACT.

Subalternatives 2b and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater (**Table 4-57**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-57**) in **Subalternative 2d**, more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average ACLs in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternative 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty.

This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined whether one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**) and scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC control rule for unassessed species (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after each two-month wave. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological effects may not be adverse by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the

recreational sector ACL for the following fishing season. In contrast, under **Subalternative 5g**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage if the species is overfished.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season under **Subalternative 5f**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

If the ACL is continually exceeded, additional AMs may need to be implemented to reduce harvest pursuant to NS1 guidelines for performance standards. Under the updated framework procedure implemented through Amendment 17B (SAFMC 2010b), the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the South Atlantic Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.5.2 Economic Effects

Action 17 considers alternatives that would potentially augment the current black grouper AMs established under Amendment 17B (SAFMC 2010b) for the recreational sector. AMs are designed to prevent ACLs from being exceeded, and if exceeded, correct or mitigate any overages (50 CFR 600.310(g)). The NS1 guidelines identify two types of AMs: in-season and

post-season, the latter of which is invoked when an ACL is exceeded. These two types of AMs are not mutually exclusive and may be used simultaneously when appropriate.

As discussed above, establishing AMs is an administrative action, and thus has no direct effects on the economic environment. However, establishing AMs may result in management actions that could rebuild the black grouper stock from its present level, which would in turn allow the stock to support higher catch levels without becoming overfished. As such, changes to the current AMs would potentially result in indirect economic effects on recreational fishing participants. Direct economic effects on recreational fishing participants would only occur in the future if and when the AMs are triggered.

Alternative 1 (No Action) would not establish an ACT for the recreational sector of the black grouper fishery. This alternative has the most potential to cause the greatest economic dislocation in the long run since the absence of an ACT could either increase the risk of overfishing or result in overfished black grouper stock, which would require lower ACLs in the future. **Alternative 2** considers alternatives for establishing an ACT which would, in general, establish the recreational ACTs as a proportion of the ACL. Specifically, **Subalternative 2a** sets no ACT and thus creates no buffer between the ACT and the ACL, which would be the least conservative of the four alternatives considered. **Subalternative 2b** sets the ACT at 85% of the ACL and thus creates a 15% buffer, **Subalternative 2c** sets the ACT at 75% of the ACL and thereby creates a 25% buffer, while **Subalternative 2d (Preferred)** sets the ACT at 50% of the ACL or at (1-PSE) of the ACL, whichever is greater.

Table 4-59 shows that, the more conservative the ACTs, the higher the short-term forgone losses in landings and consumer surplus. **Subalternative 2c** generates higher short-term losses in consumer surplus relative to **Subalternative 2b** and **Subalternative 2d (Preferred)** generates higher short-term losses in consumer surplus relative to **Subalternative 2c**. These estimates assume the recreational sector can harvest the ACT. These short-term losses are expected to be offset in the long run when stock abundance is anticipated to increase. Higher stock abundance is expected to increase harvest and thus consumer surplus, and also reduce the long-run harvesting costs in the for-hire sector, though the latter effect cannot be shown with available data. However, these results indicate that while **Subalternative 2d (Preferred)** is more conservative and thus generates the highest short-term losses in landings and consumer surplus for most species relative to **Subalternative 2b** and some species relative to **Subalternative 2c**, it is not always the most conservative and thus does not always generate the highest short-term losses in landings and consumer surplus.

The estimates in **Table 4-59** should be considered upper bounds since the adoption of ACTs across multiple species could bring about a change in fishing practices if they are used to establish additional management measures in the future, which may prevent the recreational sector from harvesting all of the ACTs. If recreational fishermen can easily re-organize their catch mix as the ACTs become increasingly restrictive, then they could potentially offset any forgone revenue by harvesting other species. On the other hand, if recreational fishermen have limited flexibility to modify the composition of their catches as ACTs become more binding, then they may either reduce their harvests of snapper grouper species, switch to other fisheries, or exit the fishery. Thus, the magnitude of the actual effects will depend on the ACT, whether

the ACT is used to establish additional measures in the future, and the resulting though presently unknown change in fishing practices, as well as the management regime in place.

Table 4-59. Changes in recreational landings and consumer surplus under **Alternative 2** for **Action 17**.
Note: Changes are relative to **Subalternative 2b**.

Alternative	**ACT Formula**	**Rec landings minus Alt 2b rec landings (lbs, ww)**	**Rec consumer surplus minus Alt 2b rec consumer surplus ($)**
Subalternative 2b	ACT= 85% ACL		
Subalternative 2c	ACT= 75% ACL	(15,502)	(190,210)
Subalternative 2d (Preferred)	**Greater of ACL*(1-PSE) or ACL*0.5**	(37,205)	(456,505)

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)**, **3c**, **3d**, and **3e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Alternative 3e**. Assuming these same relative probabilities apply to black grouper, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short-term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long-term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due highly inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic

effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternative 5d (Preferred)** and **Subalternative 5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short term**.**

Under **Subalternative 5f** and **Subalternative 5g**, a post-season AM (i.e., reducing the length of the fishing season) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c-5e.** Because the probability that a post-season AM will be required is greater under **Subalternative 5f** and **Subalternative 5g** relative to **Subalternatives 5c-5e**, the expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c-5e** in the short-term.

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5g** relative to **Subalternative 5f**. The payback that would be implemented under **Subalternative 5g** if the species is overfished would further assist with protecting the stock whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year.

4.3.5.3 Social Effects

Alternative 1 (No Action) would not establish ACTs or AMs for the black grouper recreational sector which may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a,** which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2d (Preferred)** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is the most conservative of the alternatives.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This

could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Subalternative 4a (Preferred)** which would not specify an in-season AM which could have beneficial social effects as there would be no closure when the ACL is projected to be met in **Subalternative 4b**.

Post-season accountability measures are considered under **Alternative 5** with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures through post-season measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and would likely have fewer negative social effects than **Subalternative 5c** which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5g** payback if the species is overfished would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.3.5.4 Administrative Effects

Under **Action 17**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. Recreational data collection can be more administratively burdensome due to time delay and lengthy review. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This action, like **Alternative 5** to specify the post-season AM will likely have an increased administrative burden associated with enforcement, monitoring,

rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.3.5.5 Council Conclusions

The South Atlantic Council used a four-step approach to assessing the AM alternatives for the black grouper recreational sector. First, the Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action. Second, the Council determined the approach to decide whether or not an ACL overage has occurred. Next, the Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The Council reasoned that the level of management uncertainty for the recreational component of the black grouper fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would add a more appropriate buffer than ACTs based on a simple percentage of the ACL since the PSE would reflect the quality of data. Large PSEs indicate higher uncertainty in the data while small PSEs suggest more robust estimates. Hence using the PSE in the formula to set the ACT further accounts for uncertainty. The Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational black grouper fishery. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. The ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary.

The Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of

uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**). The South Atlantic Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the black grouper recreational landings, the Council chose not to implement in-season AMs (**Subalternative 4a, Preferred**). In-season monitoring of recreational landings is difficult. Currently, there is a time lag in the availability of recreational data. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species that are infrequently taken. Therefore, the Council chose to focus on post-season AMs for the recreational sector. **Alternative 5** and its subalternatives describe methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Snapper Grouper Advisory Panel (AP) supported the South Atlantic Council's preferred alternatives for black grouper AMs. The Snapper Grouper AP suggested the South Atlantic Council consider approaches to address underages.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.6 Action 18: Establish Jurisdictional Allocations for Yellowtail Snapper

The stock assessment for yellowtail snapper (SEDAR 3, 2003) used data from two regions: the Atlantic region, primarily from Palm Beach county south through Miami-Dade county, and the Florida Keys, comprising Monroe county and west. The assessment estimated catch-at-age for the MRFSS recreational, headboat, and commercial sectors separately for the Atlantic (Dade county north) and Keys regions (Monroe county north). Although commercial landings data were available for earlier years, recreational data were only available since1981. Therefore, the stock assessment included data from 1981 to 2001. The stock of yellowtail snapper was not overfished nor undergoing overfishing at the time the stock assessment was conducted.

Alternative 1 (No action). Do not establish jurisdictional allocation of the yellowtail snapper acceptable biological catch (ABC) between the Gulf of Mexico and South Atlantic Councils.

Alternative 2. Establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003).

> **Subalternative 2a.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using average landings from 1987-2001).
> **Subalternative 2b.** South Atlantic = 98% of ABC and Gulf of Mexico = 2% of ABC (Established by using 50% of average landings from 1987-2001 + 50% of average landings from 1999-2001).
> **Subalternative 2c.** South Atlantic = 100% of ABC and Gulf of Mexico = 0% of ABC (Established by using highest catch history from 1987-2001).
> **Subalternative 2d.** South Atlantic = 95% of ABC and Gulf of Mexico = 5% of ABC (Established by using lowest catch history from 1987-2001).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of ABC (Established by using 50% of average landings from 1993-2009 + 50% of average landings from 2007-2009).

Alternative 4 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

Alternative 5. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC (Established by using average landings from 1999-2008).

Alternative 6. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC (Established by using average landings from 2005-2009).

Table 4-60a. Values for ABC (lbs whole weight) for South Atlantic and Gulf of Mexico using jurisdictional allocations specified in **Alternatives 2-6** based on recommended ABC of 2,898,500 lbs whole weight for Gulf of Mexico and South Atlantic.

Alternative	South Atlantic	Gulf of Mexico
Alternative 2a	2,840,530	57,970
Alternative 2b	2,840,530	57,970
Alternative 2c	2,898,500	0
Alternative 2d	2,753,575	144,925
Alternative 3	2,115,905	782,595
Alternative 4 (Preferred)	**2,173,875**	**724,625**
Alternative 5	2,231,845	666,655
Alternative 6	2,057,935	840,565

Table 4-60b. Values for ACL (lbs whole weight; commercial and recreational sectors combined), commercial ACL, recreational, and recreational ACT based on preferred alternative of ABC = 2,173,875 lbs whole weight for the South Atlantic.

Parameter	Value	Source
ABC	2,173,875	Action 18, Preferred Alternative 4
ACL	2,173,875	Action 6, Preferred Alternative 2
Comm ACL	1,142,657	Action 5, Preferred Alternative 2
Rec ACL	1,031,218	Action 5, Preferred Alternative 2
Rec ACT	897,160	Action 8, Preferred Alternative 2d

4.3.6.1 Biological Effects

Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf of Mexico and South Atlantic. Since yellowtail snapper are primarily landed off Florida especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. Recreational landings in other Gulf of Mexico and South Atlantic states are low, averaging less than 38,000 lbs whole weight. These allocation issues primarily revolve around dividing the landings (commercial and recreational) in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys.

The most recent stock assessment for yellowtail snapper was completed in 2003 and has landings through 2001 (SEDAR 3, 2003). The landings in the stock assessment are divided by the following regions: 1 - North of Palm Beach County; 2 - Palm Beach through Miami-Dade Counties; 3 - Monroe County (Florida Keys); and 4 - Gulf of Mexico north or west of the Keys. In the stock assessment, landings in regions 1 and 2 are clearly in the South Atlantic jurisdiction; whereas, region 3 - Monroe County (Florida Keys) is more difficult to determine if the landings came from the South Atlantic or Gulf of Mexico Councils' jurisdiction without stratifying the landings. The OFL and ABC recommendations are shown in **Table 4-61**. Using the ABC recommended by the SSC results in estimates for the jurisdictional allocation shown in **Table 4-60a**. Sector ACLs/ACT for the South Atlantic Council's area are shown in **Table 4-60b**.

Table 4-61. The OFL and ABC recommendations for yellowtail snapper from the South Atlantic Scientific and Statistical Committee.

OFL (ww)	ABC (ww)
Yield @ F_{MSY}	2,898,500 lbs.

Source: The ABC is the average of the OY defined as $75\%_{MSY}$ for the "fleet" and "ICA" models Table 2 minutes from the South Atlantic SSC report.

Alternative 1 (No Action) would not establish jurisdictional allocation of yellowtail snapper between the Gulf of Mexico and South Atlantic Councils. Under this alternative, yellowtail snapper would be managed jointly. The two Councils would need to agree on an annual catch limit and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)). If both Councils decided to allocate this species they would also have to agree on recreational and commercial allocations.

Alternative 2 would establish a jurisdictional allocation for yellowtail snapper based on the most recent stock assessment for the South Atlantic and Gulf of Mexico (SEDAR 3, 2003), which does not consider stratified yellowtail snapper catches for Monroe County, Florida. Yellowtail snapper are likely caught in the back reef area of the Florida Keys (Gulf of Mexico Council jurisdiction), but are probably not legal size (B. Muller, FL FWC, FWRI, personal communication). Juveniles are typically found over shallow-water including the back reef on patch reefs and grass beds. Adult yellowtail snapper typically inhabit sandy areas near offshore reefs at depths ranging from 10-70 m (SEDAR 3 2003). Based on information in the stock assessment and discussions with the analyst, juvenile yellowtail are likely more abundant in the Gulf of Mexico Council jurisdiction and adults along the reef tract are more abundant in the

South Atlantic Council jurisdiction (B. Muller, personal communication). Therefore, alternatives that consider post-stratified data are likely more appropriate for determining jurisdictional allocations than **Alternative 2**.

Subalternatives 2a and **2b** result in the same jurisdictional allocation for South Atlantic = 98% of the ABC and Gulf of Mexico = 2% of the ABC. These percentages were derived by using the formula presented in the June 10, 2010 letter from the South Atlantic Council to the Gulf of Mexico Council for black grouper as the following, but with more recent landings: use 50% of the average landings from 1987-2001 + 50% of the average landings from 1999-2001. Using catch history from 1987-2001 resulted in the same jurisdictional allocation between the South Atlantic and Gulf of Mexico (**Subalternative 2a**). **Subalternative 2c** would allocate 100% of ABC to the South Atlantic by using highest catch history from 1987-2001, which occurred in 2000. **Subalternative 2d** would allocate 95% of ABC to the South Atlantic and 5% to the Gulf of Mexico by using lowest catch history from 1987-2001, which occurred in 1999. The amount of yellowtail snapper landings that would be allocated to the Gulf of Mexico and South Atlantic is shown above in **Table 4-60a**.

Under **Alternatives 3-6**, data for yellowtail snapper in the Florida Keys were stratified into the South Atlantic and Gulf of Mexico using the following methods for each sector: commercial landings are based on annual landings summary and are sub-setted by region based on fisher reported "catch area"; headboat landings were defined as North Carolina-Florida Keys statistical areas 1-17 (South Atlantic); and MRFSS data was post-stratified to break the Florida Keys out from the Gulf of Mexico landings. The MRFSS landings from the Florida Keys were then re-assigned to the South Atlantic Council, because most legal sized yellowtail snapper (minimum size limit of 12-inch TL) would be caught in South Atlantic waters. All catch histories begin in 1993 due to issues associated with post-stratifying Florida Keys (Monroe County) landings prior to that date.

Alternatives 3-6 take into account any management changes that took place for yellowtail snapper in both the Gulf of Mexico and South Atlantic Councils since all catch history data begins in 1993. In the Gulf of Mexico, Amendment 1 effective in 1990 set a 12-inch TL minimum size limit for the recreational and commercial sectors that was compatible with state of Florida regulations (GMFMC 1989). Amendment 1 also limited the catch of yellowtail snapper by the 10-snapper aggregate bag limit for recreational anglers and the licensing requirements for commercial fishers (GMFMC 1989). In the South Atlantic, the original Fishery Management Plan, effective in 1985, set a 12-inch TL minimum size limit for yellowtail snapper and a 10-snapper per person possession limit (SAFMC 1983).

Alternative 3 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 73% of ABC and Gulf of Mexico = 27% of the ABC. These percentages were derived by using the formula presented in the June 10, 2010, letter from the South Atlantic Council for black grouper allocation as the following: use 50% of the average landings from 1993-2009 + 50% of the average landings from 2007-2009. The South Atlantic Council is using catch histories that include landings in 2009 and their inclusion is consistent with other data sets in their Comprehensive ACL Amendment. The

concept of this method is to use all available years to determine the split and to provide additional weight to the most recent three years. The catch histories begin in 1993 due to issues associated with post-stratifying landings prior to that date from the Florida Keys (Monroe County).

Alternative 4 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper ABC based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of the ABC. These percentages were derived by using the formula presented in the June 10, 2010 letter from the South Atlantic Council for black grouper allocation as the following: use 50% of the average landings from 1993-2008 + 50% of the average landings from 2006-2008. The concept of this method is to use all available years to determine the split, but this data set was stopped in 2008 similar to the methods used for black grouper jurisdictional allocation (**Action 13**).

Applying the preferred jurisdictional allocation in **Alternative 4** to the preferred alternatives in **Actions 5, 6,** and **8** for snapper grouper species results in the ACL and ACT values specified above in **Table 4-60b**.

Alternative 5 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch based on the following method: South Atlantic = 77% of ABC and Gulf of Mexico = 23% of ABC. These percentages were derived by using the most recent ten years of catch history data from 1999-2008, but stopping in 2008 similar to the methods used for black grouper allocation (**Action 13**). The assessment was conducted in 2009 so landings from that year were not available for the assessment.

Alternative 6 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf of Mexico and South Atlantic Councils for yellowtail snapper acceptable biological catch based on the following method: South Atlantic = 71% of ABC and Gulf of Mexico = 29% of ABC. These percentages were derived by using the most recent five years of data including 2009 landings. The South Atlantic Council is using catch histories that include landings in 2009 and their inclusion is consistent with other data sets in the Comprehensive ACL Amendment.

The biological effects of allocating a portion of the ABC to the Gulf of Mexico and South Atlantic identified in **Alternatives 2-6** would be similar. The 2003 stock assessment indicates yellowtail snapper are not experiencing overfishing and are not overfished. Furthermore, both Councils are in the process of specifying ACLs and AMs for all management species. Additional measures have been and are being considered to ensure yellowtail snapper does not experience overfishing.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the South Atlantic snapper grouper and Gulf of Mexico reef fish fisheries were not likely adversely affecting marine

mammals or *Acropora* species. **Alternatives 2-6** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-6** are unclear. If it perpetuates the existing amount of fishing effort in the fisheries it is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fisheries as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if the alternatives reduce the overall amount of effort in the fisheries, the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.6.2 Economic Effects

The analysis of economic effects for the alternatives considered under **Action 18** assume the allocation of yellowtail snapper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 52.56% commercial and 47.44% recreational, respectively. In addition, the average commercial ex-vessel price per pound for yellowtail snapper is $2.60 and the estimated recreational willingness-to-pay per pound for yellowtail snapper is $10.93 (personal communication, SEFSC). The analysis also assumes that, under **Alternative 1 (No Action)**, the distribution of yellowtail snapper landings between the South Atlantic and Gulf of Mexico Councils' jurisdictions would remain the same as it has been on average from 2005-2009. Further, since the 2005-2009 distribution of landings is the basis for **Alternative 6**, the South Atlantic and Gulf of Mexico ACLs for yellowtail snapper are the same under **Alternative 1 (No Action)** and **Alternative 6**. As can be seen in **Table 4-62**, relative to **Alternative 1 (No Action)**, the greatest change in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits to participants in the SA yellowtail snapper fishery would accrue under **Subalternative 2c**, followed by **Subalternative 2a** and **Subalternative 2b** (which are equivalent), **Subalternative 2d**, **Alternative 5**, **Alternative 4 (Preferred)**, **Alternative 3**, and the least, for reasons explained above, under **Alternative 6**.

Table 4-62. Changes in South Atlantic commercial gross revenue, recreational consumer surplus, and total economic benefits for Yellowtail Snapper, **Action 18**. ACLs are in lbs whole weight.

Alternative	SA ABC	Gulf of Mexico ABC	SA Comm ACL	SA Rec ACL	SA Comm Gross Revenue	SA Rec CS	Change in SA Gross Revenue Relative to Alt. 1	Change in SA CS relative to Alt 1	Total Change in Economic Benefits
1	2,057,935	840,565	1,081,651	976,284	$2,812,292	$10,670,788	$0	$0	$0
2a	2,840,530	57,970	1,492,983	1,347,547	$3,881,755	$14,728,693	$1,069,463	$4,057,905	$5,127,368
2b	2,840,530	57,970	1,492,983	1,347,547	$3,881,755	$14,728,693	$1,069,463	$4,057,905	$5,127,368
2c	2,898,500	0	1,523,452	1,375,048	$3,960,974	$15,029,279	$1,148,682	$4,358,491	$5,507,173
2d	2,753,575	144,925	1,447,279	1,306,296	$3,762,925	$14,277,815	$950,633	$3,607,027	$4,557,661
3	2,115,905	782,595	1,112,120	1,003,785	$2,891,511	$10,971,374	$79,219	$300,586	$379,805
4	**2,173,875**	**724,625**	**1,142,589**	**1,031,286**	**$2,970,731**	**$11,271,959**	**$158,439**	**$601,171**	**$759,610**
5	2,231,845	666,655	1,173,058	1,058,787	$3,049,950	$11,572,545	$237,658	$901,757	$1,139,415
6	2,057,935	840,565	1,081,651	976,284	$2,812,292	$10,670,788	$0	$0	$0

4.3.6.3 Social Effects

In establishing jurisdictional allocations for yellowtail snapper the social effects are similar to any allocation choice. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects. **Alternative 1 (No Action)** may make management of yellowtail snapper more difficult as monitoring of landings with ACLs and AMs creates scenarios for more administrative burdens in accounting for catches. The **Subalternatives 2a** and **2b** are similar in that the allocation schemes give the same amount to each Council although they are based upon different time series. It is difficult to know what the social effects would be although recent discussions have implied that more landings, especially recreational, may be coming from the South Atlantic. **Subalternative 2b** is between the other allocation schemes and is based upon catch history from two different time periods and may account for differing harvesting patterns historically and presently. **Subalternative 2c** provides 100% allocation to the South Atlantic with **Subalternative 2d** allowing 5% to the Gulf of Mexico. **Alternatives 3-6** allocate based upon a different time series and jurisdictional boundary. As mentioned earlier, the allocation procedure selected may have few social effects depending upon the other restrictions that come from the administration by each Council. At present it is difficult to ascertain any specific social effects other than any reduction in harvest or increased regulatory burden from the allocation scheme may have negative social effects.

4.3.6.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf of Mexico and South Atlantic. All of the action alternatives and subalternatives would carry a moderate administrative burden. Establishing jurisdictional allocation would increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored in both the Gulf of Mexico and South Atlantic in relation to the commercial and recreational portion of the allocation for overage and commercial quota purposes. Under **Subalternative 2c**, the ABC would be allocated 100% to the South Atlantic and 0% for the Gulf of Mexico. Under this scenario, monitoring, enforcement and reporting would carry the least administrative burden.

4.3.6.5 Council Conclusions

As for black grouper, the Gulf of Mexico and South Atlantic Councils requested that jurisdictional allocation alternatives be developed for yellowtail snapper. The stock assessment for yellowtail snapper treated the Gulf of Mexico and South Atlantic management unit as a single stock rather than providing separate assessments. Thus the ABC currently applies across Council jurisdictions. Since yellowtail snapper are primarily landed off the state of Florida especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues.

These allocation issues primarily revolve around dividing the landings (commercial and recreational) in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys. Both the South Atlantic and Gulf of Mexico Councils were presented with a suite of alternatives that treated the splitting of Monroe County landings similarly. Both Councils chose as their preferred alternative (**Alternative 4 Preferred**) to establish a jurisdictional allocation based on the following method: South Atlantic = 75% of ABC and Gulf of Mexico = 25% of ABC (Established by using 50% of average landings from 1993-2008 + 50% of average landings from 2006-2008).

During their April 2011 meeting, the Snapper Grouper Advisory Panel (AP) were provided recent landings (2005-2009) information for the South Atlantic and the Gulf of Mexico. Based on those landings and their knowledge of the fishery, the Snapper Grouper AP submitted for the South Atlantic Council's consideration an allocation of 70% of the ABC to the South Atlantic and 30% to the Gulf.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Preferred Alternative 4** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.3.7 Action 19: Establish Jurisdictional Allocations for Mutton Snapper

The mutton snapper stock was assessed through SEDAR 15A in 2008. The base run of the stock assessment model indicated the stock was neither undergoing overfishing nor was the stock overfished in 2006. However, sensitivity runs indicated that there was a moderate probability that the stock could be overfished. The increase in the recreational fishing mortality rate added to the concern at the time.

Alternative 1. (No Action). Do not establish jurisdictional allocation of the mutton snapper Acceptable Biological Catch (ABC) between the Gulf and South Atlantic Councils.

Alternative 2 (Preferred). Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of ABC and Gulf = 18% of ABC (Established by using 50% of average landings from 1990-2008 + 50% of average landings from 2006-2008).

Alternative 3. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper Acceptable Biological Catch (ABC) based on the following method: South Atlantic = 79% of ABC and Gulf = 21% of ABC (Established by using average landings from 2002-2006).

Alternative 4. Do not establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper. The South Atlantic Council would manage mutton snapper in the South Atlantic and Gulf of Mexico.

4.3.7.1 Biological Effects

The Gulf of Mexico Council and South Atlantic Council requested that jurisdictional allocation alternatives be developed for mutton snapper. The stock assessment for mutton snapper (SEDAR 15A, 2008) treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments. The stock assessment was completed in 2008 and concluded that the stock is neither overfished nor undergoing overfishing.

The South Atlantic Council's SSC recommended that the OFL be set equal to the equilibrium maximum sustainable yield proxy, which is the yield at $F30\%_{SPR}$= 1.52 mp whole weight (ww) and the ABC be set equal to the equilibrium optimum yield, which is the yield at $F40\%_{SPR}$ = 1.16 mp whole weight (ww). The Gulf Council's SSC recommended a consistent OFL and ABC, but separated landed weight from the dead discards (**Tables 4-63** and **4-64**).

Table 4-63. OFL and ABC Recommendations from Gulf Council's SSC.

OFL (ww)		
Landings	Discards	Total
1,480,000	35,300	1,515,300

ABC (ww)		
Landings	Discards	Total
1,130,000	26,500	1,156,500

Table 4-64. Mutton snapper ABC (landed catch lbs ww) in Gulf of Mexico and South Atlantic based on jurisdictional allocation alternatives.

	Not Adjusted for Dead Discards		**Adjusted for Dead Discards**	
Alternative	Gulf	South Atl	Gulf	South Atl
Alternative 2 (Preferred)	**208,080**	**947,920**	**203,400**	**926,600**
Alternative 3	242,480	913,520	237,300	892,700
Alternative 4	0	1,156,000	0	1,130,000

Values proposed by the South Atlantic Council are shown in **Table 4-65** below.

Table 4-65. Mutton snapper values (lbs whole weight) for OFL, ABC, ACL (commercial and recreational sectors combined), commercial ACL, recreational ACL, and recreational ACT based on preferred alternative of ABC = 926,600 lbs whole weight for the South Atlantic.

Parameter	Value	Source
OFL	1,515,300	Action 19
ABC	926,600	Action 19, Preferred Alternative 2
ACL	926,600	Action 6, Preferred Alternative 2
Comm ACL	157,707	Action 5, Preferred Alternative 2
Rec ACL	768,893	Action 5, Preferred Alternative 2
Rec ACT	668,937	Action 8, Preferred Alternative 2d

Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Mutton snapper are widely distributed in the western Atlantic from Massachusetts and Bermuda to southeastern Brazil, including the Gulf of Mexico, the Bahamas, and the Greater and Lesser Antilles. Mutton snapper are found throughout the coastal waters of the Gulf of Mexico and are associated with coral reefs, sandy bottoms, and seas grasses, including estuaries and bays with mangroves (SEDAR 15A, 2008).

Alternative 1 (No Action) would not establish jurisdictional allocations of mutton snapper between the Gulf and South Atlantic Councils. Under this alternative, mutton snapper would be managed jointly. The two Councils would need to agree on an ACL and on a common set of regulations (i.e., bag limits, size limits, and closed season(s)). If the Councils decided not to allocate this species by region they would have to agree on recreational and commercial allocations.

Alternative 2 (Preferred) would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 82% of the ABC and Gulf = 18% of the ABC. These percentages were derived by using the formula: 50% of the average landings from 1990-2008 + 50% of the average landings from 2006-2008. In **Alternatives 2 (Preferred)** and **3**, data from Monroe County, Florida are stratified using methodology described in **Action 18**. Employing the ABC for the preferred jurisdictional **Alternative 2 (Preferred)** to the preferred alternatives in **Actions 5, 6,** and **8** for snapper grouper species results in the ACL and ACT values specified above in **Table 4-65**.

Alternative 3 would establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for mutton snapper acceptable biological catch (ABC) based on the following method: South Atlantic = 79% of the ABC and Gulf = 21% of the ABC. These percentages were derived by using catch histories from 2002-2006.

Alternatives 2 (Preferred) and **3** are similar, with only 3% difference in allocation of the ABC between the Gulf and South Atlantic Councils. Based on the stock assessment for mutton snapper (SEDAR 15A 2008), the commercial landings (handline and longline combined) are close to a 50:50 split between the Gulf and South Atlantic Councils. The recreational landings (Marine Recreational Fisheries Statistical Survey (MRFSS) and heaboat) are primarily from the South Atlantic jurisdiction.

Alternative 4 would be dependent upon the Gulf Council relinquishing management of mutton snapper. Under this alternative the South Atlantic Council would manage mutton snapper in the South Atlantic, where most of the landings occur as well as the Gulf of Mexico. The biological effects of **Alternative 4** could be slightly greater than **Alternatives 2 (Preferred)** and **3** because management measures (a two month spawning season closure; May/June limited to 10 per person bag limit) are more restrictive for the commercial sector in the South Atlantic than in the Gulf of Mexico. However, commercial landings of mutton snapper are small relative to recreational landings, and landings from the Gulf of Mexico are much less than those in the South Atlantic. In the South Atlantic and Gulf of Mexico, there is a 16- inch total length minimum size limit in place for the commercial and recreational sectors, and mutton snapper is included in the 10-snapper aggregate recreational bag limit in both regions.

Regardless of which alternative is selected, SEDAR 15A (2008) indicates management measures in both areas are sufficient to prevent overfishing of mutton snapper. Furthermore, both Councils are in the process of specifying ACLs and AMs for all managed species. Therefore, additional measures have been and are being considered to ensure mutton snapper does not experience overfishing.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations

determined the South Atlantic snapper grouper and Gulf of Mexico reef fish fisheries were not likely adversely affecting marine mammals or *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** are unclear. If it perpetuates the existing amount of fishing effort in the fisheries it is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fisheries as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if the alternatives reduce the overall amount of effort in the fisheries, the risk of interactions with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.3.7.2 Economic Effects

The analysis of economic effects for the alternatives considered under **Action 19** to establish a jurisdictional allocation of mutton snapper between the South Atlantic and Gulf Councils assumes that the allocation of mutton snapper between the commercial and recreational sectors under **Alternative 2 (Preferred)** for **Action 5**, which are 17.02% commercial and 82.98% recreational, respectively. Also, under **Alternative 1 (No Action)**, the distribution of mutton snapper landings between the South Atlantic and Gulf Councils' jurisdictions is assumed to remain the same as it has been on average from 2005-2009. Analysis adopts the South Atlantic Council SSC's recommendation for ABC that makes adjustments for dead discards and assumes MRFSS landings data from Monroe County are assigned to the Gulf of Mexico. In addition, the analysis assumes the average commercial ex-vessel price per pound for mutton snapper is $2.43 and the estimated recreational willingness to pay per pound for mutton snapper is $10.93 (personal communication, SEFSC).

As can be seen in **Table 4-66**, relative to **Alternative 1 (No Action)**, the greatest losses in gross revenue to the commercial sector of the South Atlantic mutton snapper fishery would accrue under **Alternative 2 (Preferred)**. However, the greatest losses in consumer surplus to the recreational sector occur under **Alternative 3**. Because the losses in consumer surplus under **Alternative 3** exceed the losses in gross revenue under **Alternative 2 (Preferred)**, the greatest economic losses in the South Atlantic mutton snapper fishery would likely accrue under **Alternative 3**. Thus, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 1 (No Action)** relative to **Alternative 2 (Preferred)** and **Alternative 3**. Conversely, participants in the South Atlantic mutton snapper fishery would experience gains in commercial gross revenue, consumer surplus in the recreational sector, and thus total economic benefits under **Alternative 4**. Therefore, participants in the South Atlantic mutton snapper fishery would be economically better off under **Alternative 4** relative to **Alternative 1 (No Action)**, **Alternative 2 (Preferred)** and **Alternative 3**.

Table 4-66. Changes in South Atlantic Commercial Gross Revenue, Recreational Consumer Surplus, and Total Economic Benefits for **Alternatives 2-4** relative to **Alternative 1 (No Action)** under **Action 19**. ACLs are in lbs whole weight. Based on ABC recommendation from South Atlantic Council's SSC. Assumes ACL = ABC.

Alternative	SA ACL	Gulf ACL	SA Commercial ACL	SA Recreational ACL	SA Commercial Gross Revenue	SA Recreational CS	Change in SA Gross Revenue Relative to Alt. 1	Change in SA CS relative to Alt 1	Total Change in Economic Benefits
Alternative 1	970K	184K	165K	805K	$401,338	$8,801,123	$0	$0	$0
Alternative 2 (Preferred)	**927K**	**203K**	**158K**	**769K**	**$383,315**	**$8,403,607**	**-$18,023**	**-$397,516**	**-$415,539**
Alternative 3	893K	237K	152K	741K	$369,209	$8,096,529	-$32,129	-$704,594	-$736,723
Alternative 4	1,130K	0	192K	938K	$467,352	$10,248,777	$66,014	$1,444,654	$1,513,668

4.3.7.3 Social Effects

In establishing jurisdictional allocations for mutton snapper the social effects are similar to those for other species, like yellowtail snapper, within the Comprehensive ACL Amendment. Depending upon how the allocation is determined, the ensuing harvest thresholds will determine the overall social effects, although **Alternative 1 (No Action)** may make management of mutton snapper more difficult as monitoring of landings with ACLs and AMs creates scenarios for more administrative burdens in accounting for catches. Furthermore, the social effects of **Alternative 4** would be dependent upon how the South Atlantic Council addresses issues regarding required permits to catch mutton snapper in the Gulf of Mexico and South Atlantic. The allocations based upon **Alternatives 2 (Preferred)** and **3** are close and the social effects would differ minimally between the two. Both alternatives use data from recent years with **Alternative 2 (Preferred)** including older data to account for the historical fishery. The social effects of **Alternatives 2 (Preferred)**, **3**, and **4** would likely be positive in the long term as it would allow for management and accountability based upon regional fishing activities. It becomes problematic in areas like the Florida Keys where fishermen may fish in both jurisdictional areas and management differences could make fishing decisions more complicated. Overall, if management becomes more accountable and fishing thresholds provide stability in harvest the benefits should be positive. It will depend upon the ability to monitor and implement any AMs through each council process over time.

4.3.7.4 Administrative Effects

Alternative 1 (No Action) would retain the current situation and would result in the least administrative burden. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Under **Alternatives 2 (Preferred)** and **3**, 82% and 79% of the ABC, respectively, would be allocated to the South Atlantic Council. **Alternative 4** could increase the administrative burden if changes are needed to the Federal Gulf Reef Fish and the Federal Snapper Grouper Permits.

4.3.7.5 Council Conclusions

The stock assessment for mutton snapper treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments. The stock assessment was completed in 2008 and concluded that the stock is neither overfished nor undergoing overfishing. Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Since mutton snapper are primarily landed off the state of Florida, especially southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These allocation issues primarily revolve around dividing the landings (commercial and recreational) in Monroe County, because the current Gulf of Mexico and South Atlantic Council jurisdictional boundary line is the Florida Keys. Both the South Atlantic and Gulf of Mexico Councils were presented with a suite of alternatives that treated the splitting of Monroe County landings similarly. Both Councils chose as their preferred alternative to establish a jurisdictional allocation based on the

following method: South Atlantic = 82% of the ABC and Gulf = 18% of the ABC. These percentages were derived by using the following formula: use 50% of the average landings from 1990-2008 + 50% of the average landings from 2006-2008. The concept of this method is to use all available years to determine the split. The catch history was recommended to begin in 1990 when fish identification and sampling methods improved (J. O'Hop, personal communication).

The Snapper Grouper Advisory Panel (AP) and the South Atlantic Council SSC did not review the alternatives for mutton snapper jurisdictional allocations and thus no recommendations were provided to the Council. At its March 2011 meeting, the South Atlantic Council included mutton snapper among those species that would be removed from the FMU. However, Florida later expressed concern over its ability to manage the species into Federal waters, particularly due to difficulty in enforcing regulations for out-of-state vessels. Therefore, in June 2011, the South Atlantic Council voted to retain mutton snapper within the FMU.

The Law Enforcement Advisory Panel (AP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4 Dolphin Wahoo FMP

4.4 Dolphin

Fishery Management Unit

Common dolphin, *Coryphaena hippurus*, and pompano dolphin, *Coryphaena equiselis*, are in the fishery management unit for the FMP for the Dolphin Wahoo Fishery of the Atlantic (Dolphin Wahoo FMP). Pompano dolphin are rarely landed, don't reach the minimum size limit for common dolphin, and are included in the landings data for common dolphin. At the September 2009 meeting, the South Atlantic Council directed staff to develop alternatives to designate pompano as an ecosystem component species or consider them a part of a multispecies group for the MSY, OFL, and ABC values.

Pompano dolphin is considered as part of a multispecies group herein. Pompano dolphin are included in the landings of common dolphin and it is the South Atlantic Councils' intent that the MSY, OY, OFL, ABC, ACL, and AM parameters set for common dolphin also include pompano dolphin. Thus it is not necessary, nor possible to specify these parameters separately for pompano dolphin.

The Dolphin Wahoo FMP was implemented in 2004 and included the following:

1. Added dolphin and wahoo to the fishery management unit and established MSY, OY, MFMT and MSST; dealer permits; vessel permits; operator permits; Atlantic Coastal Cooperative Statistics Program (ACCSP) reporting requirements; framework procedure; allowable gear; gear prohibitions in highly migratory species (HMS) closed areas; Essential Fish Habitat (EFH)/EFH-Habitat of Particular Concern (HAPCs); and the fishing year as January 1 through December 31.
2. Prohibited sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
3. Established a cap of 1.5 million lbs or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the South Atlantic Council will review the data and evaluate the need for additional regulations, which may be established through the framework.
4. Established a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) allowed a bag limit of 10 dolphin per paying passenger.
5. Established a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.

Maximum Sustainable Yield (MSY), Minimum Stock Size Threshold (MSST) and Maximum Fishing Mortality Threshold (MFMT)/Overfishing Level (OFL)

Maximum Sustainable Yield (MSY)

The Councils (South Atlantic, Mid-Atlantic and New England Councils) have determined that the MSY for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million lbs. There is no updated MSY estimate, and the South Atlantic Council's SSC did

not provide any new guidance on MSY. Therefore, the existing MSY will remain until a SEDAR assessment is conducted.

Minimum Stock Size Threshold (MSST)

The Councils have determined that the MSST for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is defined as a ratio of current biomass (Bcurrent) to biomass at MSY or (1-M)*B_{MSY}, where 1-M (natural mortality) should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% B_{MSY}. The stock would be overfished if current biomass (Bcurrent) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY. There is no updated MSST estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSST. Therefore, the existing MSST will remain until a SEDAR assessment is conducted.

Overfishing Level (OFL)

Currently, the Councils (South Atlantic, Mid-Atlantic and New England Councils) specified the following value for MFMT through the original Dolphin Wahoo FMP:
A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin is defined as a fishing mortality rate (F) in excess of F_{MSY} (F30%Static SPR). The most recent recommendation from the South Atlantic Council's SSC stated that OFL for dolphin is unknown since there is no stock assessment, current conditions are impacted by management, and there is no measure of stock biomass relative to landings. An ABC = 14,596,216 lbs whole weight was recommended based on the SSC's ABC control rule for unassessed species in April 2011. This ABC value is similar to the value resulting from the guidance provided by the South Atlantic Council that they were comfortable with ABC approximating the mean plus one standard deviation.

Previously, the South Atlantic Council's SSC had provided the following recommendation at their April 2010 meeting: "The existing MSY estimate for dolphin (Prager 2000) applies to the Gulf of Mexico, South Atlantic, and Caribbean regions (i.e., no MSY value specific for the Atlantic stock exists). Therefore, the SSC decided to use landings data to estimate OFL. However, given dolphin's distribution and stock structure the OFL should be based on landings data for the entire Atlantic stock (i.e., not just South Atlantic). The SSC also discussed the decline in recreational landings (the bulk of total dolphin landings) during 2008-2009, which the group thought was strongly influenced by the economic downturn and associated reduction in recreational effort (number of fishing trips). The SSC decided not to use these years for developing the OFL estimate. Other points were also brought up regarding regulations that probably have kept dolphin landings down since 2004. The committee decided to use the period 1994-1997 (Atlantic coast landings data obtained from the Dolphin Wahoo FMP) to calculate average landings as the OFL estimate (OFL = 11,882,898 lbs; the mean was used instead of the median because of the short landings time series)." **(Table 4-67a)**.

The NMFS SEFSC corrected and updated the 1994-1997 data used by the SSC. The South Atlantic Council reviewed the new data at their March 2011 meeting and accepted the new catch data as being the best available data (**Table 4-67b**). The South Atlantic Council also requested

the SSC use the corrected and updated data to provide the OFL; using the new data and the SSC's methodology, results in the OFL = 13,709,523.

Table 4-67a. Landings data used by the SSC in April 2010 to develop the OFL value.

Dolphin Landings (whole weight) from Dolphin Wahoo FMP (SAFMC 2003a; Table 8)					
Year	**Rec. Total**	**%Rec**	**Com. Total**	**%Com**	**Com. & Rec. Total**
1994	9,500,580	88%	1,252,553	12%	10,753,133
1995	13,092,212	85%	2,231,787	15%	15,323,999
1996	8,002,144	87%	1,216,682	13%	9,218,826
1997	10,640,713	87%	1,594,920	13%	12,235,633
SSC's	**OFL = Mean 1994-1997**				11,882,898

Table 4-67b. Corrected and updated landings data for use by the SSC to develop the OFL value.

Corrected/Updated Dolphin Landings (whole weight) from SEFSC					
Year	**Rec. Total**	**%Rec**	**Com. Total**	**%Com**	**Com. & Rec. Total**
1994	11,067,791	90%	1,200,064	10%	12,267,855
1995	13,824,090	87%	2,136,532	13%	15,960,622
1996	10,557,938	90%	1,220,769	10%	11,778,707
1997	13,228,677	89%	1,602,230	11%	14,830,907
SSC's	**OFL = Mean 1994-1997**				13,709,523

The South Atlantic Council requested the SSC consider the Gulf of Mexico Council's ABC control rule which would use mean, mean + 0.5 to 2.0 times the SD of the last 10 years landings. During their March 2011 meeting, the South Atlantic Council approved the following motion: For dolphin and wahoo, provide guidance to the SSC that based on biology and productivity and not overfishing/overfished status, the South Atlantic Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.

The South Atlantic Council's SSC met April 5-7, 2011 in Charleston, South Carolina and recommended that the Gulf of Mexico Council's ABC Control Rule not be used for South Atlantic stocks. Instead they recommended use of their own ABC control rule for unassessed stocks. Their action changed their previous OFL/ABC recommendation for dolphin (and wahoo).

4.4.1 Action 20: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Dolphin

Alternative 1 (No Action). Do not establish an ABC Control Rule for Dolphin.

Alternative 2. Establish an ABC Control Rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule (**Table 4-23**). Note: The Gulf of Mexico Council's Control Rule, if applied to dolphin, would likely be Tier 3a and would set the OFL = mean 10 years most recent landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD. (ABC = 12,795,629 to 15,415,524 lbs whole weight).

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule described in **Table 4-22**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 4-24** and OFL = unknown (currently ABC = 14,596,216 lbs ww).

4.4.1.1 Biological Effects

Alternative 1 (No Action) would not establish an ABC control rule for dolphin. For stock and stock complexes required to have an ABC, the NS1 guidelines for the Magnuson-Stevens Act state the ABC will be set on the basis of the ABC control rule. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 (Preferred) would specify an ABC control rule for dolphin. Under **Alternative 2** the ABC would be equal to the OFL specified by the South Atlantic Council's SSC. The NS1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3** and **4 (Preferred)**. Furthermore, since the South Atlantic Council's SSC indicated at their April 2011 meeting that OFL is unknown, no value for ABC could be provided under **Alternative 2**. The South Atlantic Council indicated at their December 2010 meeting that OFL = ABC was a reasonable alternative given the species is extremely short-lived, extremely productive, reproduces at an early age, and is not vulnerable to overfishing. They reasoned that an appropriate buffer to account for scientific uncertainty could be addressed when setting the ACL (**Action 21**). In contrast to **Alternative 2**, **Alternative 3** would be based on the Gulf of Mexico SSC's ABC control rule, which would account for scientific uncertainty by providing a buffer between ABC and OFL. However, the South Atlantic Council's SSC determined at their April 2011 meeting that OFL is unknown. **Alternative 4 (Preferred)** would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule, which also accounts for scientific uncertainty.

Alternative 3 would specify an ABC control rule based on the Gulf of Mexico Council SSC's ABC control rule (**Table 4-23**). As stated, **Alternative 3** would follow Tier 3a of the Gulf of Mexico's Council SSC's ABC control rule: "No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends." For species where no assessment is available, but based

on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council's SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL.

Alternative 3, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species (**Table 4-23**) would result in values (12,795,629 to 15,415,524 lbs whole weight; **Table 4-68**) that are similar to the South Atlantic Council SSC's ABC control rule value of 14,596,216 lbs whole weight (**Alternative 4 (Preferred**)). Therefore, the biological effect of **Alternative 3**, which is based on the Gulf of Mexico Council SSC's ABC control rule would be very similar to **Alternative 4 (Preferred)**, which is based on the South Atlantic Council SSC's ABC control rule.

Table 4-68. ABC for dolphin (lbs) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009 (Tier 3a of the Gulf of Mexico Council's SSC ABC control rule.
Note: OFL = mean + 2SD = 16,743,471 lbs whole weight.

Mean	Mean + 0.5 SD	Mean + 1 SD	Mean + 1.5 SD
11,431,682	12,795,629	14,087,576	15,415,524

Establishing an ABC control rule for dolphin would not directly affect protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.4.1.2 Economic Effects

Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 20** are indirect. In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects.

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from commercial dolphin landings are predicted to total $1,582,000 (**Table 4-69**). This alternative is expected to generate the least dislocation in the short term, but will also likely generate the smallest long-term economic benefits relative to other alternatives. **Alternative 2** sets the ABC equal to the OFL estimated earlier by the South Atlantic Council's SSC (**Table 4-67b**), which may lead to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**. The potential annual short-term loss to the commercial sector was estimated at $115,000. **Alternative 3** creates a buffer between the ABC and OFL and is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e. increasing the ABC), foregone gross revenue are predicted to decrease. **Table 4-69** shows that the greater the buffer, the greater the potential short-term forgone gross revenue. If ABC = mean + 1.5 SD, the adoption of **Alternative 3** may result in a loss of $36,000 in gross revenue whereas the adoption of **Alternative 3** may result in as much as $252,000 in forgone gross revenue if ABC = mean.

Alternative 4 (Preferred) would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule. The adoption of **Alternative 4 (Preferred)** may result in a loss of $78,000 in gross revenue. **Alternative 4 (Preferred)** is the least restrictive of all the alternatives other than **Alternative 1 (No Action)**.

Table 4-69. Predicted ex-vessel gross revenues attributed to dolphin landings after the establishment of an ABC control rule.
Commercial TAC values are based on the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, the preferred ACL formula for dolphin (100% of ABC) in **Action 22**, no commercial sector ACT for dolphin (**Action 23**), and preferred minimum size limit (MSL) of 20 in FL for dolphin in **Action 25**.

Alternative	ABC Control Rule	Ex-vessel gross revenues attributed to landings of dolphin ($)
1 (No Action)		$1,582,000
2	ABC = OFL = 13,709,523 lbs ww	$1,467,000
3	ABC = mean = 11,431,682 lbs ww	$1,330,000
3	ABC = mean + 0.5 SD = 12,795,629 lbs ww	$1,404,000
3	ABC = mean + 1 SD = 14,087,576 lbs ww	$1,480,000
3	ABC = mean + 1.5 SD = 15,415,524 lbs ww	$1,546,000
4 (Preferred)	**ABC_{SSC} = 14,596,216 lbs ww**	**$1,504,000**

If **Alternative 1 (No Action)** is chosen, then the baseline estimate of consumer surplus value for recreational dolphin trips is $141,741,000 using willingness-to-pay estimates from the nested logit (NL) model and $51,081,000 using willingness-to-pay estimates from the mixed logit (ML) model (**Table 4-70**).

Alternative 2 sets the ABC equal to the OFL, which leads to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated at $57,151,000 for the NL model and $20,596,000 for the ML model.

Alternative 3 creates a buffer between the ABC and OFL and is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e. increasing the ABC), the potential economic gain to the recreational sector is expected to increase. If ABC = mean + 1.5 SD, the adoption of **Alternative 3** may result in a potential gain of $81,900,000 in consumer surplus for the NL model and a gain of $29,516,000 in economic value to the recreational sector for the ML model. Adoption of **Alternative 3** may result in a gain of $24,105,000 in consumer surplus for the NL model and a gain of $8,687,000 in consumer surplus for the ML model if ABC = mean.

Alternative 4 (Preferred) would specify an ABC for dolphin based on the South Atlantic Council's SSC's ABC control rule. The adoption of **Alternative 4 (Preferred)** may result in a potential gain of as much as $70,014,000 in consumer surplus for the NL model and a potential gain of $25,232,000 in consumer surplus for the ML model.

Table 4-70. Predicted potential economic value to the recreational sector after the establishment of an ABC control rule for dolphin.
Recreational ACL values are based on the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, the preferred ACL formula for dolphin (100% of ABC) in **Action 22**, rec ACT for dolphin (**Action 24**), and preferred minimum size limit (MSL) of 20 in FL in **Action 25**.

Alternative	ABC Control Rule	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 (No Action)		$141,741,000	$51,081,000
2	ABC = OFL = 13,709,523 lbs ww	$198,892,000	$71,677,000
3	ABC = mean = 11,431,682 lbs ww	$165,846,000	$59,768,000
3	ABC = mean + 0.5 SD = 12,795,629 lbs ww	$185,633,000	$66,899,000
3	ABC = mean + 1 SD = 14,087,576 lbs ww	$204,376,000	$73,654,000
3	ABC = mean + 1.5 SD = 15,415,524 lbs ww	$223,642,000	$80,597,000
4 (Preferred)	**ABC_{SSC} = 14,596,216 lbs ww**	**$211,755,000**	**$76,313,000**

4.4.1.3 Social Effects

As with the previous action, setting the biological parameters for harvest thresholds have few direct social effects as they are more indirect from the implementation of the acceptable biological catch and any subsequent reduction. **Alternative 1 (No Action)** does not establish an ABC control rule for dolphin and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur initiating management and rebuilding which might cause more volatility in the fishery which can have negative social effects in both the short term and long term. **Alternative 4 (Preferred)** would use the South Atlantic SSC's control rule. Basing the ABC on the best available science is more likely to have beneficial effects. The combined effect of any of the reductions in harvest levels is likely to have negative social effects, both short term and long term.

4.4.1.4 Administrative Effects

The establishment of an ABC Control Rule is a procedural exercise. The rule is developed by the South Atlantic Council's SSC for consideration by the South Atlantic Council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.4.1.5 Council Conclusions

The SSC's final ABC Control Rule document (**Appendix Q**) states:

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACLs became available during the period that the SSC discussed the ABC Control Rule and helped direct the final version. Although the SSC believes their proposed Control Rule is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P that determines MSY and OFL is considered and incorporated, the Committee recognizes that the rule may require modification in the future as final guidance on MSRA implementation becomes available.*

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation of the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule.

At their April 2011 meeting, the SSC discussed ABC levels for unassessed species in the Comprehensive ACL Amendment:

The SSC discussed the use of standard deviation as a means to adjust ABC above the median landings in the Gulf of Mexico Fishery Management Council's ABC Control Rule. The issue that concerned the group the most was that by using this method the landings-based ABC would be higher with higher uncertainty (i.e., higher variability in landings) and lower with less uncertainty. Additionally, the use of standard deviation could suggest a level of statistical rigor that would not necessarily be there. Using a percentile of the landings values would be a more uniform application that is not as impacted by the variation in the data or landings sampling error. Given 10 years of data, and being consistent with the 75th percentile (25% of the landings value exceed that value) the SSC recommended using the 3rd highest point or the 80th

percentile of the data. This recommendation was integrated into a decision tree developed for landings-only stocks.

The "decision tree" was incorporated into an alternative for the South Atlantic Council's consideration, which was subsequently chosen as the preferred. The South Atlantic Council understands the limitations of the SSC's ABC control rule and is prepared to make adjustments as needed in the future. In particular, the South Atlantic Council is aware of various approaches proposed for situations in which only catch data are available. NOAA released a Technical Memorandum in May 2011— *Calculating Acceptable Biological Catch For Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS)* — that presents various methodologies. The SSC intends to review the information included in this document and revise their ABC control rule as needed. Once the SSC finalizes Level 4 of their ABC control rule, it will be applied to all South Atlantic Council managed stocks. The recommended ABC values in this document, therefore, are considered interim values until the SSC finalizes their ABC control rule.

During their April 2011 meeting, the SSC commented on the decline in dolphin landings post 1999-2000 (or thereabouts). They stated that various factors were likely responsible: FMP effect on commercial fishery, impacts of voluntary bag limit and FMP, and recent environmental conditions and impacts on charter and private industries. Also the Florida longline closure was noted as a possible contributing factor. The SSC stated that biological data for this species reportedly show no trend in length composition. The SSC recommended applying the revised unassessed stocks control rule and setting the ABC at the third highest landings value (1999-2008). This value approximates that resulting from South Atlantic Council guidance at their March 2011 meeting (ABC for dolphin and wahoo should approximate the mean plus one standard deviation). The SSC noted other factors affecting their ABC recommendations for this species: the stock is unassessed, current fishery removals are impacted by management, and no measure of the stock biomass relative to landings exists. An assessment for dolphin is scheduled for 2014.

The Dolphin Wahoo Advisory Panel (AP) supported the South Atlantic Council's preferred alternative for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 4** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.2 Action 21: Specify Allocations for Dolphin

[Note: When considering two sectors (Commercial and Recreational), the Recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (Commercial, Recreational, and For-hire), the Recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Continue to use the allocations for dolphin specified in the Dolphin Wahoo FMP (13% commercial/87% recreational).

Alternative 2. Define allocations for dolphin based upon landings from the accumulative landings system (ALS), MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 7% commercial and 93% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial and 92.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial, 38.4% for-hire, and 54.4% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

4.4.2.1 Biological Effects

Alternative 1 (No Action) was implemented through the Dolphin Wahoo FMP, which established a non-binding allocation of 13% on the commercial harvest and 87% for the recreational harvest in the Atlantic exclusive economic zone (SAFMC 2003a). The Dolphin Wahoo FMP established this allocation as a "soft cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The 13% cap was met in 2009 (**Table 4-71**). The South Atlantic Council's intent was to monitor the fishery and if commercial landings exceeded the non-binding allocation, determine if additional regulations were necessary. Although the recreational landings have historically greatly exceeded the commercial, this action was taken to prevent the potential future expansion of the commercial fishery. Dolphin is predominantly a recreational fishery, and the South Atlantic Council wanted to maintain this structure.

Table 4-71. Annual landings (pounds whole weight) of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction.

Year	Commercial	Private	For-Hire	Total Rec	Total Com	Total	% Com	%Rec
1999	1,046,580	6,157,434	5,208,432	11,365,866	1,046,580	12,412,446	8%	92%
2000	987,623	8,462,750	6,017,689	14,480,440	987,623	15,468,063	6%	94%
2001	764,823	10,006,719	4,420,779	14,427,499	764,823	15,192,322	5%	95%
2002	670,415	6,567,523	7,358,279	13,925,801	670,415	14,596,216	5%	95%
2003	722,921	7,112,286	2,741,572	9,853,858	722,921	10,576,779	7%	93%
2004	856,517	4,452,548	3,779,531	8,232,079	856,517	9,088,596	9%	91%
2005	576,671	4,774,541	4,798,153	9,572,695	576,671	10,149,366	6%	94%
2006	650,004	5,370,256	4,163,860	9,534,116	650,004	10,184,120	6%	94%
2007	967,151	6,300,261	4,136,398	10,436,659	967,151	11,403,810	8%	92%
2008	780,818	4,964,915	3,259,429	8,224,344	780,818	9,005,162	9%	91%
2009	1,135,531	5,672,189	1,844,661	7,516,851	1,135,531	8,652,382	13%	87%

Source: SERO ACL landings database from data provided by SEFSC.

Alternatives 2-4 would modify the allocations specified in the Dolphin Wahoo FMP in favor of the recreational sector. The allocations in **Alternatives 2-4** would essentially be the same. **Alternatives 2 and 3 (Preferred)** would use a different time series of years resulting in allocations of 7% commercial/93% recreational. **Alternative 3 (Preferred)** uses a formula that would equal 50% * average of long catch range (lbs) 1999-2008 + 50% * average of recent catch trend (lbs) 2006-2008 thereby balancing the total time series with more recent data. **Alternative 4**, which uses a similar formula as **Alternative 3 (Preferred)** would divide the recreational component of the catch into for-hire and private recreational sectors.

There is a small difference in the amount of ACL allocated to the commercial and recreational sectors in **Alternatives 1 (No Action)-4** and therefore, very little difference in the biological effects among the alternatives. **Alternative 1 (No Action),** which would maintain the allocation of 13% commercial/87% recreational, could be considered to have a positive biological effect since it allocates a greater proportion of the ABC to the commercial sector. However, as mentioned previously, **Alternative 1 (No Action)** represents a non-binding allocation. Therefore, **Alternative 3 (Preferred)**, which provides the highest binding allocation to the commercial sector, would be considered to have the greatest biological effect. The biological benefits of **Alternatives 2** and **4** would be slightly less than **Alternative 3 (Preferred)**. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the recreational catch estimates.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely to adversely affect *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-4** are unclear. If the sector allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.4.2.2 Economic Effects

Under **Alternative 1 (No Action)**, assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,582,000. This figure assumes the preferred ACL for dolphin of 14,596,216 lbs ww in **Action 22**. The remaining alternatives would reduce the commercial allocation from 13% to 7% under **Alternative 2** and 7.3% under **Alternative 3 (Preferred)** and **Alternative 4**. The predicted loss in gross revenue due to a 43.8% reduction (i.e., 13% to 7.3%) in allocation as defined by **Alternative 3 (Preferred)** is $78,000 (as well as **Alternative 4**).

Note that this is the same loss associated with establishing the preferred ABC Control Rule in **Action 20**. This is because the simulation model uses the five-year average to estimate future revenue. The largest amount that the industry can earn based on historical data and given the preferred alternatives in the other actions is $1,582,000. However, commercial landings of dolphin by pelagic longliners increased markedly during 2008-2009; therefore, future foregone revenue (i.e., losses) based on the most recent levels of fishing effort would be larger than those currently predicted by the simulation model using data from 2005-2009. The predicted loss in gross revenue due to a 46.2% reduction (i.e., 13% to 7%) in allocation as defined by **Alternative 2** is $105,000.

Table 4-72. Predicted ex-vessel gross revenues attributed to landings of dolphin after the establishment of sector allocations.
Commercial ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22**, no commercial sector ACT for dolphin (**Action 23**), and the preferred minimum size limit (MSL) of 20 in FL for dolphin in **Action 25**.

Alternative	Sector Allocation	Ex-vessel gross revenues attributed to landings of dolphin ($)
1 (No Action)	Comm.=13%; Rec.=87%	$1,582,000
2	Comm.=7%; Rec.=93%	$1,477,000
3 (Preferred)	**Comm.=7.3%; Rec.=92.7%**	**$1,504,000**
4	Comm.=7.3%; FH=38.4%; Rec.=54.4%	$1,504,000

Under **Alternative 1 (No Action)**, and assuming the sector allocation remains the same as defined in the Dolphin Wahoo FMP, then the baseline estimate of consumer surplus value for recreational dolphin trips is $198,735,000 using willingness-to-pay estimates from the nested logit (NL) model and $71,621,000 using willingness-to-pay estimates from the mixed logit (ML) model (**Table 4-73**). This figure assumes the preferred ACL for dolphin of 14,596,216 lbs ww in **Action 22**. The remaining alternatives would increase the recreational allocation from 87% to 93% (**Alternative 2**) and 92.7% (**Alternatives 3 (Preferred)** and **4**). **Alternative 4** allocates 41.4% of the recreational allowance to the for-hire sector and 58.7% to the private recreational sector.

The predicted potential gain in aggregate economic value to the recreational sector due to a 6.6% increase (i.e., 87% to 92.7%) in allocation as defined by **Alternative 3 (Preferred)** is $13,021,000 for the NL model and $4,692,000 for the ML model. Using the same willingness-to-pay estimates the allocation between the for-hire and private recreational sectors described in **Alternative 4** results in consumer surplus totals of $87,717,000 and $124,266,000, respectively, for the NL model and $31,612,000 and $44,784,000, respectively, for the ML model. An estimate of willingness-to-pay for one additional pound of coastal migratory pelagic (e.g., dolphin) caught and kept per for-hire trip in North Carolina is $6.73 (Dumas et al. 2009). Using this estimate total consumer surplus to the for-hire sector is estimated at $37,721,000 under the allocation rule in **Alternative 4**. Using the estimates from Haab et al. (2009) the predicted gain in aggregate economic value to the recreational sector due to a 6.9% increase (i.e., 87% to 93%)

in allocation as defined by **Alternative 2** is $13,706,000 for the NL model and $4,939,000 for the ML model.

Table 4-73. Predicted potential economic value to the recreational sector after the establishment of sector allocations for dolphin.
Recreational ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22**.

Alternative	Sector Allocation	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 (No Action)	Comm.=13%; Rec.=87%	$198,735,000	$71,621,000
2	Comm.=7%; Rec.=93%	$212,441,000	$76,560,000
3 (Preferred)	**Comm.=7.3%; Rec.=92.7%**	**$211,755,000**	**$76,313,000**
4	Comm.=7.3%; FH=38.4%; Rec.=54.4%	FH-$87,717,000 Rec.-$124,266,000	FH-$31,612,000 Rec.-$44,784,000

4.4.2.3 Social Effects

Sector allocations exist for the recreational and commercial sectors already, **Alternative 1 (No Action)** would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue if a closure were to occur. With **Alternative 2** there would be a decrease in the commercial allocation, which could have some negative social effects, especially if other actions further decreased the harvest thresholds. **Alternative 3 (Preferred)** would also decrease the commercial allocation from the present level. In **Alternative 4**, the recreational sector allocation is further divided into the private and for-hire sectors, which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed and there has been some resistance to further separating the recreational allocation. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains.

4.4.2.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations of 13% recreational and 87% commercial. Under any of the proposed alternatives, administrative impacts will occur as allocations will need to be monitored and enforced to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. The administrative impact associated with the proposed alternatives is expected to be similar to the administrative impacts under **Alternative 1 (No Action).** None of the action alternatives are expected to increase the administrative impacts relative to the others.

4.4.2.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries managers have a fairly good handle on life histories and ecosystem interactions from the biological component, there are difficulties in coming to terms on the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources since it considers past and present participation, and has chosen to apply it to many of its managed fisheries. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Alternative 3** as their preferred approach to establish allocations for dolphin.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Dolphin Wahoo Advisory Panel (AP) reviewed the alternatives under this action during their April 2011 meeting and recommended an allocation of 90% recreational and 10% commercial. The South Atlantic Council discussed the Dolphin Wahoo AP's recommendation during their June 2011 meeting but chose to remain consistent with the approach that has been used to specify sector allocations for other managed species.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 3 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of the maximum sustainable yield (MSY) (between 14.1 and 34.9 million lbs).

Alternative 2 (Preferred). ACL = OY =ABC (currently estimated to be 14,596,216 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 12,406,784 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 10,947,162 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 9,487,540 lbs ww).

Discussion

The Dolphin Wahoo FMP (SAFMC 2003a) established what is called a "soft cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The wording is as follows:

> **ACTION 12**. Establish a cap of 1.5 million lbs or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the South Atlantic Council will review the data and evaluate the need for additional regulations, which may be established through the framework.

The Dolphin Wahoo AP initially discussed adding an alternative that would set ACL equal to 65%, 75%, or 85% of 46.5 million lbs (the top end of the current MSY range). The AP could not provide an ACL recommendation at this time given the problems with the landings data. The AP did recommend the South Atlantic Council examine a regional approach to allocating the quotas.

4.4.3.1 Biological Effects

Alternatives 2 (Preferred)-5 would set the OY equal to the ACL or some percentage of the ACL. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The NS1 guidelines discuss the relationship between OFL and MSY and ACT (ACL) and OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the OFL is unknown for dolphin, the South Atlantic Council's SSC has established an ABC control that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed OFL level. Setting OY equal to ACL would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above B_{MSY}.

Alternative 1 (No Action), would retain the current regulations established for dolphin, which includes a "soft cap" for the commercial sector of 1.5 million lbs or 13% of total landings, whichever is greater. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACLs, ACTs, and AMs in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing does not occur. Therefore ACLs are in place for dolphin in the form of a soft total allowable catch. However, the South Atlantic Council's SSC has recommended an ABC based on its ABC control rule and this document provides alternatives for ABC. **Alternatives 2 (Preferred)-5** would set the ACL based on the South Atlantic Council's choice of ABC. Therefore, retention of the status quo ACL may not be an appropriate option.

Alternative 3 would set the ACL =OY= 85% of the ABC. The ABC recommended by the South Atlantic Council's SSC is 14,596,216 lbs whole weight. Based on the preferred allocation alternatives in **Action 21**, 7.3% (1,065,524 lbs whole weight) of the ACL would be allocated to the commercial sector and 92.7% (13,530,692 lbs whole weight) of the ACL would be allocated to the recreational sector (**Table 4-74**).

Alternative 3 would have a greater positive biological effect than **Alternative 2 (Preferred)**, because it would create a buffer between the ACL and ABC. **Alternatives 4-5** would have a greater positive biological effect than **Alternative 3,** because they would create a larger buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. The ACLs under each alternative, based on the South Atlantic Council's preferred ABC control rule are provided in **Table 4-74**. Creating a buffer between the ACL and ABC would provide a greater assurance of preventing overfishing by accounting for scientific uncertainty. Setting a buffer between the ACL and ACT would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur. **Action 24** includes a preferred alternative to establish ACTs for the recreational sector.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely to adversely affect *Acropora* species. **Alternatives 2 (Preferred)-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2 (Preferred)-5** will likely be beneficial. Since the ACLs and OYs being

considered are less than the current range of OY for dolphin, **Alternatives 2 (Preferred)-5** are likely to reduce the overall amount of effort targeting dolphin. This decrease will likely reduce the likelihood of interactions between the fishery, sea turtles, and smalltooth sawfish. As the proposed ACLs and OYs decrease, the biological benefits to sea turtles and smalltooth sawfish will likely increase.

Table 4-74. ACL formula, ACL, and OY values (lbs whole weight) for dolphin under **Alternatives 2-5**.
Commercial and recreational ACL values are based on preferred allocation alternative (7.3% commercial/92.7% recreational) in **Action 21**.

Alternative	ACL Formula	ACL value	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**14,596,216**	**1,065,524**	**13,530,692**
Alternative 3	85% ABC	12,406,784	905,695	11,501,089
Alternative 4	75% ABC	10,947,162	799,143	10,148,019
Alternative 5	65% ABC	9,487,540	692,590	8,794,950

4.4.3.2 Economic Effects

Under **Alternative 1 (No Action)**, gross revenue derived from dolphin landings is predicted to total $1,582,000 (**Table 4-75**). This alternative is expected to generate the least dislocation in the short term, but will also likely generate the smallest long-term economic benefits relative to other alternatives. **Alternative 2 (Preferred)** sets the ACL/OY equal to the ABC, which leads to a short-term reduction in landings and gross revenue relative to **Alternative 1 (No Action)**. The annual short-term loss to the commercial sector was estimated at $78,000. The other alternatives create a buffer between the ACL and the ABC. **Table 4-75** shows that the greater the buffer, the greater the short-term forgone gross revenue. The adoption of **Alternative 3** is expected to result in a loss of $191,000 in gross revenue; whereas, the adoption of **Alternative 4** and **Alternative 5** are anticipated to result in $281,000 and $385,000 in forgone gross revenue, respectively.

Table 4-75. Predicted ex-vessel gross revenue attributed to commercial landings of dolphin for different ACL formulas.
Commercial ACL values are based on the preferred ABC for dolphin (14,596,216 lbs ww) in **Action 20**, the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, no commercial sector ACT for dolphin (**Action 23**), and the preferred MSL of 20 in FL for dolphin in **Action 25**.

Alternative	ACL Formula	Ex-vessel revenue attributed to commercial landings of dolphin
1 (No Action)	No ACL	$1,582,000
2 (Preferred)	**ACL=ABC**	**$1,504,000**
3	ACL=85% of ABC	$1,391,000
4	ACL=75% of ABC	$1,301,000
5	ACL=65% of ABC	$1,197,000

Table 4-76. Predicted potential economic value to the recreational sector for different ACL formulas for dolphin.
Recreational ACL values are based on the preferred ABC for dolphin (14,596,216 lbs ww) in **Action 20** and the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**.

Alternative	ACL Formula	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 (No Action)	No ACL	$141,741,000	$51,081,000
2 (Preferred)	**ACL=ABC**	**$211,755,000**	**$76,313,000**
3	ACL=85% of ABC	$179,992,000	$64,866,000
4	ACL=75% of ABC	$158,816,000	$57,235,000
5	ACL=65% of ABC	$137,641,000	$49,604,000

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational dolphin trips is $141,741,000 using willingness-to-pay estimates from the nested logit (NL) model and $51,081,000 using willingness-to-pay estimates from the mixed logit (ML) model (**Table 4-76**). **Alternative 2 (Preferred)** sets the ACL equal to the ABC, which leads to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated at $70,014,000 for the NL model and $25,232,000 for the ML model.

Alternative 3 creates a buffer between the ACL and the ABC. **Table 4-76** shows that the greater the buffer, the lower the estimate of aggregate consumer surplus. The adoption of **Alternative 3** is expected to result in a gain of $38,251,000 in consumer surplus for the NL model and a gain of $13,785,000 in consumer surplus for the ML model. **Alternative 4** is expected to result in a gain of $17,075,000 in consumer surplus for the NL model and a gain of $6,154,000 in consumer surplus for the ML model. However, the adoption of **Alternative 5** is anticipated to result in a loss of $4,100,000 in consumer surplus for the NL model and a loss of $1,477,000 in economic value to the recreational sector for the ML model.

4.4.3.3 Social Effects

Establishing an ACL for dolphin will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternatives 1 (No Action**), **2 (Preferred)**, **3**, or **4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. Under **Alternative 1 (No Action)** there would likely be few direct social effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. **Alternative 3** would be less restrictive than the **Alternatives 4 and 5** and more restrictive than **Alternative 1**

(No Action). In choosing **Alternative 2 (Preferred)** there may be fewer negative social effects as any further buffers imposed would not be on top of a previous buffer between ABC and ACL.

4.4.3.4 Administrative Effects

The specification of ACL/OY is a procedural exercise. Although ACL/OY can have implications on management actions, no specific management actions are required through the specification of ACL/OY. The administrative impacts of specifying ACL/OY are minimal and would not differ much between the proposed alternatives.

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and AMs would likely increase. Other administrative burdens that may result from any of the action alternatives would take the form of development and dissemination of outreach and education materials for fishery participants.

4.4.3.5 Council Conclusions

The OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment (dolphin included), however, the South Atlantic Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 23** and **24** for dolphin). Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved.

The Dolphin Wahoo Advisory Panel (AP) recommended the South Atlantic Council chose **Alternative 2** as their preferred.

The South Atlantic Council's SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2** (**Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred

alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.4 Action 23: Establish Accountability Measures for the Commercial Sector for Dolphin

Alternative 1 (No Action). Do not specify commercial sector ACTs or AMs for dolphin. There is no hard quota for dolphin and there are no AMs in place for dolphin.

Alternative 2. Specify commercial sector ACTs for dolphin.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Table 4-77. The commercial sector ACT for each of the alternatives.
Values are in lbs gutted weight.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Subalt. 2a (Preferred); No ACT	ACT Subalt. 2b; ACT=90%(ACL)	ACT Subalt. 2c; ACT=80%(ACL)
Dolphin	1,065,524	N/A	958,972	852,419

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

4.4.4.1 Biological Effects

Currently, there are only size limits, trip limits, and bag limits in place to restrict harvest of dolphin in the South Atlantic. There is no hard quota that would trigger the fishery to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the South Atlantic Council's choice of ACL or ACT for the fishery. As is the case for many fisheries, accurate in-season monitoring of ACTs and ACLs for the purposes of triggering AMs when needed can be very difficult. The challenges associated with monitoring in-season harvest often lead to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded.

Overall, the most biologically conservative approach to specifying AMs for dolphin would be to establish in-season and post-season AMs. By establishing both types of AMs, exceeding the ACL or ACT could be avoided, provided adequate in-season monitoring is possible, and an additional backstop would exist if the ACL or ACT should be exceeded despite the in-season controls.

Establishing an ACT **(Alternative 2)** for the commercial sector would be somewhat more straight-forward than for the recreational sector since all commercial landings of dolphin are reported through dealer trip tickets, which can be used to monitor in-season harvest. Therefore, projections of when the ACT would likely be met, or estimates of by how much an ACT is exceeded, would be more reliable than for the recreational sector. A higher degree of harvest projection accuracy would reduce the risk of AMs being triggered too soon or too late. Under this action the most biologically beneficial ACT alternative would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL. **Alternative 3 (Preferred)** would remove the incentive to target dolphin on commercial trips since all purchase and sale would be prohibited once the ACL is met. This alternative would also still allow some level of harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the dolphin stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of dolphin.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting dolphin for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.4.4.2 Economic Effects

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,504,000. This figure corresponds to the amount of industry revenue predicted under the preferred alternatives in

Actions 20-22. If the South Atlantic Council would have specified a commercial sector ACT, then the commercial sector would have forgone gross revenue in the future, if management measures enforcing the ACT are implemented, ranging from $83,000 for **Subalternative 2b** to $161,000 for **Subalternative 2c** due to specification of the ACT (**Table 4-78**).

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run, but still be bound by the figures in **Table 4-76**, since this alternative is intended to prevent the commercial sector from harvesting dolphin in quantities exceeding the ACL. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector or implementing post-season AMs that are meant to correct for an ACL overage. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could adversely affect the stock.

Alternative 4 calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative would likely generate adverse short-term economic effects (i.e., lower short-term gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk of overfishing. The extent of these adverse short-term economic effects is unknown at this time since the probability the ACL for each species will be exceeded is unknown.

Table 4-78. Predicted ex-vessel gross revenue attributed to commercial landings of dolphin for different ACT formulas.
Commercial ACL values are based on the preferred ACL for dolphin (1,065,524 lbs ww) in **Action 22**, the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, and the preferred minimum size limit (MSL) of 20 in FL for dolphin in **Action 25**.

Subalternative	ACT Formula	Ex-vessel gross revenue attributed to commercial landings of dolphin ($)
1 and **2a (Preferred)**	**No ACT**	**$1,504,000**
2b	90% ACL	$1,421,000
2c	80% ACL	$1,343,000

4.4.4.3 Social Effects

There would likely be few negative social effects from the **Alternative 1 (No Action)** as no further reductions in harvest would be implemented either through a lower ACT threshold or AMs. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** would impose reductions of 90% of ACL and 80% of ACL, respectively. In both cases the reductions

could impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season. Because dolphin are a fast growing fish, it may not be necessary to impose any payback as this species has a very short lifespan which means those fish that are not caught may not provide the additional payback to the stock.

4.4.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs (**Alternative 2** and associated subalternatives) alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. The need for enforcement and monitoring of AMs would also increase the administrative burden. However, **Alternative 3 (Preferred)** and **Alternative 4** would be expected to have similar administrative impacts.

4.4.4.5 Council Conclusions

Annual Catch Targets (ACTs) refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial component of the dolphin fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT (**Subalternative 2a, Preferred**). Quota monitoring in the commercial fishery and the AMs the Council is proposing to implement through this amendment (see below), are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of dolphin in quantities exceeding the ACL, and thus provide a disincentive to target the species once the ACL has been reached. After the ACL has been met, then all harvest would be limited to the recreational bag limit. The South Atlantic Council saw no need to put in place measures to correct for an ACL overage post-season. The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Dolphin Wahoo Advisory Panel (AP) did not support the South Atlantic Council's preferred approach to setting commercial AMs for dolphin. Instead, the Dolphin Wahoo AP recommended developing a method of notifying the sector (commercial, for-hire, and private recreational) when 90% of their quota is being met.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.5 Action 24: Establish Accountability Measures for the Recreational Sector for Dolphin

Alternative 1 (No Action). Do not specify new recreational AMs for dolphin.

Decision 1. Specify an ACT?

Subalternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 3-year average (7.0).

Table 4-79. Percent Standard Errors (PSEs) for dolphin from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Dolphin	8.5	7.6	26.6	16.4	17.5	15.6	9.9	14.3	17.2

Note: The South Atlantic Council decided to use the 3-year average PSE because this better represented recent catches than the 5-year average.

Table 4-80. The recreational ACT for dolphin for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 5a; ACT=85%(ACL)	ACT Subalt. 5b; ACT=75%(ACL)	ACT Subalt. 5c; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Dolphin	13,530,692	11,501,088	10,148,019	11,595,803

Average recreational landings for 2005-2009 from **Table 4-71** = 9,056,933 lbs ww.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.

Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.

Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]

Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:

[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.

[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For

2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing season by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. *Reduce bag limit.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

4.4.5.1 Biological Effects

Alternative 1 (No Action) would not specify recreational AMs for dolphin and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in **Action 22**. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL (**Tables 4-79** and **4-80**). **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater (**Tables 4-79** and **4-80**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-79**) in **Subalternative 2d**, more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three-year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternatives 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have been regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose to not have an in-season AM for the recreational sector as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after the end of a two-month wave. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h** there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season (**Subalternative 5f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under

these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting dolphin for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.4.5.2 Economic Effects

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus for recreational dolphin trips is $211,755,000 using willingness-to-pay estimates from the nested logit (NL) model and $76,313,000 using willingness-to-pay estimates from the mixed logit (ML) model. Since the South Atlantic Council specified a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to a potential marginal decrease in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)** and **Subalternative 2a**. The potential annual short-term loss to the recreational sector was estimated at $31,763,000 for the NL model and $11,447,000 for the ML model. **Subalternative 2d (Preferred)** leads to the most loss in consumer surplus resulting in potential annual short-term loss to the recreational sector of $57,502,000 for the NL model and $20,723,000 for the ML model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Table 4-81. Predicted potential economic value to the recreational sector for different ACT formulas for dolphin.
Recreational ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22** and the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**.

Subalternative	ACT Formula	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (NL)	Consumer Surplus (WTP) Value of Recreational Dolphin Trips – Haab et al (ML)
1 and 2a	No ACT	$211,755,000	$76,313,000
2b	85% ACL	$179,992,000	$64,866,000
2c	75% ACL	$158,816,000	$57,235,000
2d (Preferred)	**ACT equals [sector ACL *(1-PSE)] or [ACL*0.5], whichever is greater**	**$154,253,000**	**$55,590,000**

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)-3e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Subalternative 3e**. Assuming these same relative probabilities apply to dolphin, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternatives 3c** and **3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AMs and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due to inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternatives 5d (Preferred)** and **5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5e** are expected to be less than under **Subalternative 5d (Preferred)** in the short term.

Under **Subalternatives 5f** and **5g**, a post-season AM (i.e., reducing the length of the fishing season or the bag limit) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c, 5d (Preferred)**, and **5e.** Because the probability that a post-season AM will be required is greater under **Subalternatives 5f** and **5g** relative to **Subalternatives 5c, 5d (Preferred)**, and **5e**, the expected adverse indirect economic effects resulting from **Subalternatives 5f** and **5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred)**, and **5e** in the short-term. Since economic welfare in the

recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5f** are expected to be greater than under **Subalternative 5g (Preferred)** in the short term**.**

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternative 5f** or **Subalternative 5g**. The payback that would be implemented under **Subalternative 5h** would further assist with protecting the stock whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year and **Subalternative 5g** alone would not since it reduces the bag limit rather than recreational sector ACL in the following year.

4.4.5.3 Social Effects

Alternative 1 (No Action) would not establish ACTs or AMs for dolphin recreational sector which may have few negative social effects as there are measures in place through previous management actions. No ACT would be established through **Subalternative 2a**, which may not have any negative social effects through further harvest reductions. **Subalternatives 2b-2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is less restrictive than **Subalternatives 2b** and **2c**.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Subalternative 4a (Preferred)** which would not specify an in-season AM which could have beneficial social effects as there would be no closure when the ACL is projected to be met as there is in **Subalternative 4b**.

Post-season accountability measures are considered under **Alternative 5** with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures through post-season measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and would likely have fewer

negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended through such action. Again, depending upon the alternative chosen, the combination with other actions can have a compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5h** payback would reduce the next year's ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.4.5.4 Administrative Effects

Under **Action 24**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. Recreational data collection can be more administratively burdensome due to time delay and lengthy review. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This action, like **Alternative 5** (and associated subalternatives) to specify the post-season AM will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts.

4.4.5.5 Council Conclusions

The South Atlantic Council used a four-step approach to assess the AM alternatives for the recreational sector. First, the South Atlantic Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the

actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action. Second, the South Atlantic Council determined the approach to decide whether or not an ACL overage has occurred. Next, the South Atlantic Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decided whether or not post-season AMs should be used to correct for ACL overages and/or prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The South Atlantic Council reasoned that the level of management uncertainty for the recreational component of the dolphin fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would further account for uncertainty in the recreational estimates. Hence the South Atlantic Council concluded that **Subalternative 2d (Preferred)**, best met the need to account for management uncertainty in the recreational dolphin fishery. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in a particular fishery.

The South Atlantic Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings were greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings were greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the South Atlantic Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**). The South Atlantic Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the recreational landings, the South Atlantic Council chose not to implement in-season AMs (**Subalternative 4a, Preferred**). In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data after each two-month wave. There would likely be considerable uncertainty in imposing in-season AMs for the recreational sector. Therefore, the South Atlantic Council chose to focus on post-season AMs for the recreational sector. **Alternative 5** and its subalternatives specify methodologies for specifying post-season AMs that would be implemented if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Dolphin Wahoo Advisory Panel (AP) did not support the South Atlantic Council's preferred alternatives for recreational AMs. Instead, the Dolphin Wahoo AP recommended that the South Atlantic Council modify their proposed approach to only adjust bag limits and deduct overages if the total ACL (commercial and recreational) is exceeded. The South Atlantic Council discussed this approach during their June 2011 meeting. However, given that this was not among the alternatives that had been analyzed, the South Atlantic Council could not consider it. However, the South Atlantic Council intends to evaluate this approach further and determine its applicability.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.4.6 Action 25: Establish Management Measures for Dolphin

Note: The South Atlantic Council's preferred recreational ACT does not require a reduction in harvest based on 2005-2009 average recreational catch; in fact, the average catch (9,056,933 lbs whole weight; 2005-2009) is 22% below the recreational ACT (11,595,803 lbs whole weight; **Table 4-82**). The commercial sector will be closed when the commercial ACL is met or projected to be met.

Alternative 1 (No Action). Retain current management regulations.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught dolphin in or from the Atlantic EEZ is prohibited. For-hire vessels possessing the necessary state and federal commercial permits can sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
- Commercial soft cap of 1.5 million lbs or 13% of total landings, whichever is greater.
- Recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Bag limit of 10 dolphin per paying passenger on headboats.
- Minimum size limit for dolphin of 20 inches fork length off Florida and Georgia, and no minimum size limit north of Georgia. Note: Florida regulations require a minimum size limit of 20 inches fork length; a 10 fish per person bag limit with a 60 fish boat limit; and a saltwater products license, a restricted species endorsement, and a federal commercial vessel permit to sell dolphin, exceed the10-fish bag limit, or exceed 60 per vessel per day statewide.
- Vessel permits and operator permits are required for commercial and for-hire sectors.
- Allowable gear is specified.
- For a commercial permitted vessel fishing north of 39°N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2 (Preferred). Prohibit bag limit sales of dolphin from for-hire vessels.
Note: It is the South Atlantic Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode.

Alternative 3 (Preferred). Establish a minimum size limit of 20 inches fork length from Florida through South Carolina.

Alternative 4. Establish a minimum size limit of 20 inches fork length from Florida through New England.

Alternative 5. Increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length.

Alternative 6. Reduce the boat limit (e.g. reduce by 1/3). Note: this applies only to charterboats and recreational vessels, not headboats.

Subalternative 6a. Reduce the boat limit by 25%.

Subalternative 6b. Reduce the boat limit by 33%.
Subalternative 6c. Reduce the boat limit by 50%.

Alternative 7. Consider a series of trip limits for the commercial fishery (e.g., 4,000 lbs with alternatives higher and lower).

Subalternative 7a. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.
Subalternative 7b. Establish a 5,000 pound trip limit.
Subalternative 7c. Establish a 4,000 pound trip limit.
Subalternative 7d. Establish a 3,000 pound trip limit.
Subalternative 7e. Establish a 2,000 pound trip limit.
Subalternative 7f. Establish a 1,000 pound trip limit.

Alternative 8. Reduce the recreational bag limit to 9 dolphin per person.

Table 4-82. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

						Formula	%Recreational Reduction from various time periods		
Dolphin	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL(7.3%)**	**Rec ACL(92.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**
SSC ABC Control Rule	Unknown	14,596,216	14,596,216	1,065,524	13,530,692	11,595,803	-22%	-23%	-23%
GMFMC Tier 3a*	16,743,471	15,415,524	15,415,524	1,125,333	14,290,191	12,246,693	-26%	-27%	-27%
Mean + 1.0 Std.Dev.		14,087,576	14,087,576	1,028,393	13,059,183	11,191,720	-19%	-20%	-20%
Mean + 0.5 Std.Dev.		12,759,629	12,759,629	931,453	11,828,176	10,136,747	-11%	-12%	-12%
Mean		11,431,682	11,431,682	834,513	10,597,169	9,081,774	0%	-2%	-2%
Average landings for time period from **Table 4-71**.							9,056,933	8,927,993	8,919,457

*GMFMC Tier 3a OFL = mean + 2.0 Std.Dev.; ABC = mean + 1.5 Std.Dev.

4.4.6.1 Biological Effects

Alternative 1 (No Action) would retain the current regulations for dolphin. These regulations include: A "soft cap" on the commercial sector, which requires a review of the data and a determination whether action is necessary but does not close the fishery; a prohibition on the sale of recreationally caught dolphin in or from the Atlantic EEZ except for for-hire vessels that possess the necessary state and federal commercial permits; a 10 fish per day bag limit for dolphin, which cannot exceed 60 dolphin per boat per day, except on headboats; and a 20 inch fork length (FL) minimum size limit off Florida and Georgia. There is no minimum size limit north of Georgia.

Prager (2000) conducted the first comprehensive exploratory stock assessment for dolphin based on landings from the U.S. Atlantic and Gulf of Mexico. In the South Atlantic, dolphin is not overfished and is not experiencing overfishing. Dolphin grow very rapidly attaining 40 lbs in 12 months and reach sexual maturity by 3 to 4 months of age. They spawn intermittently year-round throughout their 4-year life span. The life history of dolphin and estimates generated by Prager (2000) suggest the species may be able to withstand a relatively high rate of exploitation.

Dolphin is neither overfished nor experiencing overfishing, and average catch in recent years is less than the South Atlantic Council's preferred alternatives for recreational ACL and ACT specified in **Actions 23** and **24**. At their April 2011 meeting, the South Atlantic Council's SSC indicated OFL is unknown for dolphin and recommended an ABC = 14,596,216 lbs whole weight based on their ABC control rule. Based on average data from 1999-2009 or 2005-2009, the commercial ACL of 1,065,524 lbs whole weight would not be met and a commercial closure would not occur. However, commercial catches in 2009 (**Table 4-71**) were slightly above the commercial ACL. For the recreational sector, no reduction in average 2005-2009 recreational landings (9,056,933 lbs whole weight) would be needed to ensure the recreational ACT (**Action 24**) was not exceeded (ACT = 11,595,803 lbs whole weight) (**Table 4-82**). The AMs under **Actions 23** and **24** include alternatives such as closing the sector when landings approach an ACL to ensure overfishing does not occur. The South Atlantic Council is considering additional management measures in this section that would reduce the chance ACLs are exceeded and perhaps prevent seasonal closures.

Alternatives 2-8 would all be expected to have positive biological effects. **Alternative 2 (Preferred)** would prohibit bag limit sales of dolphin from for-hire vessels. Currently, for-hire fishermen who possess the necessary state and federal permits can sell bag limit quantities of dolphin. With the possibility of more restrictive catch limits for dolphin being imposed on recreational and commercial fishermen, the South Atlantic Council is concerned that when for-hire fishermen sell their catch to dealers, catch will be counted toward the commercial quota resulting in early filling of commercial ACL. In addition, sales of bag limit fish may result in double counting if catches are reported through the MRFSS/MRIP and through commercial dealers. Therefore, the South Atlantic Council is considering an alternative to prohibit the sale of bag limit caught dolphin from for-hire vessels. The intent of this action is to ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.

Alternative 3 (Preferred) would establish a minimum size limit of 20 inches FL from Florida through South Carolina. The current minimum size limit is 20 inches FL off Florida and Georgia but there is not a minimum size limit north of Georgia. Among sectors, the average size of dolphin landed by state is smallest for headboat fishermen. Among states, the average size of dolphin landed is largest for South Carolina. Length data are not available for all sectors north of North Carolina (**Table 4-83**)

Table 4-83. Average size (inches FL) of dolphin landed by state during 2004-2008.

State	Comm	HB	Private	Charter
FL	28.2	23.4	26.6	26.8
GA*	28.9	28.2	-	26.6
SC	33.7	27.5	31.0	32.0
NC	27.9	24.1	28.4	29.1
VA	-	-	-	25.4
MD	-	-	33.2	22.5
DE	-	-	21.7	26.3
NJ	-	-	18.4	22.5
NY	-	-	22.8	-

*GA data are confidential for HB. GA are expressed as GA and North Florida for headboat.

A small percentage of dolphin less than 20 inches FL are landed in South Carolina (**Table 4-84**). Based on the proportion of landings in the different sectors, establishing a 20-inch FL minimum size limit for dolphin landed in South Carolina would be expected to reduce total harvest of dolphin by 1.4%. The overall reduction in total kill would be less when release mortality is considered. There are currently no estimates of release mortality for dolphin. However, since dolphin are caught at the surface, release mortality would likely be low and a function of hooking injuries and effects of handling when removing the hook.

Table 4-84. Percentage of dolphin less than 20 inches FL for Florida, Georgia, South Carolina, and North Carolina during 2004-2008.
Length data are not available for areas north of North Carolina for all sectors.

State	Comm	HB	Private	Charter
FL	3.06%	14.04%	7.24%	5.37%
GA*	0.00%	0.00%	0.00%	5.26%
SC	1.07%	8.70%	0.00%	5.06%
NC	10.87%	16.07%	3.96%	2.85%
total	5.66%	13.19%	6.07%	3.26%

*GA data are confidential for HB. GA are expressed as GA and North Florida for headboat.

Alternative 4 would increase the minimum size limit for Florida through New England to 20 inches FL. Data are not available for areas north of North Carolina for all sectors and a 20-inch FL size limit is already in place for Florida and Georgia. Establishing a 20-inch FL size limit for dolphin in South Carolina and North Carolina would be expected to reduce harvest of dolphin by about 5% (**Table 4-85a**). A minimum size limit of 21 inches FL would provide about a 14% reduction in harvest. No reduction is needed based on average recreational landings during 2005-2009.

Table 4-85a. Reduction in harvest provided by establishing a minimum size limit in South Carolina and North Carolina of 20 inches FL or greater based on data from 2004-2008.

Sector	20 inch limit	21 inch limit	22 inch limit	23 inch limit	24 inch limit
Comm	11.23	15.78	20.69	25.53	28.66
Headboat	15.11	21.58	25.90	30.22	33.09
Private	5.84	14.81	21.69	31.56	34.55
Charter	4.56	10.85	17.13	27.73	32.73
All sectors	5.39	14.11	21.43	32.98	37.98
Rec sector	4.98	12.03	18.46	28.82	33.25

Alternative 5 would increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches FL. Among all sectors combined, an increase in the minimum size limit from 20 inches FL to 22 inches FL would be expected to reduce harvest by about 17% (**Table 4-85b**) and would provide more than needed to ensure the recreational ACT would not be exceeded. This value assumes the same amount of non-compliance with the size limit would continue with a change in the minimum size limit. Increasing the minimum size limit to 24 inches FL would be expected to provide a 35% reduction in harvest among all sectors off of Florida and Georgia and therefore would have a greater biological effect than increasing the size limit to 22 inches FL.

Table 4-85b. Reduction in harvest provided by increasing the minimum size limit for dolphin in Florida and Georgia from 20 inches FL based on data from 2004-2008.
Analyses take into consideration non-compliance with the 20-inch FL minimum size limit.

Sector	21 inch limit	22 inch limit	23 inch limit	24 inch limit
Comm	5.43	12.05	18.83	24.74
Headboat	9.88	19.73	28.38	36.31
Private	7.94	17.24	26.37	35.97
Charter	7.96	17.01	26.49	36.13
All sectors	7.72	16.75	25.70	34.96
Rec sector	7.94	17.19	26.35	35.94

Alternative 6 would reduce the boat limit for private and charter recreational fishermen from a maximum of 60 fish per vessel to a maximum of 45 fish per vessel in **Subalternative 6a**, 40 fish per vessel in **Subalternative 6b**, and 30 fish in **Subalternative 6c**. Proposed reductions in the vessel limit would reduce harvest of dolphin by 6% to 18% (**Table 4-86**).

Table 4-86. Reduction in harvest of dolphin for Atlantic states provided by a reduction in the vessel limit.

	Charter	Private	All
Vessel limit	Reduction	Reduction	Reduction
50	3.88	0	3.14
45	7.39	0	5.99
40	10.85	0	8.80
35	16.91	0.12	13.74
30	22.4	0.4	18.24
25	29.67	1.06	24.27
20	37.4	2.29	30.77
15	46.94	4.57	38.94
10	57.73	9.29	48.58
9	60.54	11.24	51.23
8	63.29	13.41	53.87
7	66.31	16.2	56.84
6	69.5	19.68	60.09
5	72.99	24.09	63.76
4	76.78	29.68	67.88
3	81.07	37.06	72.76
2	86.04	48	78.86
1	92.01	65.68	87.03

Alternative 7 would establish a commercial trip limit for dolphin. **Subalternative 7a** would establish a 3,000 pound trip limit for dolphin north of 31° N. latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia). A 3,000 pound gutted weight trip limit would be expected to reduce harvest north of 31° N. latitude by about 3.6% (**Table 4-87**), and a 1,000 pound gutted weight trip limit would

reduce harvest of dolphin by about 31% for areas south of 31° N. Latitude (**Table 4-88**). **Subalternatives 7b-7f** would establish a trip limit for dolphin throughout the South Atlantic ranging from 5,000 lbs gutted weight (**Subalternative 7b**) to 1,000 lbs (**Subalternative 7f**). The trip limit of 5,000 lbs gutted weight proposed in **Subalternative 7b** would do little to reduce harvest of dolphin (**Table 4-88**). The greatest biological effect among the trip limit subalternatives would be provided by **Subalternative 7f**, which would be expected to provide a 26% reduction in dolphin harvest for all areas (**Table 4-89**).

Table 4-87. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from Georgia, South Carolina, and North Carolina (North of 31°N) for 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	848.0	85,522	0	100.0%	100.0%
23	463.5	69,152	16,370	54.7%	80.9%
45	299.0	59,948	25,574	35.3%	70.1%
68	223.8	53,516	32,006	26.4%	62.6%
90	171.0	48,614	36,908	20.2%	56.8%
104	147.0	46,235	39,286	17.3%	54.1%
135	109.0	41,730	43,791	12.9%	48.8%
158	98.3	39,140	46,382	11.6%	45.8%
180	82.3	36,899	48,623	9.7%	43.1%
225	61.5	33,389	52,133	7.3%	39.0%
270	46.5	30,780	54,742	5.5%	36.0%
450	21.0	24,192	61,330	2.5%	28.3%
541	17.3	22,275	63,246	2.0%	26.0%
631	13.8	20,736	64,786	1.6%	24.2%
721	13.3	19,382	66,139	1.6%	22.7%
811	11.5	18,136	67,386	1.4%	21.2%
901	11.0	17,029	68,492	1.3%	19.9%
991	10.5	15,968	69,554	1.2%	18.7%
1,081	9.5	14,967	70,554	1.1%	17.5%
1,171	9.3	14,040	71,482	1.1%	16.4%
1,261	9.0	13,127	72,395	1.1%	15.3%
1,351	8.8	12,249	73,273	1.0%	14.3%
1,441	8.3	11,389	74,133	1.0%	13.3%
1,532	7.5	10,618	74,904	0.9%	12.4%
1,622	7.3	9,884	75,638	0.9%	11.6%
1,712	6.3	9,227	76,295	0.7%	10.8%
1,802	6.0	8,623	76,899	0.7%	10.1%
2,027	5.3	7,173	78,349	0.6%	8.4%
2,252	4.5	5,985	79,537	0.5%	7.0%
2,477	4.0	4,921	80,601	0.5%	5.8%
2,703	3.8	3,928	81,594	0.4%	4.6%
2,928	3.5	3,049	82,472	0.4%	3.6%
3,153	1.8	2,319	83,202	0.2%	2.7%
3,378	1.8	1,882	83,640	0.2%	2.2%

Table 4-87. Continued. Estimated reduction in commercial harvest of dolphin from trip limits.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
3,604	1.3	1,510	84,012	0.1%	1.8%
3,829	1.3	1,197	84,325	0.1%	1.4%
4,054	1.0	892	84,630	0.1%	1.0%
4,279	1.0	642	84,880	0.1%	0.8%
4,505	0.8	412	85,110	0.1%	0.5%
4,730	0.5	250	85,272	0.1%	0.3%
4,955	0.5	125	85,397	0.1%	0.1%

Table 4-88. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from east Florida (South of 31°N) for 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	1,308.3	137,484	0	100.0%	100.0%
23	681.3	112,830	24,654	52.1%	82.1%
45	453.5	99,069	38,415	34.7%	72.1%
68	337.3	89,253	48,231	25.8%	64.9%
90	261.3	81,811	55,673	20.0%	59.5%
104	225.8	78,160	59,324	17.3%	56.9%
135	161.5	71,555	65,929	12.3%	52.0%
158	138.5	67,785	69,699	10.6%	49.3%
180	110.8	64,691	72,793	8.5%	47.1%
225	79.3	59,947	77,537	6.1%	43.6%
270	60.8	56,504	80,980	4.6%	41.1%
450	20.0	49,172	88,312	1.5%	35.8%
541	15.0	47,439	90,046	1.1%	34.5%
631	12.5	46,088	91,396	1.0%	33.5%
721	10.8	44,921	92,563	0.8%	32.7%
811	9.8	43,900	93,584	0.7%	31.9%
901	8.0	43,011	94,474	0.6%	31.3%
991	8.0	42,211	95,274	0.6%	30.7%
1,081	7.5	41,417	96,068	0.6%	30.1%
1,171	7.5	40,667	96,818	0.6%	29.6%
1,261	7.5	39,917	97,568	0.6%	29.0%
1,351	7.3	39,191	98,294	0.6%	28.5%
1,441	7.0	38,475	99,010	0.5%	28.0%
1,532	6.8	37,780	99,705	0.5%	27.5%
1,622	6.8	37,105	100,380	0.5%	27.0%
1,712	6.5	36,450	101,034	0.5%	26.5%
1,802	6.3	35,820	101,664	0.5%	26.1%
2,027	5.8	34,363	103,121	0.4%	25.0%
2,252	5.5	32,947	104,537	0.4%	24.0%

Table 4-88. Continued. Estimated reduction in commercial harvest of dolphin from trip limits.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
2,477	5.0	31,627	105,857	0.4%	23.0%
2,703	5.0	30,377	107,107	0.4%	22.1%
2,928	4.8	29,128	108,356	0.4%	21.2%
3,153	4.5	27,991	109,493	0.3%	20.4%
3,378	4.3	26,914	110,570	0.3%	19.6%
3,604	4.0	25,889	111,595	0.3%	18.8%
3,829	4.0	24,889	112,595	0.3%	18.1%
4,054	4.0	23,889	113,595	0.3%	17.4%
4,279	4.0	22,889	114,595	0.3%	16.6%
4,505	4.0	21,889	115,595	0.3%	15.9%
4,730	4.0	20,889	116,595	0.3%	15.2%
4,955	4.0	19,889	117,595	0.3%	14.5%

Table 4-89. Estimated reduction in commercial harvest of dolphin from trip limits. Based on data from east FL to NC during 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expecte d catch	% trips over limit	% reduction in catch from limit
0	2,183.0	226,587	0	100.0%	100.0%
23	1,164.8	184,987	41,600	53.4%	81.6%
45	767.0	161,592	64,996	35.1%	71.3%
68	574.3	144,985	81,602	26.3%	64.0%
90	442.3	132,349	94,238	20.3%	58.4%
104	382.5	126,173	100,414	17.5%	55.7%
135	278.8	114,729	111,858	12.8%	50.6%
158	243.3	108,188	118,399	11.1%	47.7%
180	198.3	102,704	123,883	9.1%	45.3%
225	144.5	94,213	132,375	6.6%	41.6%
270	110.5	87,983	138,604	5.1%	38.8%
450	42.5	73,627	152,961	1.9%	32.5%
541	33.0	69,854	156,733	1.5%	30.8%
631	26.8	66,895	159,692	1.2%	29.5%
721	24.3	64,335	162,252	1.1%	28.4%
811	21.5	62,044	164,543	1.0%	27.4%
901	19.0	60,040	166,547	0.9%	26.5%
991	18.5	58,179	168,409	0.8%	25.7%
1,081	17.0	56,384	170,203	0.8%	24.9%
1,171	16.8	54,706	171,881	0.8%	24.1%
1,261	16.5	53,043	173,544	0.8%	23.4%
1,351	16.0	51,440	175,148	0.7%	22.7%
1,441	15.3	49,864	176,724	0.7%	22.0%
1,532	14.3	48,398	178,190	0.7%	21.4%

Table 4-89. Continued. Estimated reduction in commercial harvest of dolphin from trip limits.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg lbs over limit	Expected catch	% trips over limit	% reduction in catch from limit
1,622	14.0	46,989	179,599	0.6%	20.7%
1,712	12.8	45,677	180,911	0.6%	20.2%
1,802	12.3	44,443	182,145	0.6%	19.6%
2,027	11.0	41,536	185,052	0.5%	18.3%
2,252	10.0	38,932	187,655	0.5%	17.2%
2,477	9.0	36,548	190,039	0.4%	16.1%
2,703	8.8	34,304	192,283	0.4%	15.1%
2,928	8.3	32,178	194,410	0.4%	14.2%
3,153	6.3	30,310	196,277	0.3%	13.4%
3,378	6.0	28,796	197,791	0.3%	12.7%
3,604	5.3	27,398	199,189	0.2%	12.1%
3,829	5.3	26,086	200,501	0.2%	11.5%
4,054	5.0	24,780	201,807	0.2%	10.9%
4,279	5.0	23,530	203,057	0.2%	10.4%
4,505	4.8	22,300	204,287	0.2%	9.8%
4,730	4.5	21,138	205,449	0.2%	9.3%
4,955	4.5	20,013	206,574	0.2%	8.8%

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. Based on average 2005-2009 recreational landings, no reduction would be needed to ensure the recreational ACT was not exceeded. In December 2010, the South Atlantic Council approved a motion for a bag limit of 9 dolphin per person but not as a preferred alternative. Based on data from the South Atlantic during 2007-2009 (**Table 4-90**), a 9-fish bag limit would reduce catches by 2%.

Table 4-90. Reduction in harvest of dolphin provided by reduction in the bag limit. Based on data from NC to FL during 2007-2009.

Bag Limit	Headboat	Charter	Private	All sectors
10	0%	0%	0%	0.0%
9	0%	5%	1%	2.2%
8	0%	8%	2%	3.8%
7	0%	13%	3%	6.2%
6	1%	18%	5%	9.4%
5	1%	25%	7%	13.3%
4	2%	34%	11%	18.6%
3	4%	44%	17%	26.0%
2	7%	57%	26%	36.4%
1	15%	74%	45%	54.6%

In August 2009, the Dolphin Wahoo AP recommended **Alternative 1 (No Action)** at this time because there is no problem identified that needs to be addressed. The Dolphin Wahoo AP recognized that this would need to be revisited once the South Atlantic Council's SSC had provided their OFL and ABC recommendations. In April 2011, the South Atlantic Council's

SSC indicated OFL was unknown for dolphin and recommended an ABC = 14,596,216 lbs whole weight. Based on the SSC's recommended ABC, the average recreational catch (9,056,933 lbs whole weight; 2005-09) is 22% below the South Atlantic Council's preferred alternative for a recreational ACT (11,595,803lbs whole weight) and average commercial landings (822,035 lbs whole weight; 2005-09) are 23% below the South Atlantic Council's preferred alternative for a commercial ACL (1,065,524 lbs whole weight).

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-8** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-8** and the associated subalternatives are unclear. If the management measures perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.4.6.2 Economic Effects

Under **Alternative 1 (No Action),** regarding minimum size limits, ex-vessel gross revenue derived from commercial landings of dolphin are predicted to total $1,517,000 (**Table 4-91**). **Alternative 3 (Preferred)** proposes increasing the minimum size limit of commercial landings of dolphin in South Carolina resulting in predicted gross revenue of $1,504,000 (i.e. $13,000 in foregone revenue due to the minimum size limit only). This figure corresponds to the amount of gross revenue predicted under the preferred alternatives in **Actions 20-23**. The percentage of commercially landed dolphin less than 20 inches FL for South Carolina is 1.07% (**Table 4-84**). It is assumed this means the reduction in harvests off South Carolina provided by establishing the commercial minimum size limit proposed in **Alternative 3 (Preferred)** would also be 1.07%. This is an important assumption as this alternative is used as a fixed parameter when analyzing the other actions relating to dolphin in the Comprehensive ACL Amendment.

Alternative 4 proposes increasing the minimum size limit from Florida to New England. Since the minimum size length in Florida and Georgia is already 20 inches FL, landings of dolphin in these states would be unaffected. However, updated data suggests that harvest of dolphin in South Carolina and North Carolina would be reduced by 11.23% (**Table 4-84**). In light of this information the simulation model predicts that the commercial sector would lose $107,000 in gross revenue due to the implementation of **Alternative 4**.

Alternative 5 contains two minimum size subalternatives, **5a** (22 inches fork length) and **5b** (24 inches fork length). These subalternatives would result in foregone ex-vessel gross revenue of $116,000 and $309,000, respectively (**Table 4-91**).

Alternative 7 presents several subalternative trip limits ranging from 1,000 lbs to 5,000 lbs throughout the Atlantic EEZ (South Atlantic through New England), with one subalternative proposing regional trip limits (**Subalternative 7a**). The estimated effects assume the minimum size limit under **Alternative 3 (Preferred)** is in effect. The least restrictive of the trip limits is 5,000 lbs (**Subalternative 7b**) and would result in foregone commercial gross revenue of $318,000. The most restrictive of the trip limits is 1,000 lbs (**Subalternative 7f**) and would result in foregone gross revenue in the order of $799,000. The regional trip limit (**Subalternative 7a**) would result in foregone gross revenue of $581,000. The majority of the financial burden of trip limits for the dolphin fishery would fall on participants that employ pelagic longline gear, especially in North Carolina.

Pelagic longline trips that target dolphin can be categorized as directed dolphin or directed HMS where dolphin is landed as bycatch. The pelagic longline trips that directly target dolphin usually land their catch in North Carolina and take place during the summer months. It is likely that these fishers could adapt their fishing behavior in response to trip limits by taking more trips to sustain current revenue streams. The simulation model does not account for this possibility. Information about trip costs (especially fuel costs) would be useful to estimate the economic impact of trip limits on these operations. These trips have been sampled for expense reporting over the last couple of years; however, not enough information has been collected to this date to reliably estimate the cost structure of these trips.

Pelagic longline trips that target HMS species such as swordfish and sharks may also land dolphin as bycatch. If trip limits were to affect these operations we assume that the trips would go on as usual after the trip limit was reached. Less gear and bait may be used if trip limits altered targeting behavior for dolphin; however, the most significant economic impact would be the foregone revenue from discarded dolphin, which is considered in the simulation model.

Table 4-91. Predicted ex-vessel gross revenues attributed to commercial landings of dolphin after establishment of management measures for dolphin.
Commercial ACL values are based on the preferred ACL for dolphin (14,596,216 lbs ww) in **Action 22**, the preferred sector allocation for dolphin (7.3% commercial/92.7% recreational) in **Action 21**, and no commercial sector ACT for dolphin (**Action 23**). Commercial trip limits were analyzed with the preferred minimum size limit (MSL) for dolphin as defined by **Alternative 3** in **Action 25**.

Alternative	Management Measure	Ex-vessel gross revenue attributed to commercial landings of dolphin ($)
1 (No Action)		$1,517,000
3 (Preferred)	**MSL 20 in. FL through SC**	**$1,504,000**
4	MSL 20 in FL from FL through New Eng	$1,410,000
5a	MSL 22 in FL for FL and GA	$1,401,000
5b	MSL 24 in FL for FL and GA	$1,208,000
7a	3,000 lb trip limit north of 31° N 1,000 lb trip limit south of 31° N	$923,000
7b	5,000 lb trip limit	$1,186,000
7c	4,000 lb trip limit	$1,115,000
7d	3,000 lb trip limit	$1,023,000
7e	2,000 lb trip limit	$892,000
7f	1,000 lb trip limit	$705,000

Under **Alternative 2 (Preferred)**, for-hire vessels will not be able to sell dolphin fish harvested under the bag limit, even with the appropriate permits. This will result in a loss of producer surplus relative to the no action alternative. Information is not available on the relevant costs of selling fish for for-hire vessels that is necessary to measure the loss in producer surplus associated with this alternative. Therefore, the loss in terms of foregone revenue from the sale of fish is estimated. The use of revenue will overstate the loss relative to the same loss measured in terms of producer surplus. It is assumed the average annual revenue associated with selling dolphin fish on for-hire trips is given by the amount sold by vessels with for-hire dolphin/wahoo permits from 2005 to 2009. The results and data sources are reported in **Table 4-92**.

Table 4-92. Foregone revenue due to prohibiting bag limit sales of dolphin from for-hire vessels under **Alternative 2** for **Action 25.**

	Trips				Revenue			
Year	**EFL_GA**	**FL_Keys**	**NC_SC**	**Total**	**EFL_GA**	**FL_Keys**	**NC_SC**	**Total**
2005	165	132	85	382	$12,786	$17,724	$7,002	$37,512
2006	117	178	126	421	$8,584	$32,127	$16,034	$56,745
2007	138	187	213	538	$17,082	$38,253	$28,327	$83,661
2008	184	214	180	578	$20,555	$32,867	$20,581	$74,003
2009	275	271	288	834	$21,947	$39,749	$40,887	$102,583
Avg.	176	196	178	551	$16,191	$32,144	$22,566	$70,901

Based on trips with a for-hire dolphin/wahoo (CDW) permit that caught at least one pound of dolphin, but less than the 60 fish boat limit in lbs (495lbs in GA-EFL and 533lbs in NC-SC). The trips and landings information are from the SE Logbook data and the prices are from the ALS data.

The predicted reduction in consumer surplus to the recreational sector under **Preferred Alternative 3** is documented in **Table 4-93**. The data sources and method are listed below.

Table 4-93. Reduction in economic value to the recreational sector in South Carolina with a 20 inch minimum size limit for dolphin under **Alternative 3** for **Action 25**.

	Head	Private	Charter	Total
ALT1 Landings (lbs)	10,329	160,536	55,954	226,820
ALT3 Reduction (%)	8.70%	0.00%	5.06%	
ALT3 Reduction (lbs)	899	0	2,831	3,730
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.92	10.69	12.41	
wpt/lb	$16.21	$12.01	$10.34	
dCS	$14,571	$0	$29,285	$43,856
Target (angler) trips	1,122	na	1,375	2,497
ALT3 Reduction in Target Trips	98	na	70	167
NOR per angler trip	$63	na	$128	
dPS	$6,147	na	$8,906	
dTS	$20,718	$0	$38,191	$58,909

ALT1 landings assumed to be the average annual landings of dolphin in SC from 2005 to 2009.

ALT3 % reduction from Table 4-79a of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in SC from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT3 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip
The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)[9]

[9] Dumas, C.F., J.C. Whitehead, C.E. Landry, and J.H. Herstine. 2009. "Economic Impacts and Recreation Value of the North Carolina For-Hire Fishing Fleet." North Carolina Sea Grant FRG Grant Report 07-FEG-05.

Alternative 4 would establish a recreational minimum size limit of 20 inches fork length from Florida through New England. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-94**. The data sources and method are listed below the table.

Table 4-94. Reduction in economic value to the recreational sector in North and South Carolina with a 20 inch recreational minimum size limit for dolphin (**Alternative 4**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	14,047	170,865	3,417,573	3,602,485
ALT4 Reduction (%)	15.11%	5.84%	4.56%	
ALT4 Reduction (lbs)	2,122	9,979	155,841	167,942
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.10	9.86	10.65	
wpt/lb	$18.08	$13.01	$12.05	
dCS	$38,379	$129,838	$1,877,823	
Target (angler) trips	4,582	na	30,429	35,011
ALT4 Reduction in Target Trips	692	na	1,388	2,080
NOR per angler trip	$63	na	$128	
dPS	$43,617	na	$177,608	$221,225
dTS	$81,996	$129,838	$2,055,431	$2,267,265

ALT1 landings assumed to be the average annual landings of dolphin in SC and NC from 2005 to 2009.

ALT4 % reduction from Table 4-79a of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in SC and NC from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT4 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT4 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009. The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

The target angler charter trips are from the description of the fishery.

Alternative 5 would increase the recreational minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-95** and **Table 4-96**. The data sources and method are listed below each table.

Table 4-95. Reduction in economic value to the recreational sector in Florida and Georgia with a 22-inch recreational minimum size limit for dolphin (**Alternative 5**).

	Head	Private	Charter	Total
EFL ALT1 Landings (lbs)	1,974	464,942	39,602	506,519
GA ALT1 Landings (lbs)	31	5,095	506	5,632
EFL ALT5a Reduction (%)	19.73%	17.24%	17.01%	
GA ALT5a Reduction (%)	19.73%	17.24%	17.01%	
ALT5a Reduction (lbs)	396	81,034	6,822	88,252
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.33	10.18	8.75	
wpt/lb	$17.51	$12.61	$14.67	
dCS	$6,927	$1,021,534	$100,100	$1,128,562
Target (angler) trips	13,155	na	17,296	30,451
ALT5a Reduction in Target Trips	2,596	na	2,942	5,538
NOR per angler trip	$63	na	$128	
dPS	$163,517	na	$376,582	$540,099
dTS	$170,444	$1,021,534	$476,683	$1,668,661

ALT1 landings assumed to be the average annual landings of dolphin in EFL and GA from 2005 to 2009.

ALT5a % reduction from Table 4-79b of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the EFL and GA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT5a Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT5a Reduction (%) X NOR/trip. See table above for further description of sources and methods.

Table 4-96. Reduction in economic value to the recreational sector in Florida and Georgia with a 24 inch recreational minimum size limit for dolphin (**Alternative 5**).

	Head	Private	Charter	Total
EFL ALT1 Landings (lbs)	1,974	464,942	39,602	506,519
GA ALT1 Landings (lbs)	31	5,095	506	5,632
EFL ALT5b Reduction (%)	36.31%	35.97%	36.13%	
GA ALT5b Reduction (%)	36.31%	35.97%	36.13%	
ALT5b Reduction (lbs)	728	169,072	14,491	184,292
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	7.33	10.18	8.75	
wpt/lb	$17.51	$12.61	$14.67	
dCS	$12,748	$2,131,356	$212,618	$2,356,722
Target (angler) trips	13,155	na	17,296	30,451
ALT5b Reduction in Target Trips	4,777	na	6,249	11,026
NOR per angler trip	$63.00	na	$128.00	
dPS	$300,927	na	$799,878	$1,100,805
dTS	$313,676	$2,131,356	$1,012,496	$3,457,528

ALT1 landings assumed to be the average annual landings of dolphin in EFL and GA from 2005 to 2009.

ALT5b % reduction from Table 4-79b of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT5a Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT5b Reduction (%) X NOR/trip
The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Alternative 6 would reduce the recreational boat limit. This alternative applies only to charterboats and private recreational vessels, not headboats. **Subalternative 6a** would reduce the boat limit by 25%, **Subalternative 6b** would reduce the boat limit by 33%, and **Subalternative 6c** would reduce the boat limit by 50%. The reduction in consumer surplus to the recreational sector predicted under this alternative is documented in **Tables 4-97** through **4-99**. The data sources and method are listed below each table.

Table 4-97. Reduction in economic value to the recreational sector with a 25% reduction in the boat limit to 45 dolphin (**Subalternative 6a)**.

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT6a Reduction (%)	0.00%	0.00%	7.39%	
ALT6a Reduction (lbs)	0	0	259,104	259,104
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$0	$3,748,469	$3,748,469
Target (angler) trips	17,737	na	47,726	65,463
ALT6a Reduction in Target Trips	0	na	3,527	3,527
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$451,450	$451,450
dTS	$0	$0	$4,199,919	$4,199,919

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT6a % reduction from Table 4-80 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT6a Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT6a Reduction (%) X NOR/trip. See table above for further description of sources and methods.

Table 4-98. Reduction in economic value to the recreational sector with a 33% reduction in the boat limit to 40 dolphin (**Subalternative 6b**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT6b Reduction (%)	0.00%	0.00%	10.85%	
ALT6b Reduction (lbs)	0	0	380,416	380,416
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$0	$5,503,504	$5,503,504
Target (angler) trips	17,737	na	47,726	65,463
ALT6b Reduction in Target Trips	0	na	5,178	5,178
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$662,819	$662,819
dTS	$0	$0	$6,166,322	$6,166,322

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT6b % reduction from Table 4-80 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT6b Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT6b Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-99. Reduction in economic value to the recreational sector with a 50% reduction in the boat limit to 30 dolphin (**Subalternative 6c**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT6c Reduction (%)	0.00%	0.40%	22.40%	
ALT6c Reduction (lbs)	0	20,588	785,375	805,963
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$337,953	$11,362,072	$11,700,025
Target (angler) trips	17,737	na	47,726	65,463
ALT6c Reduction in Target Trips	0	na	10,691	10,691
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$1,368,400	$1,368,400
dTS	$0	$337,953	$12,730,472	$13,068,425

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT6c % reduction from Table 4-80 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT6c Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT6c Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Alternative 8 would reduce the recreational bag limit to 9 dolphin per person. In December 2010, the South Atlantic Council approved a motion for a bag limit of 9 dolphin per person but not as a preferred alternative. The reduction in consumer surplus to the recreational sector predicted with this alternative is documented in **Table 4-100**. The data sources and method are listed below the table.

Table 4-100. Reduction in economic value to the recreational sector with a reduction in the bag limit to 9 dolphin.

	Head	Private	Charter	Total
ALT1 Landings (lbs)	26,705	5,146,878	3,506,140	8,679,723
ALT8 Reduction (%)	0.00%	1.00%	5.00%	
ALT8 Reduction (lbs)	0	51,469	175,307	226,776
wtp/fish	$128.34	$128.34	$128.34	
lbs/fish	6.84	7.82	8.87	
wpt/lb	$18.75	$16.42	$14.47	
dCS	$0	$844,884	$2,536,177	$3,381,060
Target (angler) trips	17,737	na	47,726	65,463
ALT8 Reduction in Target Trips	0	na	2,386	2,386
NOR per angler trip	$63.00	na	$128.00	
dPS	$0	na	$305,446	$305,446
dTS	$0	$844,884	$2,841,623	$3,686,507

ALT1 landings assumed to be the average annual landings of dolphin in SA from 2005 to 2009.

ALT8 % reduction from Table 4-84 of the DEIS

The wtp/fish is $103 in 2000 dollars for dolphin (>20") from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of dolphin in the SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT8 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT8 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

A summary of the reduction in economic value for **Action 25** is shown in **Table 4-101**.

Table 4-101. Summary of the reduction in economic value to the recreational sector across alternatives in **Action 25**.

Alternative	Head	Private	Charter	Total
ALT1	$0	$0	$0	$0
ALT2	$0	$0	$70,901	$70,901
ALT3	$20,718	$0	$38,191	$58,909
ALT4	$81,996	$129,838	$2,055,431	$2,267,265
ALT5a	$170,444	$1,021,534	$476,683	$1,668,661
ALT5b	$313,676	$2,131,356	$1,012,496	$3,457,528
ALT6a	$0	$0	$4,199,919	$4,199,919
ALT6b	$0	$0	$6,166,322	$6,166,322
ALT6c	$0	$337,953	$12,730,472	$13,068,425
ALT8	$0	$844,884	$2,841,623	$3,686,507

All changes are measured relative to ALT1.

Economic value for all alternatives are measured in terms of changes in consumer and producer surplus, except for ALT2 which is measured in terms of changes in revenue from the sale of dolphin fish by charter operations with for-hire dolphin/wahoo permits.

4.4.6.3 Social Effects

The effects upon the social environment would depend upon the suite of management measures chosen by the South Atlantic Council to include in the amendment. **Alternative 1 (No Action)** would likely induce few social effects. **Alternative 2 (Preferred)**, prohibiting bag limit sales of dolphin from for-hire vessels, would likely have negative social effects on for-hire crew, at least in the short term. However, the lack of prohibiting sale could also have negative social effects as fish caught recreationally could be counted toward the commercial quota. Requiring a minimum size limit from Florida through South Carolina in **Alternative 3 (Preferred)** may have some social effects north of Georgia as there is no size limit and fishermen will have new regulatory regimes to follow but may be beneficial in that management will be more consistent. **Alternative 4** may have similar social effects as it establishes the size limit from Florida through New England. These alternatives may be a viable means of meeting threshold criteria for reductions that may be implemented elsewhere in this amendment. The same is true for **Alternative 5** by establishing a more restrictive size limit. **Alternative 6** and its associated subalternatives would accomplish similar reductions for the charter sector with its decreasing boat limit moving from **Subalternatives 6a** to **6c**, respectively. **Alternative 7** would accomplish similar reductions for the commercial sector with its decreasing trip limit moving from **Subalternatives 7b** to **7f**, respectively. **Subalternative 7a** would split the trip limit near Jekyll Island with a smaller 1,000-pound limit to the south and 3,000 pound trip limit to the north. **Alternative 8** would reduce the boat limit to 9 fish and would likely have short-term negative social effects as fishermen adjust to the reductions.

4.4.6.4 Administrative Effects

The current management regime, as described **in Alternative 1 (No Action)**, is quite comprehensive as it implements a quota, bag limits, size limits, trip limits, and permits. The selection of **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would be expected to increase the administrative burden slightly due to increase monitoring and enforcement requirements. All of the action alternatives are expected to maintain the same level of administrative burden relative to each other. Administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.4.6.5 Council Conclusions

The Magnuson-Stevens Act required establishment of limits and targets for managed species undergoing overfishing by 2010 and for all other managed fisheries by 2011. The NS1 guidelines, however, do not specify that management measures need to be put in place at the same time that the new limits and targets are specified. Because the Comprehensive ACL Amendment sets limits for so many snapper grouper species, the South Atlantic Council chose not to address the implementation of management measures for snapper grouper species in this amendment. However, the South Atlantic Council decided to consider implementation of management measures for dolphin in order to ensure that the landings do not exceed the proposed ACL.

Alternative 2 (Preferred) would ensure regulations are fair and equitable and fish harvested by the recreational sector are not counted toward commercial quotas. This would also improve the accuracy of total landings. With implementation of ACLs that would restrict catches for dolphin on recreational and commercial fishermen, the South Atlantic Council is concerned that when for-hire fishermen sell their catch to dealers, that poundage will be counted toward the commercial quota resulting in early filling of the commercial ACL. In addition, sales of bag limit fish may result in double counting if catches are reported through the MRFSS/MRIP and through commercial dealers. Therefore, the Council selected **Alternative 2 (Preferred)** to prohibit the sale of bag limit caught dolphin in the for-hire sector. In the past concern has been expressed that the fish sold makes up an important part of the mate's income and if this was prohibited, the cost of a charter trip would have to be increased to cover the lost income. This could, in turn, result in a reduced number of trips as the price increases. **Alternative 3 (Preferred)** would establish a minimum size limit of 20 inches FL from Florida through South Carolina. This alternative was introduced for the South Atlantic Council's consideration to address concerns, primarily from South Carolina anglers, about the large-scale recreational harvest of "peanut" dolphin. At the time size limits were being discussed for this species in the South Atlantic region (2002), they were not considered off South Carolina because the state had its own measure. That measure has since been challenged in court, however, and overturned.

In North Carolina the vast majority of fishing for dolphin is done in open water. However, there is a short season that lasts for a couple of weeks, usually in the early fall, where the smaller dolphin come in close enough that fishermen can catch them off fishing piers. Extending the minimum size limit requirement to North Carolina would limit access to people who would not be able to catch a dolphin otherwise because they don't have the access to a boat. Moreover, this is a traditional fishery that has been taking place in North Carolina for a long time. Since there appear to be no issues with the health of the stock and to maintain access to the resource, the South Atlantic Council decided not to extend the proposed size limit to North Carolina and north.

The Dolphin Wahoo Advisory Panel (AP) supported establishing a minimum size limit of 20 inches FL from Florida through South Carolina. The Dolphin Wahoo AP also supported establishing a minimum size limit of 20 inches fork length from Florida through New England. Moreover, the Dolphin Wahoo AP recommended the South Atlantic Council consider an alternative to establish a minimum size limit of 20 inches FL from Florida through Maine with no size limit for dolphin caught from shore. The AP did not support prohibiting sale in the for-hire sector due to the loss of income to the crew members of for-hire vessels.

The South Atlantic Council's SSC did not have recommendations for this action.

The Law Enforcement Advisory Panel (LEAP) did not provide a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing of dolphin and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5 Wahoo

Fishery Management Unit

The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.

The Dolphin Wahoo FMP was implemented in 2004 and included the following:

1. Added Wahoo to the Fishery Management Unit and established MSY, OY, MFMT and MSST; dealer permits; vessel permits; operator permits; ACCSP reporting requirements; framework procedure; allowable gear; gear prohibitions in HMS closed areas; EFH/EFH-HAPCs; and the fishing year as January 1 through December 31.
2. Prohibit sale of recreationally caught wahoo in or from the Atlantic.
3. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 lbs with no transfer at sea allowed.
4. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.

Maximum Sustainable Yield (MSY), Minimum Stock Size Threshold (MSST) and Maximum Fishing Mortality Threshold (MFMT)/Overfishing Level (OFL)

Maximum Sustainable Yield

The Councils (South Atlantic, Mid-Atlantic and New England Councils) have determined that the MSY proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million lbs. There is no updated MSY estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSY. Therefore, the existing MSY proxy of 1.41 – 1.63 million lbs will remain until a SEDAR assessment is conducted.

Minimum Stock Size Threshold (MSST)

The Councils (South Atlantic, Mid-Atlantic and New England Councils) have determined that the MSST for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M (natural mortality) should never be less than 0.5. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY. There is no updated MSST estimate, and the South Atlantic Council's SSC did not provide any new guidance on MSST. Therefore, the existing MSST will remain until a SEDAR assessment is conducted.

Overfishing Level (OFL)

Currently, the Councils (South Atlantic, Mid-Atlantic and New England Councils) specified the following value for MFMT through the original Dolphin Wahoo FMP:
A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin is defined as a fishing mortality rate (F) in excess of F_{MSY} (F30%Static SPR). At their April 2011 meeting, the South Atlantic Council's SSC stated that OFL for wahoo is unknown since there is no stock assessment, current conditions are impacted by management, and there is no measure of stock biomass relative to

landings. An ABC = 1,491,785 lbs whole weight was recommended based on the SSC's ABC control rule for unassessed species.

Previously, the South Atlantic Council's SSC provided the following OFL at their April 2010 meeting: Since no MSY estimate is available for wahoo, OFL was estimated from landings data (Atlantic coast landings data also obtained from the Dolphin Wahoo FMP). Similar to dolphin, wahoo landings were thought to be impacted by economic trends as well as the 2004 regulations (for wahoo, 2-fish bag limit and a 500 lb trip limit). OFL (1,101,231 lbs) was determined as the median of landings for the period 1994-2003 (used the median instead of the mean since this was a longer time series than used for dolphin). **(Table 4-102a)**.

NMFS SEFSC corrected and updated the 1994-1998 data used by the SSC. The South Atlantic Council reviewed the new data at their March 2011 meeting and accepted the new catch data as being the best available data (**Table 4-102b**). The South Atlantic Council also requested the SSC use the corrected and updated data to provide the OFL; using the new data and the SSC's methodology, results in the OFL = 1,202,939 lbs.

Table 4-102a. Wahoo landings (whole weight) used by the SSC in April 2010.

Year	Rec. Total	%Rec	Com. Total	%Com	Com. & Rec. Total
1994	814,588	90%	88,036	10%	902,624
1995	981,257	90%	109,506	10%	1,090,763
1996	844,014	91%	82,281	9%	926,295
1997	890,402	90%	93,857	10%	984,259
1998	949,035	92%	78,477	8%	1,027,512
1999	1,405,653	93%	99,159	7%	1,504,812
2000	1,083,721	94%	65,283	6%	1,149,004
2001	1,050,625	95%	61,073	5%	1,111,698
2002	1,244,854	95%	60,703	5%	1,305,557
2003	1,099,259	95%	60,720	5%	1,159,979
2004	950,112	94%	65,485	6%	1,015,597
2005	815,846	94%	47,744	6%	863,590
2006	763,145	95%	41,539	5%	804,684
2007	1,924,492	97%	59,558	3%	1,984,050
2008	631,525	94%	41,586	6%	673,111
SSC's OFL	= Median 1994-2003				1,101,231

Source: 1994-98 from **Table 26** in Dolphin Wahoo FMP (SAFMC 2003a); 1999-2008 from Dolphin Wahoo Decision Document.

Table 4-102b. Wahoo landings (whole weight) used by the SSC in April 2011.

Year	Rec. Total	%Rec	Com. Total	%Com	Com. & Rec. Total
1994	926,279	92%	84,966	8%	1,011,245
1995	1,109,907	91%	107,497	9%	1,217,404
1996	918,492	92%	83,288	8%	1,001,780
1997	1,055,915	92%	92,964	8%	1,148,879
1998	1,019,871	93%	77,964	7%	1,097,835
1999	1,559,673	94%	99,286	6%	1,658,959
2000	1,122,639	94%	65,834	6%	1,188,473
2001	1,159,384	95%	58,594	5%	1,217,978
2002	1,433,225	96%	58,560	4%	1,491,785
2003	1,251,164	96%	58,673	4%	1,309,837
2004	1,100,738	94%	65,118	6%	1,165,856
2005	852,671	95%	44,542	5%	897,213
2006	765,654	95%	39,824	5%	805,478
2007	2,041,154	97%	57,290	3%	2,098,444
2008	663,732	94%	40,525	6%	704,257
2009	792,687	95%	43,126	5%	835,813
SSC's OFL	**= Median 1994-2003**				1,202,939

The South Atlantic Council requested their SSC consider the Gulf of Mexico Control Rule which would use mean, mean + 0.5 to 2.0 times the SD. During their March 2011 meeting, the South Atlantic Council approved the following motion: For dolphin and wahoo, provide guidance to the SSC that based on biology and productivity and not overfishing/overfished status, the Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.

The South Atlantic Council's SSC met April 5-7, 2011 in Charleston, South Carolina and recommended that the Gulf of Mexico Council's ABC Control Rule not be used for South Atlantic stocks. Instead they recommended use of their own ABC control rule for unassessed stock. Their action changed their previous OFL/ABC recommendation for wahoo (and dolphin).

4.5.1 Action 26: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo

Alternative 1 (No Action). Do not establish an ABC control rule for wahoo.

Alternative 2. Establish an ABC control rule where ABC equals OFL.

Alternative 3. Establish ABC based on the Gulf of Mexico Council's ABC control rule (**Table 4-23**).
Note: The Gulf of Mexico Control Rule as applied to wahoo would likely be Tier 3a and would set the OFL = mean 10 years landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD.

Alternative 4 (Preferred). When the ABC control rule portion for unassessed species is complete, establish ABC for wahoo based on the South Atlantic Council SSC's ABC control rule described in **Table 4-22**. Until the ABC control rule is complete, establish ABC based upon the approach in **Table 4-24** and OFL = unknown (currently ABC is estimated to be 1,491,785 lbs ww).

4.5.1.1 Biological Effects

Alternative 1 (No Action) would not establish an ABC control rule for wahoo. For stock and stock complexes required to have an ABC, the NS1 guidelines for the Magnuson-Stevens Act state the ABC will be set on the basis of the ABC control rule. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 would specify an ABC control rule for wahoo. The OFL was determined to be unknown at the April 2011 South Atlantic Council's SSC meeting; therefore, ABC would not be specified under **Alternative 2**. The South Atlantic Council's SSC recommended an ABC = 1,491,785 lbs whole weight at their April 2011 meeting based on their ABC control rule.

The NS1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would theoretically be less than **Alternatives 3,** which is based on the Gulf of Mexico Council SSC's ABC control rule (**Table 4-23**). However, the South Atlantic Council's SSC determined at their April 2011 meeting that OFL is unknown. **Alternative 4 (Preferred)** would specify an ABC for wahoo based on the South Atlantic Council's SSC's ABC control rule, which also accounts for scientific uncertainty.

Alternative 3 would follow Tier 3a of the Gulf of Mexico's Council SSC's ABC control rule. According to **Table 4-23** the ABC control described for Tier 3a would be used in situations where landings are small relative to stock biomass and recent historical landings are without trend. Tier 3a would be used for species where no assessment is available, but landings data exist, and the probability of exceeding the OFL in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the OFL and ABC. For

species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf of Mexico Council SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternative 3**, which is based on Tier 3a of the Gulf of Mexico Council SSC's ABC control rule for unassessed species (**Table 4-23**) would result in a similar estimate of ABC (1,171,513 to 1,788,691 lbs whole weight; **Table 4-103**) as recommended by the South Atlantic Council's SSC through their ABC control rule (1,491,785 lbs whole weight, **Alternative 4, Preferred**). Therefore, the biological effects of **Alternative 3** would be very similar to **Alternative 4 (Preferred)**.

Table 4-103. ABC for wahoo (lbs) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009.
Note: OFL = mean + 2SD = 1,994,417 lbs.

Mean	Mean + 0.5 SD	Mean + 1 SD	Mean + 1.5 SD
1,171,513	1,377,239	1,582,965	1,788,691

Establishing an ABC control rule for wahoo would not directly affect the protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.5.1.2 Economic Effects

Establishing the biological parameters for harvest thresholds only generate indirect economic effects because the direct economic effects will result from establishing the ACLs and the triggering of subsequent corrective actions as per the accountability measures. Thus, the economic effects under all alternatives for **Action 26** are indirect. In general, the more conservative the ABC control rule, the greater the short-term adverse economic effects and the greater the potential long-term positive economic effects.

Under **Alternative 1 (No Action)**, **Alternative 3** (ABC = mean + 1 SD and ABC = mean + 1.5 SD) and **Alternative 4 (Preferred)**, ex-vessel revenue derived from landings of wahoo are predicted to total $118,000 (**Table 4-104**) and thus are not expected to have short-term indirect economic effects on the commercial fleet. Under **Alternative 3** where ABC = mean and ABC = mean + .5 SD, gross revenue derived from landings of wahoo are predicted to total $111,000 and $117,000, respectively. **Alternative 3** follows Tier 3a of the Gulf of Mexico Council SSC's ABC control rule. **Alternative 2** which sets ABC equal to OFL may result in as much as $5,000 in foregone revenue.

Table 4-104. Predicted ex-vessel gross revenues attributed to landings of wahoo after establishment of ABC Control Rule for wahoo.
Commercial ACL values are based on the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**, the preferred ACL formula for wahoo (100% of ABC) in **Action 28**, and no commercial sector ACT for wahoo (**Action 29**).

Alternative	ABC Formula	Ex-vessel revenue attributed to commercial landings of wahoo
1 (No Action)		$118,000
2	ABC=OFL	$113,000
3	ABC = mean	$111,000
3	ABC = mean + 0.5 SD	$117,000
3	ABC = mean + 1 SD	$118,000
3	ABC = mean + 1.5 SD	$118,000
4 (Preferred)	**ABC = 1,491,785 ww**	**$118,000**

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. **Alternative 2** sets the ABC equal to the OFL, which may lead to a potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain to the recreational sector was estimated to be as much as $283,000 for the CL model and $573,000 for the NL model (**Table 4-105**).

Alternative 3 creates a buffer between the ABC and OFL. **Table 4-105** shows that the greater the buffer, the greater the short-term loss in consumer surplus. **Alternative 3** is based on the Gulf of Mexico Council's SSC ABC control rule. As the risk of exceeding the OFL increases (i.e. increasing the ABC), potential economic gain to the recreational sector is expected to increase. If ABC = mean + 1.5 SD, the adoption of **Alternative 3** may result in a potential gain of $1,522,000 in consumer surplus for the CL model and a gain of $3,085,000 in economic value to the recreational sector for the NL model. If ABC = mean, **Alternative 3** may generate the largest potential increase in economic value to the recreational sector in the short-run, but may also generate the smallest long-run economic benefits relative to other alternatives. If ABC = mean, the adoption of **Alternative 3** may result in a gain of $217,000 in consumer surplus for the CL model and a gain of $439,000 in consumer surplus for the NL model. The adoption of **Alternative 4 (Preferred)** may result in a potential gain of $894,000 in consumer surplus for the CL model and a potential gain of $1,812,000 in consumer surplus for the NL model.

Table 4-105. Predicted potential economic value to the recreational sector after the establishment of an ABC control rule for wahoo.
Recreational ACL values are based on the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27** and the preferred ACL formula for wahoo (100% of ABC) in **Action 28**.

Alternative	ABC Control Rule	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 (No Action)		$2,261,000	$4,584,000
2	ABC = OFL	$2,544,000	$5,157,000
3	ABC = mean	$2,478,000	$5,023,000
3	ABC = mean + 0.5 SD	$2,913,000	$5,905,000
3	ABC = mean + 1 SD	$3,348,000	$6,787,000
3	ABC = mean + 1.5 SD	$3,783,000	$7,669,000
4 (Preferred)	**ABC = 1,491,785 ww**	**$3,155,000**	**$6,396,000**

4.5.1.3 Social Effects

As with the previous action, setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from the implementation of the allowable biological catch and any subsequent reduction. **Alternative 1 (No Action)** does not establish an ABC control rule for wahoo and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur inducing management and rebuilding which might cause more volatility in the fishery. Like with dolphin, the South Atlantic Council has chosen **Alternative 4 (Preferred)** which would utilize an ABC control rule established by the SSC. Again, using the best available science should have positive social effects. However, the combined effect of any of the reductions in harvest levels is difficult to assess without knowing how other actions may affect the final threshold. Certainly for those alternatives that are the most restrictive the potential of negative social effects, both short term and long term, becomes more likely even though there may be long term biological benefit.

4.5.1.4 Administrative Effects

The establishment of an ABC Control Rule is a procedural exercise. The rule is established by a Council's SSC for consideration by a Council. Although the ABC control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.5.1.5 Council Conclusions

The South Atlantic Council SSC's final ABC Control Rule document states:

The SSC began working on this ABC control rule in June 2008, following approval of the MSRA but before finalization of revised National Standard Guidelines and before finalization of implementation guidelines. The Final Rule on establishing ACLs became available during the period that the SSC discussed the ABC Control Rule and helped direct the final version. Although the SSC believes their proposed Control Rule is consistent with the language of the MSRA and ACL Final Rule, and that Council guidance as to the overall acceptable level of risk and base P that determines MSY and OFL is considered and incorporated, the Committee recognizes that the rule may require modification in the future as final guidance on MSRA implementation becomes available.*

Experience in applying the rule and future scientific advances may also trigger changes in the control rule. Although the SSC attempted to consider the full range of situations and scenarios expected across stocks managed by the South Atlantic Council, it is acknowledged that situations may arise that cause difficulties in actual application and interpretation of the rule and hinder the resultant ABC recommendations. Changes in the dimensions, tiers, and scoring approach may be needed in the future as the rule is tested through application to the many stocks managed by the Council. Further development in methods of analyzing and expressing probabilities of overfishing could also lead to changes in how ABC is determined from the adjustment factor provided by the control rule.

At their April 2011 meeting, the South Atlantic Council's SSC discussed ABC levels for unassessed species in the Comprehensive ACL Amendment:

The SSC discussed the use of standard deviation as a means to adjust ABC above the median landings in the Gulf of Mexico Fishery Management Council's ABC Control Rule. The issue that concerned the group the most was that by using this method the landings-based ABC would be higher with higher uncertainty (i.e., higher variability in landings) and lower with less uncertainty. Additionally, the use of standard deviation could suggest a level of statistical rigor that would not necessarily be there. Using a percentile of the landings values would be a more uniform application that is not as impacted by the variation in the data or landings sampling error. Given 10 years of data, and being consistent with the 75th percentile (25% of the landings value exceed that value) the SSC recommended using the 3rd highest point or the 80th percentile of the data. This recommendation was integrated into a decision tree developed for landings-only stocks.

The "decision tree" was incorporated into an alternative for the South Atlantic Council's consideration, which was subsequently chosen as the preferred. The South Atlantic Council understands the limitations of the South Atlantic Council SSC's Control Rule and is prepared to make adjustments as needed in the future. In particular, the Council is aware of various approaches proposed for situations in which only catch data are available. NOAA Fisheries Service released a Technical Memorandum in May 2011 — *Calculating Acceptable Biological*

Catch For Stocks That Have Reliable Catch Data Only (Only Reliable Catch Stocks – ORCS) — that presents various methodologies. The South Atlantic Council's SSC intends to review the information included in this document and revise their ABC control rule as needed. Once the South Atlantic Council's SSC finalizes Level 4 of their ABC control rule, it will be applied to all South Atlantic Council managed stocks. The recommended ABC values in this document, therefore, are considered interim values until the South Atlantic Council's SSC finalizes their ABC control rule.

During their April 2011 meeting the South Atlantic Council's SSC discussed trends in landings of wahoo and stated that the decline in landings post 2002 was likely a result of the bag limit change. The South Atlantic SSC recommended applying the "decision tree" discussed above and used the 3rd highest landings value between 1999 and 2008 as the recommended ABC for wahoo. Thus the South Atlantic Council selected **Alternative 4 (Preferred)**, which encompasses their SSC's ABC control rule and latest ABC recommendation, as their preferred. The South Atlantic Council's SSC also noted that wahoo landings are significant in the charter fishery and are therefore impacted by economic trends, as is the case for dolphin. The South Atlantic Council's SSC indicated that the OFL for wahoo would remain unknown since no assessment or measures of abundance are available. An assessment for wahoo is scheduled for 2014.

The Dolphin Wahoo Advisory Panel (AP) supported the South Atlantic Council's preferred alternative to set an ABC for wahoo.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 4 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.2 Action 27: Specify Allocations for Wahoo

[Note: When considering two sectors (commercial and recreational), the recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (commercial, recreational, and for-hire), the recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Do not define allocations for wahoo.

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 4% commercial and 96% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:

> Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial and 95.7% recreational.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector allocation = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

4.5.2.1 Biological Effects

Alternative 1 (No Action) would not establish allocations for wahoo. If an allocation is not specified then it would not be possible to identify the ACL in the recreational sector. Only a single ACL could be established for both sectors and options for an AM would be limited.

The allocations in **Alternatives 2-4** would be similar. Under **Alternative 2** the allocations would be 4% commercial/96% recreational. **Alternative 3 (Preferred)** would result in 4.3% commercial/95.7% recreational, respectively, through the use of a formula that would equal 50% * average of long catch range (lbs) 1999-2008) + 50% * average of recent catch trend (lbs) 2006-2008. **Alternative 4**, which uses a similar formula as **Alternative 3 (Preferred),** would divide the recreational component of the catch into for-hire and private recreational sectors. Under **Alternative 4**, the allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. Catches by sector are shown in **Table 4-106**.

Table 4-106. Annual landings of wahoo by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction.

Year	Commercial	Private	For-Hire	Total Rec	Total Com	Total	% Com	%Rec
1999	99,286	784,753	774,921	1,559,673	99,286	1,658,959	6%	94%
2000	65,834	639,889	482,750	1,122,639	65,834	1,188,473	6%	94%
2001	58,594	701,917	457,466	1,159,384	58,594	1,217,978	5%	95%
2002	58,560	676,847	756,379	1,433,225	58,560	1,491,785	4%	96%
2003	58,673	847,598	403,566	1,251,164	58,673	1,309,837	4%	96%
2004	65,118	611,130	489,608	1,100,738	65,118	1,165,856	6%	94%
2005	44,542	600,230	252,441	852,671	44,542	897,213	5%	95%
2006	39,824	546,314	219,340	765,654	39,824	805,478	5%	95%
2007	57,290	1,649,855	391,299	2,041,154	57,290	2,098,444	3%	97%
2008	40,525	457,160	206,573	663,732	40,525	704,257	6%	94%
2009	43,126	583,845	208,842	792,687	43,126	835,813	5%	95%

Note: Bag limit became effective in 2004.

There is a very small difference in the amount of ABC allocated to the commercial and recreation sectors in **Alternatives 2-4** and therefore, very little difference in the biological effects among the alternatives. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the estimates.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the snapper grouper fishery was not likely adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If these allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.5.2.2 Economic Effects

Under **Alternative 1 (No Action)**, ex-vessel gross revenue is predicted to total $118,000, which is the largest amount that the industry can earn based on historical data. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. **Alternative 2** would result in an allocation of 4% to the commercial sector. The predicted loss in gross revenue from landings of wahoo to the commercial sector is $1,000. **Alternative 3 (Preferred)** and **Alternative 4** would

provide for an allocation of 4.3% to the commercial sector, which would not change commercial gross revenue in the short-term if historical fishing patterns continue into the near future .

Under **Alternative 1 (No Action)**, in which no sector allocation is specified, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model. This figure assumes the preferred ACL for wahoo of 1,491,785 lbs ww in **Action 28**. The remaining alternatives would establish a recreational allocation of 96% (**Alternative 2**) and 95.7% (**Preferred Alternative 3**). **Alternative 4** allocates 30.4% of the recreational allowance to the for-hire sector and 69.6% to the private recreational sector.

The potential gain in aggregate economic value to the recreational sector due to **Alternative 3 (Preferred)** is $894,000 for the CL model and $1,812,000 for the NL model. Using the same willingness-to-pay estimates, the allocation between the for-hire and private recreational sectors described in **Alternative 4** results in consumer surplus totals of $959,000 and $2,196,000, respectively, for the CL model and $1,945,000 and $4,451,000, respectively, for the NL model. An estimate of willingness-to-pay for one additional pound of coastal migratory pelagic (e.g. wahoo) caught and kept per for-hire trip in North Carolina is $6.73 (Dumas et al. 2009). Using this estimate total consumer surplus to the for-hire sector is estimated at $2,922,000 under the allocation rule in **Alternative 4**. The potential gain in aggregate economic value to the recreational sector due to **Alternative 2** is $904,000 for the CL model and $1,832,000 for the NL model. The relatively large potential gains in consumer surplus are due mainly to the relatively large value of the proposed ACL in **Alternative 2** of **Action 28** with respect to average recreational landings of wahoo for 2005-2009.

Table 4-107. Predicted ex-vessel gross revenue attributed to landings of wahoo after the establishment of sector allocations. Commercial ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and no commercial sector ACT for wahoo (**Action 29**).

Alternative	**Sector Allocation**	**Ex-vessel gross revenue attributed to landings of wahoo ($)**
1 (No Action)	none	$118,000
2	Comm=4%; Rec.=96%	$117,000
3 (Preferred)	**Comm=4.3%; Rec.=95.7%**	**$118,000**
4	Comm=4.3%; FH=29.1%; Rec.=66.6%	$118,000

Table 4-108. Predicted potential economic value to the recreational sector after the establishment of sector allocations for wahoo.
Recreational ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28**.

Alternative	Sector Allocation	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 (No Action)		$2,261,000	$4,584,000
2	Comm=4%; Rec=96%	$3,165,000	$6,416,000
3 (Preferred)	**Comm=4.3%; Rec=95.7%**	**$3,155,000**	**$6,396,000**
4	Comm=4.3%; FH=29.1%; Rec=66.6%	FH=$959,000 Rec=$2,196,000	FH=$1,945,000 Rec=$4,451,000

4.5.2.3 Social Effects

Alternative 1 (No Action) would maintain an overall ABC and may have few social effects. However, determining accountability may become an issue for the recreational sector. With **Alternatives 2-4** there would be a similar commercial allocation between 4% or 4.3%. In **Alternative 4**, the recreational sector allocation is further divided into the private and for-hire sectors, which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. **Alternative 3 (Preferred)** does not split the recreational sector. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short-term losses are offset by any long-term biological gains.

4.5.2.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2-4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. However, **Alternative 3 (Preferred)** would not increase administrative impacts more than the other action alternatives.

4.5.2.5 Council Conclusions

The South Atlantic Council's Allocation Committee met several times in 2008 to address allocation issues for fisheries in the South Atlantic region. The Allocation Committee explored ways to model the economics associated with fisheries but concluded that whereas fisheries

managers have a fairly good handle on life histories and ecosystem interactions from the biological component, they still find themselves arguing over the differences between economic value and economic impact. Ultimately, the resources and expense of developing and applying modeling applications to address allocations was not deemed feasible and the South Atlantic Council chose to establish allocations based on balancing long-term catch history with recent catch history. The South Atlantic Council believes that this approach, now known as "Boyles' Law", is the most fair and equitable way to allocate fishery resources and has chosen to apply it to many of its managed fisheries since it considers past and present participation. Furthermore, the South Atlantic Council felt an additional benefit of this alternative was its inclusion of a transparent formula to specify allocations. Hence the South Atlantic Council chose **Preferred Alternative 3** as their preferred approach to establish allocations for wahoo.

The Dolphin Wahoo Advisory Panel (AP) reviewed the alternatives under this action during their April 2011 meeting and supported the South Atlantic Council's preferred alternative for specifying sector allocations for wahoo.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 3 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.3 Action 28: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo

Alternative 1 (No Action). There is no ACL specified for wahoo. Currently OY for wahoo is the amount of harvest that can be taken by fishermen while not exceeding 100% of MSY (between 1.41 and 1.63 million lbs).

Alternative 2 (Preferred). ACL = OY = ABC (currently estimated to be 1,491,785 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1,268,017 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 1,118,839 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 969,660 lbs ww).

ACL values are shown in **Table 4-109**.

Table 4-109. ACL formula, ACL, and OY values (lbs whole weight) for wahoo under **Alternatives 2-5**.
Commercial and recreational ACL values are based on preferred allocation alternative (4.3% commercial/95.7% recreational) in **Action 26**.

Alternative	ACL Formula	ACL value	Comm ACL	Rec ACL
Alternative 2 (Preferred)	**ABC**	**1,491,785**	**64,147**	**1,427,638**
Alternative 3	85% ABC	1,268,017	54,525	1,213,492
Alternative 4	75% ABC	1,118,839	48,110	1,070,729
Alternative 5	65% ABC	969,660	41,695	927,965

4.5.3.1 Biological Effects

The Magnuson-Stevens Act requires that by 2010, FMPs for fisheries determined by the Secretary to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) to the Snapper Grouper FMP specified ACLs for species subject to overfishing.

Alternative 1 (No Action) would not specify an ACL for wahoo. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to the OFL, acceptable biological catch, ACL, annual catch target, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs,

they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Currently, there are no quotas in place that could serve as ACLs for either the commercial or recreational sector. Therefore, **Alternative 1 (No Action)** would not meet the requirements specified in the Magnuson-Stevens Act.

Alternatives 2 (Preferred)-5 would set ACL and the OY equal to the ABC or at a percentage of the ABC and would represent the management area specified in the FMP for Dolphin and Wahoo. National Standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The NS1 guidelines discusses about the relationship between OFL to MSY and ACT (ACL) to OY. The OFL, if provided by a SSC, is an annual amount of catch that corresponds to the estimate of MFMT applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL would be the limit that triggers AMs, and ACT, if specified, would be the management target for a fishery. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL or ACT. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch in order to achieve the OY without overfishing.

Although the OFL is unknown for wahoo, the South Atlantic Council's SSC has established an ABC control that takes into consideration scientific uncertainty to ensure catches are maintained below a presumed MSY/OFL level. Setting ACL/OY equal to a percentage of the ABC would provide greater assurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}. The NS1 guidelines indicate the ACL may typically be close to the ABC. Setting ACL/OY equal to some percentage of the ABC in **Alternatives 3-5** would provide greater assurance overfishing does not occur. **Alternatives 2 (Preferred)-5** are based on an ABC control that sets ABC below OFL and, therefore, take into consideration scientific uncertainty in the specification of OFL.

Alternative 2 (Preferred) would set the ACL =OY = ABC. The preferred alternative in **Action 26** specified an ABC based on the South Atlantic Council SSC's ABC control rule where ABC = 1,491,785 lbs whole weight. Based on the preferred allocation alternatives in **Action 27**, 4.3% (64,147 lbs whole) of the ACL would be allocated to the commercial sector and 95.7% (1,427,638 lbs whole weight) of the ACL would be allocated to the recreational sector (**Table 4-109**).

Alternatives 3-5 would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. The ACLs under each alternative, based on the Council's preferred ABC control rule is provided in **Table 4-109**. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-5** will likely be beneficial. Since the ACLs and OYs being considered are less than the current range of OY for wahoo, **Alternatives 2-5** are likely to reduce the overall amount of effort targeting wahoo. This decrease will likely reduce the likelihood of interactions between the fishery, sea turtles, and smalltooth sawfish. As the proposed ACLs and OYs decrease, the biological benefits to sea turtles and smalltooth sawfish will likely increase.

4.5.3.2 Economic Effects

Under **Alternative 1 (No Action)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000. The alternative setting ACL equal to ABC, which is represented by **Alternative 2 (Preferred)**, results in no short-term losses in gross revenues to commercial fishers landing wahoo. **Alternative 3,** which provides a 15% buffer between ACL and ABC, would result in foregone revenue of $4,000. **Alternative 4** and **Alternative 5** result in foregone commercial gross revenue of $9,000 and $15,000, respectively.

Table 4-110. Predicted ex-vessel gross revenues attributed to commercial landings of wahoo for different ACL formulas.
Commercial ACL values are based on the preferred ABC for wahoo (1,491,785 lbs ww) in **Action 26**, the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**, and no commercial sector ACT for wahoo (**Action 29**).

Alternative	ACL Formula	Ex-vessel gross revenue attributed to commercial landings of wahoo ($)
1 (No Action)		$118,000
2 (Preferred)	**ACL=ABC**	**$118,000**
3	ACL = 85% ABC	$114,000
4	ACL = 75% ABC	$109,000
5	ACL = 65% ABC	$103,000

Under **Alternative 1 (No Action)**, the baseline estimate of consumer surplus value for recreational wahoo trips is $2,261,000 using willingness-to-pay estimates from the conditional logit (CL) model and $4,584,000 using willingness-to-pay estimates from the nested logit (NL) model (**Table 4-111**).

Alternative 2 (Preferred) sets the ACL equal to the ABC, which leads to a predicted potential increase in recreational landings and economic value to the recreational sector relative to **Alternative 1 (No Action)**. The potential annual short-term gain in consumer surplus to the recreational sector was estimated at $894,000 for the CL model and $1,812,000 for the NL model.

Alternative 3 creates a buffer between the ACL and the ABC. **Table 4-111** shows that the greater the buffer, the lower the estimate of aggregate consumer surplus. The adoption of **Alternative 3** is expected to result in a gain of $421,000 in consumer surplus for the CL model and a gain of $852,000 in consumer surplus for the NL model. The adoption of **Alternative 4** is expected to result in a gain of $105,000 in consumer surplus for the CL model and a gain of $213,000 in consumer surplus for the NL model. The adoption of **Alternative 5** is anticipated to result in a loss of $210,000 in consumer surplus for the CL model and a loss of $427,000 in economic value to the recreational sector for the NL model.

Table 4-111. Predicted potential economic value to the recreational sector for different ACL formulas for wahoo.
Recreational ACL values are based on the preferred ABC for wahoo (1,491,785 lbs ww) in **Action 26** and the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**.

Alternative	ACL Formula	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 (No Action)	No ACL	$2,261,000	$4,584,000
2 (Preferred)	**ACL=ABC**	**$3,155,000**	**$6,396,000**
3	ACL=85% of ABC	$2,682,000	$5,436,000
4	ACL=75% of ABC	$2,366,000	$4,797,000
5	ACL=65% of ABC	$2,051,000	$4,157,000

4.5.3.3 Social Effects

Establishing an ACL for wahoo will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternative 3** or **4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable. Choosing **Alternative 2 (Preferred)** would be less restrictive than the **Alternatives 3** and **4** and likely have the fewest negative social effects in the short term.

4.5.3.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2-5** are minimal and would not differ much among the three action alternatives. However, once

the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures, will increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.5.3.5 Council Conclusions

Optimum yield is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt. An ACL cannot exceed the ABC and may be set annually or on a multiyear basis. Annual catch limits (ACLs) in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, however, the Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate (see **Actions 29** & **30** for wahoo). Similarly, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved.

The Dolphin Wahoo Advisory Panel (AP) supported the South Atlantic Council's preferred alternative.

The South Atlantic Council's SSC did not have any recommendations on the specification of ACL as this is a management limit.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.4 Action 29: Establish Accountability Measures for the Commercial Sector for Wahoo

Alternative 1 (No Action). There is no hard quota for wahoo and there are no AMs in place for wahoo.

Alternative 2. Establish commercial sector ACT for wahoo.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Table 4-112. Commercial sector ACTs for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Commercial ACL	Commercial Sector ACT Subalternatives		
		2a - No ACL	2b -90%(ACL)	2c -80%(ACL)
Wahoo	64,147	N/A	57,732	51,318

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

4.5.4.1 Biological Effects

Currently, there are only size limits, trip limits, and bag limits in place to restrict harvest of wahoo in the South Atlantic. There is no hard quota that would trigger the fishery to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the South Atlantic Council's choice of ACL or ACT for the fishery. As is the case for many fisheries, accurate in-season monitoring of ACTs and ACLs for the purposes of triggering AMs when needed can be very difficult for the recreational sector. The challenges associated with monitoring in-season harvest in recreational fisheries often leads to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded.

Overall, the most biologically conservative approach to specifying AMs for wahoo, would be to establish in-season and post-season AMs. By establishing both types of AMs, exceeding the ACL or ACT could be avoided, provided adequate in-season monitoring is possible, and an additional backstop would exist if the ACL or ACT should be exceeded despite the in-season controls.

Establishing an ACT **(Alternative 2)** for the commercial sector would be somewhat more straight-forward than for the recreational sector since all commercial landings of wahoo are reported through dealer trip tickets and federal logbooks, which can be used to monitor in-season harvest. Therefore, projections of when the ACT would likely be met, or estimates of by how much an ACT is exceeded would be more reliable than for the recreational sector. A higher degree of harvest projection accuracy would reduce the risk of AMs being triggered too soon or too late. Under this action the most biologically beneficial ACT alternative for the commercial sector would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL in order to trigger an AM to prevent ACL overages. **Alternative 3 (Preferred)** would remove the incentive to target wahoo on commercial trips since all purchase and sale would be prohibited once the ACL is projected to be met. This alternative would also still allow some level harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the wahoo stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of wahoo if no level of harvest is permitted after the ACL is reached.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the wahoo component of the dolphin wahoo fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-4** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-4** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting wahoo for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.5.4.2 Economic Effects

Under **Alternative 1 (No Action)** and **Subalternative 2a (Preferred)**, ex-vessel gross revenue derived from landings of wahoo are predicted to total $118,000 (**Table 4-113**). This figure corresponds to the amount of industry revenue predicted under the preferred alternatives in **Actions 27** and **28**. If the Council had specified a commercial sector ACT, and management measures enforcing the ACT were implemented, then the commercial sector would forgo gross revenue ranging from $2,000 for **Subalternative 2b** to $5,000 for **Subalternative 2c (Table 4-113)**.

Table 4-113. Predicted ex-vessel gross revenues attributed to commercial landings of wahoo for different ACT formulas.
Commercial ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**.

Subalternative	ACT Formula	Ex-vessel gross revenue attributed to commercial landings of wahoo ($)
2a (Preferred)	**No ACT**	**$118,000**
2b	90% ACL	$116,000
2c	80% ACL	$113,000

Alternative 3 (Preferred) will likely generate marginally lower economic benefits in the short-run**,** but still be bound by the figures in **Table 4-113**, since this alternative is intended to prevent the commercial sector from harvesting wahoo in quantities exceeding the ACL. The extent of these potential reductions in short-run gross revenue is unknown at this time since the probability that each species' ACL will be exceeded is unknown. Establishing an ACT under **Subalternative 2b** or **Subalternative 2c** that is 90% or 80% of the commercial ACL would reduce the probability of closing the commercial sector. Further, the probability that short-run losses in gross revenue will occur is also a function of NOAA Fisheries Service's ability to accurately project whether and when an ACL is met. Inaccurate projections could either result in premature closures, which would unnecessarily interrupt commercial fishing operations and result in gross revenue losses in the current year, or allow harvests to exceed the ACL, which could have adverse effects on the stock.

Alternative 4 calls for reducing the commercial sector ACL in the following season by the amount of the overage. This alternative will likely generate adverse short-term economic effects (i.e., lower short-term gross revenue) but potentially long-run positive economic effects relative to **Alternative 1 (No Action)** as it would help stabilize stock abundance and reduce the risk overfishing. The extent of these adverse short-term economic effects is unknown at this time since the probability the ACL will be exceeded is unknown.

4.5.4.3 Social Effects

As with dolphin, there would likely be few negative social effects from the **Alternative 1 (No Action)** as no further reductions in harvest of wahoo would be implemented either through a lower ACT threshold or accountability measures. However, there could be negative long-term social effects if stock status is jeopardized from frequent overages. With **Subalternative 2a (Preferred)** there would be no further reduction in harvest levels through an ACT whereas both **Subalternative 2b** and **2c** would both impose reductions of 90% of ACL and 80% of ACL, respectively. In both cases the reductions could impose negative social effects. The closure of the commercial fishery under **Alternative 3 (Preferred)** would have beneficial social effects as stock status would be protected. With **Alternative 4** there would be payback by the amount of any overage. This could impose some short-term negative impacts upon the commercial fishery in the following season.

4.5.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 2-4** would be greatest relative to the commercial AMs proposed. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place (**Alternative 2** and associated subalternatives). **Alternative 3 (Preferred)** and **Alternative 4** would require rule-making, education, monitoring and enforcement, but the administrative impacts of one relative to the other is expected to be minor.

4.5.4.5 Council Conclusions

Annual Catch Targets (ACTs) refer to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. For the commercial component of the wahoo fishery, the South Atlantic Council concluded that the level of uncertainty is minimal and does not warrant the need to establish an ACT (**Subalternative 2a, Preferred**). Quota monitoring in the commercial fishery and the AMs the South Atlantic Council is proposing to implement through this amendment, are sufficient to account for management uncertainty.

Alternative 3 (Preferred) would prevent the commercial sector from profiting from the harvest of wahoo in quantities exceeding the ACL, and thus provide a disincentive to target the species once the ACL has been reached. After the ACL has been met, then all harvest would be limited to the recreational bag limit. The South Atlantic Council saw no need to put in place measures to correct for an ACL overage post-season. The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Dolphin Wahoo Advisory Panel (AP) supported not specifying an ACT for the commercial sector but did not support setting in-season and post-season commercial AMs for wahoo (**Preferred Alternative 3** and **Alternative 4**).

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.5 Action 30: Establish Accountability Measures for the Recreational Sector for Wahoo

Alternative 1 (No Action). Do not specify new recreational AMs for wahoo.

Decision 1. Specify an ACT?

Alternative 2. Specify an ACT.

Subalternative 2a. Do not specify an ACT.
Subalternative 2b. The ACT equals 85% of the ACL.
Subalternative 2c. The ACT equals 75% of the ACL.
Subalternative 2d (Preferred). The ACT equals ACL*(1-PSE) or ACL*0.5, whichever is greater. Council guidance to use the PSE 5-year (2005-2009) average (18.4).

Table 4-114. Percent Standard Errors (PSEs) for wahoo from weight estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on June 10, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Wahoo	21.1	23.1	19.8	13.7	20.8	18.1	19.8	19.6	18.4

Note: The Council decided to use the 5-year average PSE because this better represented recent catches than the 3 year average.

Table 4-115. The recreational ACT for wahoo for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT Subalternatives		
		5a - 85%(ACL)	5b - 75%(ACL)	5c - ACL [(1-PSE) or 0.5, whichever is greater]
Wahoo	1,427,638	1,213,492	1,070,729	1,164,953

Average recreational landings from 2005, 2006, 2008, and 2009 from **Table 4-106** = 768,686 lbs ww. Note: 2007 landings were excluded based on them being so high.

Decision 2. What is the AM trigger?

Alternative 3. Specify the AM trigger.

Subalternative 3a. Do not specify an AM trigger.
Subalternative 3b (Preferred). If the *annual landings* exceed the ACL in a given year.
Subalternative 3c. If the *mean landings* for the past three years exceed the ACL.[1, 2]
Subalternative 3d. If the *modified mean landings* exceed the ACL. The modified mean is the average of the most recent 5 years of available landings data with highest and lowest landings estimates removed.[1,2]

Subalternative 3e. If the lower bound of the 90% *confidence interval* estimate of the MRFSS landings' population mean plus headboat landings is greater than the ACL.

Notes:
[1] *Start the clock over.* In any year the ACL is reduced or increased, the sequence of future ACLs will begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on.
[2] For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.

Decision 3. Is there an in-season AM?

Alternative 4. Specify the in-season AM.

Subalternative 4a (Preferred). Do not specify an in-season AM.

Subalternative 4b. The Regional Administrator shall publish a notice to close the recreational sector when the ACL is projected to be met.

Decision 4. Is there a post-season AM?

Alternative 5. Specify the post-season AM.

Subalternative 5a. Do not specify a post-season AM.

Subalternative 5b. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the mean landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running mean.[1]

Subalternative 5c. *Monitor following year.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator would take action as necessary.

Subalternative 5d (Preferred). *Monitor following year and shorten season as necessary.* If the ACL is exceeded, the following year's landings would be monitored in-season for persistence in increased landings. The Regional Administrator will publish a notice to reduce the length of the fishing season as necessary.

Subalternative 5e. *Monitor following year and reduce bag limit as necessary.* If the ACL is exceeded, the following year's landings would be monitored for persistence in increased landings. The Regional Administrator will publish a notice to reduce the bag limit as necessary.

Subalternative 5f. *Shorten following season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the ACL for the following fishing year.

Subalternative 5g. *Reduce bag limit and shorten season.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit to 1

fish and reduce the season as necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Subalternative 5h. *Payback.* If the ACL is exceeded, the Regional Administrator shall publish a notice to reduce the ACL in the following season by the amount of the overage.

4.5.5.1 Biological Effects

Alternative 1 (No Action) would not specify recreational AMs for wahoo and would not comply with the requirements of the Magnuson-Stevens Act. **Alternative 1 (No Action)** would perpetuate the current level of fishing with no mechanism to maintain harvest levels at or below the ACLs established in the previous section. Therefore, taking no action to establish AMs would not benefit the biological environment.

With the exception of **Subalternative 2a, Alternative 2** and its subalternatives would specify a recreational sector ACT, which would be set lower than the recreational sector ACL. **Subalternative 2a** would not set a recreational sector ACT at all. **Subalternatives 2b** and **2c** would establish reduced harvest levels (85% and 75% of the ACL, respectively) designed to hedge against an ACL overage and therefore, provide a buffer between the ACT and ACL, and account for management uncertainty. **Subalternative 2d (Preferred)** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or one minus the PSE from the recreational fishery, whichever is greater (**Table 4-115**). The lower the value of the PSE the more reliable the landings data. By using PSE (**Table 4-114**) in **Subalternative 2d**, more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post-season AMs that are meant to correct for an ACL overage.

With the exception of **Subalternative 3a**, **Alternative 3** and its subalternatives would specify the AM trigger under different scenarios. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. If in any year the ACL is reduced or increased, the sequence of future ACLs would begin again starting with a single year of landings compared to the ACL for that year, followed by a 2-year average of landings compared to the 2-year average annual catch limits in the next year, further followed by a 3-year average of landings compared to the 3-year average of ACLs for the third year, and so on. For example, for year 2011, 2011 landings would be used. For 2012, mean landings of 2011 and 2012 would be used. For 2013 and beyond, the most recent three-year running mean would be used to determine if the ACL is exceeded.

Using the average of three years landings would help address any anomalous highs and lows reflected in the landings data; however, if one of the three years was associated with an extremely large spike in landings, which may or may not be attributable to an actual increase in harvest or some sampling variability, that spike would greatly influence the three year average for several years in the future and potentially result in the unnecessary triggering of harvest restrictions.

Subalternatives 3d is similar to **Subalternative 3c**, except that a review of the most recent 5-year time series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings was greater than the ACL for the individual species or species complex then the AMs would be triggered.

Subalternative 3e would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings is greater than the ACL. The application of the 90% CI could be considered a more conservative parameter to use when estimating overage amounts. Additionally, if years of high landings are indeed attributable to increased harvest due to spikes in recruitment or effort shifts rather than sampling effects, this method of implementing AMs may remove years of high landings inappropriately, and thus fail to trigger corrective action when it would have been needed. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI.

One of the benefits of employing the approaches in **Subalternatives 3c-3e** to implementing AMs is that it provides an opportunity for fishery managers to use a data set uninfluenced by anomalous highs and lows, which could be caused by statistical variability. Alternatively, it may be difficult to decide if such differences in recreational landings are due to statistical or sampling variances, or if they can be attributed to actual increased harvest. In the case of the latter, the modified mean approach (**Subalternative 3d**) may not be the most biologically advantageous compared to other alternatives considered that would retain high and low landings years. In cases where it cannot be determined that one year's high landings are definitively caused by statistical variation, it may be difficult to justify removing that year's landings from the time series of data, especially if there is a strong year class known to have entered the fishery at that time or if there have regulations implemented that cause an extreme effort shift.

Since management uncertainty is already accounted for in the choice of an ACT (**Subalternative 2d**, **Preferred**), scientific uncertainty is accounted for in the choice of the South Atlantic Council SSC's ABC recommendation (and its corresponding ACL), the biological benefits would increase in order from **Subalternatives 3e-3b (Preferred).**

Alternative 4 examines the need for an in-season AM; the South Atlantic Council chose not to have an in-season AM as defined in **Subalternative 4a (Preferred)**. **Subalternative 4b** would allow the RA to publish a notice to close the recreational sector when the ACL is projected to be met. In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in when recreational data become available after each wave. There would likely be considerable uncertainty in imposing in-season AMs for species in the recreational sector, particularly for species which are infrequently taken. Therefore, post-season AMs may be more appropriate for the recreational sector. Biological benefits may not be affected adversely by not having an in-season AM due to the current preferred alternatives for an ACT and AM trigger.

With the exception of **Subalternative 5a**, which would not specify a post-season AM, **Alternative 5** and its subalternatives specify methodologies for specifying post-season AM actions that would be taken if the ACL is exceeded. Under **Subalternative 5b**, ACLs would be compared with landings over a range of years to determine the magnitude of the ACL overage for imposing post-season AMs. For example, for 2011, only 2011 landings would be used. For 2012, the mean landings from 2011 and 2012 would be used, and for 2013 and beyond, the most recent three-year running mean would be used. If the ACL is exceeded, **Subalternatives 5c-5e** would monitor the following year's landings for persistence in increased landings. Under **Subalternative 5c**, the RA would take action as necessary to ensure an ACL was not exceeded in a year subsequent to an ACL overage. Under **Subalternative 5d (Preferred)**, the RA would publish a notice to reduce the length of the fishing season as necessary, and under **Subalternative 5e**, the RA would publish a notice to reduce the bag limit as necessary. Under **Subalternative 5f**, if the ACL is exceeded, the RA would publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing season. **Subalternative 5g** would reduce the bag limit by the necessary amount to ensure overage does not occur the following year. In contrast to **Subalternative 5f**, under **Subalternative 5h**, there would be a payback provision for exceeding an ACL, whereby, the RA would publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternatives 5d (Preferred) and **5f** would ensure that the amount of the previous year's ACL overage would be accounted for in the subsequent year's protection via a shortened season, and thus would be biologically beneficial. The monitoring component of **Subalternatives 5c-5e** would allow for any anomalies or data reporting irregularities to be taken into account before the AMs would be effective, hence possibly adding a socio-economic benefit to the biological benefit of any management measures such as reducing the length of the following fishing season **(Subalternative 5f)**. There would be an opportunity to determine if a spike in landings is merely a factor of some statistical variability, or if it is due to truly high landings that continue to persist into the following fishing season. Years of exceptionally high landings are not eliminated under these alternatives, rather they are monitored to assess whether spikes in landings can truly be considered outliers or if they are in fact years of increased harvest that need to be addressed through corrective action.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the wahoo component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-5** and the associated subalternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-5** and the associated subalternatives are likely to be beneficial to sea turtles and smalltooth sawfish. Implementing AM would likely reduce the amount of fishing effort targeting wahoo for a period of time, which would likely lower the risk of interactions between sea turtles and smalltooth sawfish, providing additional biological benefits to these species.

4.5.5.2 Economic Effects

Under **Alternative 1 (No Action)** and **Subalternative 2a**, the baseline estimate of consumer surplus value for recreational wahoo trips is $3,155,000 using willingness-to-pay estimates from the conditional logit (CL) model and $6,396,000 using willingness-to-pay estimates from the nested logit (NL) model. If the Council prefers to specify a recreational sector ACT, then economic losses to the recreational sector are predicted to accrue.

Subalternative 2b leads to the least loss in consumer surplus to the recreational sector relative to **Alternative 1 (No Action)**, estimated at $473,000 for the CL model and $959,000 for the NL model. The potential annual short-term loss to the recreational sector for **Subalternative 2c** was estimated at $789,000 for the CL model and $1,599,000 for the NL model. **Subalternative 2d (Preferred)** results in potential annual short-term loss of consumer surplus to the recreational sector of $580,000 for the CL model and $1,177,000 for the NL model. These losses would only accrue in the future if and when the Council uses the ACT for management purposes.

Table 4-116. Predicted potential economic value to the recreational sector for different ACT formulas for wahoo.
Recreational ACL values are based on the preferred ACL for wahoo (1,491,785 lbs ww) in **Action 28** and the preferred sector allocation for wahoo (4.3% commercial/95.7% recreational) in **Action 27**.

Subalternative	ACT Formula	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (CL)	Consumer Surplus (WTP) Value of Recreational Wahoo Trips – Haab et al (NL)
1 and 2a	No ACT	$3,155,000	$6,396,000
2b	85% ACL	$2,682,000	$5,436,000
2c	75% ACL	$2,366,000	$4,797,000
2d (Preferred)	**ACT equals [sector ACL* (1-PSE)] or [sector ACL*0.5], whichever is greater]**	**$2,575,000**	**$5,219,000**

Alternative 3 considers alternatives for establishing an AM trigger. **Subalternative 3a** would not specify an AM trigger and thus would not generate any indirect economic effects. The primary difference between **Subalternatives 3b (Preferred)-3e** is the probability of an ACL being exceeded under each alternative relative to the others. An ACL is most likely to be exceeded for certain snapper species under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while the ACL is the least likely to be exceeded under **Subalternative 3e**. Assuming these same relative probabilities apply to wahoo, **Subalternative 3b (Preferred)** is the most conservative alternative and in turn has the highest likelihood of triggering an in-season AM under **Alternative 4** or a post-season AM under **Alternative 5**. Thus, expected adverse, indirect economic effects in the short term are greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**. Conversely, expected positive, indirect economic effects in the long term are the greatest under **Subalternative 3b (Preferred)**, followed by **Subalternative 3c** and **Subalternative 3d**, while such effects are the least under **Subalternative 3e**.

Alternative 4 considers alternatives for establishing an in-season AM. **Subalternative 4a (Preferred)** would not establish an in-season AM and thus would not generate any indirect economic effects. **Subalternative 4b** would establish an in-season AM, in the form of closing the recreational sector when its ACL is projected to be met. Because there is some positive probability the recreational sector's ACL will be exceeded, **Subalternative 4b** would generate greater adverse, indirect economic effects in the short-term relative to **Subalternative 4a (Preferred)**. The inability to properly monitor the recreational sector could generate additional adverse indirect economic effects if it is closed too soon or too late due to inaccurate projections.

Alternative 5 considers alternatives for establishing a post-season AM. **Subalternative 5a** would not establish a post-season AM and thus would not generate any indirect economic effects. **Subalternative 5b** would not generate any indirect economic effects as it only specifies the years of landings data to compare against the ACL when determining if a post-season AM is necessary. **Subalternative 5c** may generate the same indirect economic effects in the short term as **Subalternative 5d (Preferred)** and **Subalternative 5e** as it allows the RA to shorten the following season or reduce the bag limit if the ACL is exceeded for two years in a row. Since economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit, the adverse indirect economic effects resulting from **Subalternative 5e** are expected to be greater than under **Subalternative 5d (Preferred)** in the short term**.**

Under **Subalternative 5f** and **Subalternative 5g**, a post-season AM (i.e., reducing the length of the fishing season and/or the bag limit) must be implemented in the following year if the ACL is exceeded in just one year, whereas a post-season AM is only required if the ACL is exceeded in two consecutive years under **Subalternatives 5c**, **5d (Preferred)**, and **5e.** Because the probability that a post-season AM will be required is greater under **Subalternative 5f** and **Subalternative 5g** relative to **Subalternatives 5c, 5d (Preferred)**, and **5e**, the expected adverse indirect economic effects resulting from **Subalternative 5f** and **Subalternative 5g** are also expected to be greater than under **Subalternatives 5c, 5d (Preferred)**, and **5e** in the short-term. Economic welfare in the recreational sector is generally more dependent on the length of the fishing season than on the bag limit. However, **Subalternative 5g** would require a reduction in the bag limit from two fish to one fish as well as a reduction season length. Thus, the adverse indirect economic effects resulting from **Subalternative 5g** are expected to be greater than under **Subalternative 5f** in the short-term**.**

Because of the immediate payback provision, where the recreational sector ACL in the following season is directly reduced by the amount of any overage, there is a higher probability of adverse indirect short-term economic effects under **Subalternative 5h** relative to **Subalternative 5f** or **Subalternative 5g**. The payback that would be implemented under **Subalternative 5h** would further assist with protecting the stock whereas **Subalternative 5f** alone would not since it reduces the length of the recreational fishing season rather than recreational sector ACL in the following year. **Subalternative 5g** would reduce the bag limit as well as the fishing season and thus may afford nearly as much protection to the stock as **Subalternative 5h**. As such, the adverse indirect economic effects under **Subalternative 5g** are expected to be nearly as great as under **Subalternative 5h**.

4.5.5.3 Social Effects

The social effects of establishing accountability measures for wahoo are assumed to be similar to those for dolphin and other recreational fisheries. **Alternative 1 (No Action)** would not establish ACTs or AMs for the wahoo recreational sector which may have few negative social effects as there are measures in place through previous management action. No ACT would be established through **Subalternative 2a**, which may not have any negative social effects through further harvest reductions. **Subalternatives 2b and 2c** offer buffers that would impose increasingly stricter thresholds on the harvest that in turn would have increasing negative social effects if these levels are reductions from current harvest trends. However, these levels may be necessary to maintain a sustainable stock. **Subalternative 2d (Preferred)** would set an ACT that is the less restrictive of the alternatives.

Under **Alternative 3** the AM trigger is set, which in itself should not have any negative social effects, but could impose negative effects indirectly if the trigger initiates management action that is unnecessary at the time or delays management action when it is necessary. **Subalternative 3a** would not set an AM trigger and could impose indirect effects as mentioned. **Subalternative 3b (Preferred)** would impose a trigger when annual catch landings are exceeded. Other alternatives would use various methods to moderate a closure based upon one year's landing as in **Subalternative 3c**, which uses the mean over the past three years. This could be beneficial if for some reason landings in one or more years were artificially high or low due to anomalies in harvesting behavior or stock status. An even longer time frame for "smoothing out" landings is used in **Subalternative 3d**, which may be more beneficial if landings are especially volatile. The more conservative trigger would be in **Subalternative 3e**, which could impose negative social effects as harvest levels are well below averages in most years. The choice of whether to impose an in-season AM is outlined in **Alternative 4 Subalternative 4a (Preferred)** would not specify an in-season AM which could have beneficial social effects as there would be no closure as when the ACL is projected to be met in **Subalternative 4b**.

Post-season accountability measures are considered under **Alternative 5** with several different subalternatives. **Subalternative 5a** could have negative social effects if stocks status is affected by the lack of any accountability measures through post-season measures. **Subalternative 5b** uses smoothing allowing for adjustments to the landings, which would account for uncertainty in recreational landings whether from sampling or statistical anomalies and would likely have fewer negative social effects than **Subalternative 5c**, which uses only the next year for monitoring. **Subalternative 5d (Preferred)** would shorten the next season with close monitoring of the fishery and may have benefits if management can respond in a timely manner to keep the fishing season open for as long as possible. Reducing the bag limit in **Subalternative 5e** may be preferable in some fisheries, depending upon the impacts of bag limit reductions compared to shorter seasons. This may be specific to a species or fishery. **Subalternative 5f** may have more negative social effects as it does not allow for more flexibility in setting parameters for the fishing season the next year as in **Subalternative 5d (Preferred)**. Reducing the bag limit in **Subalternative 5g** may have beneficial social effects as the season may be extended. Again, depending upon the alternative chosen, the combination with other actions can have a

compounding effect upon the social environment. Fishermen will likely prefer the longest fishing season with the highest bag limit and the subsequent trade-offs between shorter seasons or lower bag limits may depend upon the area fished. In **Subalternative 5h** payback would reduce the next years ACL and could have negative social effects depending upon the amount of payback. However, over time such payback may be necessary to sustain the stock.

4.5.5.4 Administrative Effects

Under **Action 30**, the alternatives for specifying ACTs and AMs for the recreational sector are explained using a step-wise process for ease of understanding. Recreational data collection can be more administratively burdensome due to time delay and lengthy review. **Alternative 1 (No Action)** would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. **Alternative 2** and associated subalternatives deal with the specification of the ACT. Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment. **Alternative 3** specifies the AM trigger. Once specified, this is not likely to have any administrative impacts. **Alternative 4** and associated subalternatives would specify the in-season AM. This action, like **Alternative 5** (and associated subalternatives) to specify the post-season AM will likely have an increased administrative burden associated with enforcement, monitoring, rule-making and informing the public. However, the alternatives and associated subalternatives are not likely to differ much in their impacts. The tracking of recreational landings can be challenging and would likely impose a burden on the administrative environment. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.5.5.5 Council Conclusions

The South Atlantic Council used a four-step approach to assess the AM alternatives for the recreational sector. First, the Council determined whether or not to specify an ACT. The latter refers to the amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. The NS1 guidelines state that setting of ACTs is left to the discretion of each Council and should be based on the level of management uncertainty in each fishery. The ACT alone does not trigger any corrective action. Second, the Council determined the approach to decide whether or not an ACL overage has occurred. Next, the Council determined whether in-season action would be taken if the ACL is projected to be met. Lastly, the South Atlantic Council decided whether or not post-season AMs should be used to correct for ACL overages and/or

prevent an ACL overage in the following year. The combination of the preferred alternatives designated under each of step of the decision process creates the recreational AM.

The Council reasoned that the level of management uncertainty for the recreational component of the wahoo fishery is currently high enough to warrant specification of an ACT. Moreover, they reasoned that including the PSE for the catch estimates into the formula to establish ACT would further account for uncertainty in the recreational estimates. Hence, the South Atlantic Council concluded that **Subalternative 2d (Preferred)** best met the need to account for management uncertainty in the recreational wahoo fishery. The South Atlantic Council intends to use ACTs in the recreational sector as points of reference to assist with management decisions. The ACTs would not limit landings nor trigger AMs, but would be used to gauge whether management action is likely to be necessary in a particular fishery.

The South Atlantic Council examined various approaches to help ascertain ACL overages and thus trigger AMs. Under **Subalternative 3b (Preferred)**, AMs would be triggered if the annual landings exceeded the ACL in a given year. **Subalternative 3c** would examine the trend in the past three years of landings data to determine if AMs would be triggered. **Subalternative 3d** is similar to the previous one, except that a review of the most recent 5-year series of landings data would be conducted to determine which of the five years were associated with the highest and lowest harvest levels. After the years of highest and lowest landings were determined, those two years' landings would be removed from the time series leaving three years of landings to be averaged. If the averaged total of the remaining three years' landings were greater than the ACL for the individual species or species complex then the AMs would be triggered. **Subalternative 3e** would trigger AMs if the lower 90% confidence interval (CI) estimate of MRFSS landings' population mean plus headboat landings were greater than the ACL.

An evaluation of these approaches revealed problems with the use of averages and the use of the lower bound of the 90% CI. The averages do not necessarily help with the problem of uncertainty. If landings fluctuate around a certain point, then the average would smooth out the landings and reveal the actual trend. But in other instances (i.e., if the landings trend up or down over time) this is not the case. The average would instead create a lag and mask what was actually happening in the landings. By using the lower bound of the 90% CI, the landings estimate is effectively being lowered the by the amount of uncertainty. This is the same as if the ACL was being increased by the amount of the uncertainty. However, the actual landings are just as likely to be higher than the estimate, but this isn't taken into consideration by using only the lower bound of the CI. Therefore, the Council chose as their preferred alternative to simply compare the annual landings to the ACL in a given year (**Subalternative 3b, Preferred**). The South Atlantic Council concluded that this approach was the most accurate way to determine whether AMs should be put in place.

Because of the level of uncertainty in the recreational landings, the Council chose not to implement in-season AMs (**Subalternative 4a, Preferred**). In-season monitoring of recreational landings is difficult. Currently, there is a 45-day time lag in the availability of recreational data after each wave. There would likely be considerable uncertainty in imposing in-season AMs in the recreational sector. Therefore, the Council chose to focus on post-season AMs for the recreational sector.

Alternative 5 and its subalternatives specify methodologies for specifying post-season AMs that would be implemented if the ACL is exceeded. Of these, **Subalternative 5d (Preferred)** was chosen as the South Atlantic Council's preferred: if the ACL is exceeded in a given year, the following year's landings would be monitored in-season for persistence in increased landings. If landings continue to be above the ACL, then the RA would publish a notice to reduce the length of the fishing season as necessary. In-season monitoring of the MRFSS waves, the first few of the fishing year, would provide enough information to anticipate whether landings are going to increase and go above the ACL. This approach allows managers to anticipate whether action is truly necessary.

The Dolphin Wahoo Advisory Panel (AP) supported the specification of a recreational ACT but did not support the South Atlantic Council's preferred approach to setting other recreational AMs for wahoo. Instead, the AP recommended that, if required in the future, the bag limit should be reduced (e.g., 2 per person or 6 per boat whichever is less) to achieve the necessary reduction in landings. In addition, the Dolphin Wahoo AP suggested the development of a method for notifying the sector (commercial, for-hire and private recreational) when 90% of their quota is being met. The Dolphin Wahoo AP also recommended that the South Atlantic Council modify their proposed approach to only adjust bag limits and deduct overages if the total ACL (commercial and recreational) is exceeded. The South Atlantic Council discussed this approach during their June 2011 meeting. However, given that this was not among the alternatives that had been analyzed, the South Atlantic Council could not consider it. However, the South Atlantic Council intends to evaluate this approach further and determine its applicability.

The South Atlantic Council's SSC did not provide a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) expressed concern over the level of outreach that is likely to be necessary to keep the public adequately informed of regulatory changes as a result of the proposed accountability measures.

The South Atlantic Council concluded that the preferred alternatives best meet the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.5.6 Action 31: Establish Management Measures for Wahoo

Note: The South Atlantic Council's preferred recreational ACT (1,164,953 lbs whole weight) does not require a reduction based on average recreational landings (2005-2009, excluding 2007); in fact, the average catch (768,686 lbs whole weight) is 34% below the ACT (**Table 4-106**). The commercial sector will be closed when the commercial ACL is met or projected to be met. Average commercial landings (42,004 lbs ww) during 2005-2009 (excluding 2007) are well below the South Atlantic Council's preferred alternative for a commercial ACL (64,147 lbs whole weight).

Alternative 1 (No Action) (Preferred). Retain current management measures for wahoo.

- Fishing year is January 1 to December 31.
- Sale of recreationally caught wahoo in or from the Atlantic EEZ is prohibited.
- 500-pound commercial trip limit for wahoo (landed head and tail intact) with no transfer at sea allowed.
- Recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.
- For a commercial permitted vessel fishing north of 39°N latitude, that does not have a federal commercial vessel permit for dolphin or wahoo, there is a trip limit of 200 lbs of dolphin and wahoo combined.

Alternative 2. Establish a boat limit of 2-12 wahoo per boat/vessel per day in the recreational fishery.

Subalternative 2a. Establish a boat limit of 12 wahoo per boat/vessel per day.
Subalternative 2b. Establish a boat limit of 11 wahoo per boat/vessel per day.
Subalternative 2c. Establish a boat limit of 10 wahoo per boat/vessel per day.
Subalternative 2d. Establish a boat limit of 9 wahoo per boat/vessel per day.
Subalternative 2e. Establish a boat limit of 8 wahoo per boat/vessel per day.
Subalternative 2f. Establish a boat limit of 7 wahoo per boat/vessel per day.
Subalternative 2g. Establish a boat limit of 6 wahoo per boat/vessel per day.
Subalternative 2h. Establish a boat limit of 5 wahoo per boat/vessel per day.
Subalternative 2i. Establish a boat limit of 4 wahoo per boat/vessel per day.
Subalternative 2j. Establish a boat limit of 3 wahoo per boat/vessel per day.
Subalternative 2k. Establish a boat limit of 2 wahoo per boat/vessel per day.

Table 4-117. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

							%Recreational Reduction from various time periods			
Wahoo	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL (4.3%)**	**Rec ACL (95.7%)**	**Rec ACT**	**2005-09**	**2006-09**	**2004-09**	**05, 06, 08, 09**
SSC ABC Control Rule	Unknown	1,491,785	1,491,785	64,147	1,427,638	1,164,953	-12%	-8.5%	-11%	-34%
GMFMC Tier 3a*	1,994,417	1,788,691	1,788,691	76,914	1,711,777	1,473,840	-31%	-28%	-30%	-48%
Mean + 1.0 Std.Dev.		1,582,965	1,582,965	68,067	1,514,898	1,304,327	-22%	-18%	-21%	-41%
Mean + 0.5 Std.Dev.		1,377,239	1,377,239	59,221	1,318,018	1,134,814	-10%	-6%	-9%	-32%
Mean		1,171,513	1,171,513	50,375	1,121,138	965,300	6%	10%	7%	-20%
Average landings for time period from **Table 4-106**.							1,023,180	1,065,807	1,036106	768,686

Note: The South Atlantic Council decided to calculate reductions in harvest for wahoo using average landings for years 2005-2009 excluding 2007. The bag limit specified for wahoo was first implemented in 2004 and the reduction is reflected in the 2005 landings after full implementation. Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented, and the South Atlantic Council concluded this was more of a sampling factor than actual catches.

4.5.6.1 Biological Effects

Alternative 1 (Preferred) (No Action) would retain the management measures currently in place including: prohibition on sale of recreationally caught wahoo in or from the Atlantic EEZ; 500-pound commercial trip limit for wahoo (landed head and tail intact); and recreational bag limit of 2 wahoo per person per day. The South Atlantic Council's preferred recreational ACT (1,164,953 lbs whole weight) does not require a reduction in harvest based on average recreational landings (2005-2009, excluding 2007 (**Table 4-117**). Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented in 2004, and the South Atlantic Council concluded this was more of a sampling factor than actual catches. Furthermore, the South Atlantic Council's preferred ACL does not require a reduction in harvest based on average commercial landings (2005-2009, excluding 2007 (**Table 4-117**).
The AMs under **Actions 29** and **30** include alternatives such as closing the fishery when landings approach an ACL to ensure overfishing does not occur. The South Atlantic Council is considering additional management measures in this section that would reduce the chance ACLs are exceeded.

Alternative 2 would establish a boat limit for private, charter, and headboat recreational fishermen ranging from 2 to 12. Proposed reductions in the vessel limit would reduce harvest of wahoo in the private and recreational sectors range from 0.75% for a 12 vessel limit to 26% for a 2-fish per vessel limit (**Table 4-118**). Restricting the vessel limit to 2-fish per vessel (**Subalternative 2k)** would have the greatest biological effect and would provide the greatest assurance the ACL would not be exceeded, and would provide an estimated 26% reduction in wahoo harvest in the recreational fishery. However, based on 2005-2009 landings data (excluding 2007) no reduction in recreational landings is needed to prevent the ACT from being exceeded.

Table 4-118. Reduction (percent) in harvest of wahoo for Atlantic states provided by a reduction in the vessel limit.

	Charter	**Private**	**All**
Vessel limit	**Reduction**	**Reduction**	**Reduction**
12	1.00	0.00	0.75
10	1.45	0.00	1.09
9	1.90	0.00	1.42
8	2.56	0.68	2.10
7	3.79	1.69	3.27
6	5.80	3.38	5.20
5	8.47	5.41	7.71
4	12.15	7.43	10.98
3	17.28	11.49	15.84
2	28.43	17.23	25.65
1	48.72	42.23	47.11

There is likely to be no additional biological benefit to protected species from **Alternative 1 (Preferred) (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. The subalternatives under **Alternative 2** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from the subalternatives under **Alternative 2** are unclear. If the alternative perpetuates the existing amount of fishing effort it is unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if this alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.5.6.2 Economic Effects

Alternative 2 and its subalternatives would establish a boat limit between 2 and 12 wahoo per boat/vessel per day in the recreational sector. The reductions in consumer surplus to the recreational sector predicted with this alternative are documented in **Tables 4-119 through 4-129**. A summary of the changes in economic value to the recreational sector across all alternatives under **Action 31** is presented in **Table 4-130**.

Table 4-119. Change in economic value to the recreational sector with a 12-wahoo boat limit (**Subalternative 2a**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.00%	
ALT2 Reduction (lbs)	0	0	2,255	2,255
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$10,799	$10,799
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	67	67
NOR per angler trip	$63	na	$128	
dPS	$0	na	$8,548	$8,548
dTS	$0	$0	$19,346	$19,346

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-120. Change in economic value to the recreational sector with an 11-wahoo boat limit (**Subalternative 2b**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.23%	
ALT2 Reduction (lbs)	0	0	2,762	2,762
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$13,228	$13,228
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	82	82
NOR per angler trip	$63	na	$128	
dPS	$0	na	$10,471	$10,471
dTS	$0	$0	$23,699	$23,699

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-121. Change in economic value to the recreational sector with a 10-wahoo boat limit (**Subalternative 2c**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.45%	
ALT2 Reduction (lbs)	0	0	3,269	3,269
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$15,658	$15,658
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	97	97
NOR per angler trip	$63	na	$128	
dPS	$0	na	$12,394	$12,394
dTS	$0	$0	$28,052	$28,052

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-122. Change in economic value to the recreational sector with a 9-wahoo boat limit (**Subalternative 2d**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.00%	1.90%	
ALT2 Reduction (lbs)	0	0	4,284	4,284
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$0	$20,517	$20,517
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	127	127
NOR per angler trip	$63	na	$128	
dPS	$0	na	$16,241	$16,241
dTS	$0	$0	$36,758	$36,758

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-123. Change in economic value to the recreational sector with a 8-wahoo boat limit (**Subalternative 2e**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	0.68%	2.56%	
ALT2 Reduction (lbs)	0	4,958	5,772	10,729
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$14,035	$27,644	$41,679
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	171	171
NOR per angler trip	$63	na	$128	
dPS	$0	na	$21,882	$21,882
dTS	$0	$14,035	$49,527	$63,561

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-124. Change in economic value to the recreational sector with a 7-wahoo boat limit (**Subalternative 2f**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	1.69%	3.79%	
ALT2 Reduction (lbs)	0	12,321	8,545	20,866
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$34,881	$40,926	$75,807
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	253	253
NOR per angler trip	$63	na	$128	
dPS	$0	na	$32,396	$32,396
dTS	$0	$34,881	$73,323	$108,203

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-125. Change in economic value to the recreational sector with a 6-wahoo boat limit (**Subalternative 2g**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	3.38%	5.80%	
ALT2 Reduction (lbs)	0	24,642	13,076	37,718
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$69,762	$62,631	$132,393
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	387	387
NOR per angler trip	$63	na	$128	
dPS	$0	na	$49,577	$49,577
dTS	$0	$69,762	$112,209	$181,970

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-126. Change in economic value to the recreational sector with a 5-wahoo boat limit (**Subalternative 2h**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	5.41%	8.47%	
ALT2 Reduction (lbs)	0	39,442	19,096	58,537
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$111,660	$91,463	$203,123
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	566	566
NOR per angler trip	$63	na	$128	
dPS	$0	na	$72,400	$72,400
dTS	$0	$111,660	$163,864	$275,523

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-127. Change in economic value to the recreational sector with a 4-wahoo boat limit (**Subalternative 2i**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	7.43%	12.15%	
ALT2 Reduction (lbs)	0	54,168	27,392	81,561
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$153,352	$131,202	$284,553
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	811	811
NOR per angler trip	$63	na	$128	
dPS	$0	na	$103,856	$103,856
dTS	$0	$153,352	$235,058	$388,410

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-128. Change in economic value to the recreational sector with a 3-wahoo boat limit (**Subalternative 2j**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	11.49%	17.28%	
ALT2 Reduction (lbs)	0	83,768	38,958	122,726
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$237,148	$186,598	$423,746
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	1,154	1,154
NOR per angler trip	$63	na	$128	
dPS	$0	na	$147,707	$147,707
dTS	$0	$237,148	$334,305	$571,453

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

Table 4-129. Change in economic value to the recreational sector with a 2-wahoo boat limit (**Subalternative 2k**).

	Head	Private	Charter	Total
ALT1 Landings (lbs)	5,041	729,051	225,450	959,542
ALT2 Reduction (%)	0.00%	17.23%	28.43%	
ALT2 Reduction (lbs)	0	125,615	64,096	189,711
wtp/fish	$100.93	$100.93	$100.93	
lbs/fish	35.65	35.65	21.07	
wtp/lb	$2.83	$2.83	$4.79	
dCS	$0	$355,619	$307,001	$662,620
Target (angler) trips	2,305	na	6,678	8,983
ALT3 Reduction in Target Trips	0	na	1,899	1,899
NOR per angler trip	$63	na	$128	
dPS	$0	na	$243,015	$243,015
dTS	$0	$355,619	$550,016	$905,635

ALT1 landings assumed to be the average annual landings of wahoo in the SA from 2005 to 2009.

ALT2 % reduction from Table 4-112 of the DEIS

The wtp/fish is $81 in 2000 dollars for big game from Haab et al. (2009) Table 6-1

The lbs/fish is based on the average annual landings of wahoo in SA from 2005 to 2009.

dCS = ALT1 landings (lbs) X ALT2 Reduction (%) X wtp/lb

All estimates are in 2009 dollars.

dPS = ALT1 Target trips X ALT3 Reduction (%) X NOR/trip

The head boat target trips (angler hours) are estimated as the proportion of charter trips to total charter trips times the average annual head boat trips (angler hours) from 2005-2009.

The target angler charter trips are from the description of the fishery.

The Net Operating Revenue (NOR) per angler trip for head boats and charter boats is from Dumas et al. (2009)

'na' indicates not applicable or not available.

A summary of the boat limit impacts is shown in **Table 4-130**.

Table 4-130. Summary of the change in economic value to the recreational sector across alternatives in **Action 31**.

Alternative	Head	Private	Charter	Total
ALT1	$0	$0	$0	$0
ALT2a	$0	$0	$19,346	$19,346
ALT2b	$0	$0	$23,699	$23,699
ALT2c	$0	$0	$28,052	$28,052
ALT2d	$0	$0	$36,758	$36,758
ALT2e	$0	$14,035	$49,527	$63,561
ALT2f	$0	$34,881	$73,323	$108,203
ALT2g	$0	$69,762	$112,209	$181,970
ALT2h	$0	$111,660	$163,864	$275,523
ALT2i	$0	$153,352	$235,058	$388,410
ALT2j	$0	$237,148	$334,305	$571,453
ALT2k	$0	$355,619	$550,016	$905,635

All changes are measured relative to ALT1.

Economic value for all alternatives are measured in terms of changes in consumer and producer surplus.

4.5.6.3 Social Effects

The social effects from **Alternative 1 (No Action) (Preferred)** may be minimal as it would require no changes in regulation. **Alternative 2** would impose varying degrees of reduction in catch depending upon which subalternative is chosen with the most restrictive being **Subalternative 2k** with a 2-fish limit which would impose a 26% reduction and may impose substantial negative social effects. Although fishermen would likely prefer larger bag limits, without sufficient protection ACLs could be exceeded and early closures could occur as a result thereby imposing further negative impacts upon the sector.

4.5.6.4 Administrative Effects

Under **Preferred Alternative 1 (No Action)**, no new administrative impacts are expected. Under the status quo, there are currently administrative impacts associated with monitoring and enforcing the commercial trip limit and the recreational bag limit. **Alternative 2** proposes to change the recreational bag limit, but this is not expected to have an impact on monitoring or enforcement. **Alternative 2** would require rulemaking, education and outreach which would result in minor administrative impacts.

4.5.6.5 Council Conclusions

The Magnuson-Stevens Act required establishment of limits and targets for managed species undergoing overfishing by 2010 and for all other managed fisheries by 2011. The NS1

guidelines, however, do not specify that management measures need to be put in place at the same time that the new limits and targets are specified. Because the Comprehensive ACL Amendment sets limits for so many snapper grouper species, the South Atlantic Council chose not to address the implementation of management measures for snapper grouper species in this amendment. However, the South Atlantic Council decided to consider implementation of management measures for wahoo to ensure that landings do not exceed the proposed ACL.

The South Atlantic Council considered a wide range of boat limits for the recreational wahoo fishery. However, the current level of landings is below the proposed ACL. Therefore the South Atlantic Council reasoned that no harvest reduction was necessary at this time.

The Dolphin Wahoo Advisory Panel (AP) also recommended **Alternative 1 (No Action)** as their preferred alternative because they did not perceive any problem that needed to be addressed.

The South Atlantic Council's SSC did not have a recommendation for this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded no additional management measures are needed at this time. The Council concluded that **Alternative 1 (No Action) (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of wahoo and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Dolphin Wahoo FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.6 Sargassum FMP

4.6.1 Acceptable Biological Catch Control Rule and ABC for Sargassum

There has not been a fishery for *Sargassum* since 1998 and *Sargassum* is not a significant bycatch in any fishery. It is a critical component of the ecosystem providing essential habitat to numerous fish species and protected resources. Because of its ecological importance, the South Atlantic Council's SSC believes *Sargassum* should be labeled and treated as an "ecosystem component species."

Since *Sargassum* has a FMP (SAFMC 2002), an ABC is required. The Sargassum FMP includes an estimate of the MSY that could be used in determination of an ABC, but the South Atlantic Council's SSC stated that the MSY was not developed through a traditional stock assessment method but was instead based on informal methods involving aerial photography and estimates of doubling time. As a result, the SSC considered the MSY value to be extremely uncertain and unreliable. Based upon the recommendation of its stock assessment experts, the SSC chose not to use the MSY value previously reported for ABC calculations.

At the second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based on the status of the stock relative to its fishery. The framework includes one category that labels a catch as "nil," where the stock is not caught in any significant amounts and can be treated as ecosystem component stocks. The framework also includes a category that categorizes a catch as "small," where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, the framework allows for setting the ABC greater than or equal to the historical average catch.

Historically the *Sargassum* fishery can be classified as "small," where overfishing has not been a concern. The average catch from 1976 to 2009 equaled 12,800 lbs wet weight. The SSC therefore recommended an ABC for *Sargassum* of 12,800 lbs wet weight. Furthermore, the previous OY set by the South Atlantic Council in the FMP was 5,000 lbs. The SSC understood that the OY was set at that level out of concern for the ecosystem services provided by *Sargassum*. For this reason, the SSC recommended that the South Atlantic Council establish an ACL/ACT equal to the previous OY value of 5,000 lbs.

However, given that there have been no landings over the past twelve years, the *Sargassum* fishery would be placed in the "nil" category using Methot's framework adopted by the SSC. Under this framework, *Sargassum* would be labeled an "ecosystem component species" and would not require an ABC. As stated at the beginning of this section, the SSC recommended that the South Atlantic Council take the actions necessary to reclassify *Sargassum* as such. However, since this species is currently managed under a Fishery Management Plan, the setting of an ABC is required.

The following restrictions are in place for *Sargassum* in the South Atlantic: (1) harvest and possession of *Sargassum* is prohibited south of the latitude line representing the North Carolina/South Carolina border (34 degrees North latitude), (2) all harvest is prohibited within

100 miles of shore between the 34 degrees North latitude line and the line representing the North Carolina/Virginia border, (3) harvest is limited to the months of November through June, (4) official observers are required on any harvesting trip, (5) an annual quota of 5,000 lbs landed wet weight, and (6) nets used to harvest *Sargassum* must be constructed of 4" stretch mesh or larger fitted to a frame no larger than 4 x 6 feet.

The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Therefore, an ACL is in place for *Sargassum* in the form of a 5,000-pound commercial quota, which is also considered equivalent to the OY for the species. In addition to the current restrictions, the AM for *Sargassum* restricts all harvest of the species after the quota is met or is projected to be met.

4.7 Golden Crab FMP

4.7.1 Acceptable Biological Catch Control Rule and ABC

It is widely argued that the golden crab is an underutilized resource and that the fishery exploits only a portion of the species' range. The South Atlantic Council's SSC recommended an ABC for golden crab in April 2010 based on the control rule derived at that meeting. At their June 2010 meeting the South Atlantic Council rejected the SSC's control rule from April 2010 and removed the ABC recommendations based on that control rule.

The South Atlantic Council agreed with the SSC comments from April 2010 that there was likely additional information that could be compiled for golden crab to better support fishing level recommendations. One of the concerns was that there was a wide range of prior estimates of productivity and acceptable yield. At their August 2010 meeting, the SSC considered additional information on golden crab. These data included additional landings, catch per unit effort, mean sizes, and history and background of past MSY values.

At the second National SSC Meeting, Dr. Rick Methot (NMFS/SFD) presented a framework for dealing with data-poor stocks. Under this framework, a stock is categorized based the status of the stock relative to its fishery. The "small" category applies to situations where there is no risk of overfishing and the catch is not significant enough to be a concern. In these cases, Methot suggests setting the ABC greater than or equal to the historical average catch. Therefore, the SSC discussed comments provided by industry representatives regarding the fishery, and how this fishery might fit into Methot's range of unassessed stock categories. The SSC concluded that the golden crab fishery is small; the catch is large enough to warrant including it in the fishery but not enough to be of concern. Based on the rationale from earlier discussions, it was suggested that ABC and ACL could be set above historical catch levels.

The SSC recommended that ABC be set at 2 million lbs with a precautionary note that more data are needed. Issues such as an updated, possibly a benchmark assessment, with other models including the surplus production model were suggested, along with improvements in data collection.

4.7.2 Action 32: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Golden Crab

Alternative 1 (No Action). Do not specify an ACL for Golden Crab.

Alternative 2 (Preferred). ACL= OY=ABC (currently estimated to be 2 million lbs).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 1.7 million lbs).

Alternative 4. ACL = OY =75% of the ABC (currently estimated to be 1.5 million lbs).

Alternative 5. ACL = OY =65% of the ABC (currently estimated to be 1.3 million lbs).

4.7.2.1 Biological Effects

The Magnuson-Stevens Act required that by 2010, FMPs for fisheries determined by the Secretary of Commerce to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A (SAFMC 2010a) and 17B (SAFMC 2010b) specified ACLs for species subject to overfishing.

Alternative 1 (No Action), which includes restrictions associated with trapping gear and a requirement that retention of females be limited to 0.5% of the catch by number, would not specify an ACL for golden crab. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to OFL, ABC, ACL, ACT, and AM in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as fishery management councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Currently, there are no quotas in place that could serve as ACLs. Therefore, **Alternative 1 (No Action)** would not meet the requirements specified in the Magnuson-Stevens Act.

Alternatives 2 (Preferred)-5 would set ACL equal to ABC or some portion of ABC. The Council's SSC specified an ABC of 2 million lbs for golden crab at their August 2010 meeting. The rationale for setting the ABC at 2 million lbs is that golden crab is a small fishery that is not likely fully exploited, so setting ABC above historical catch is appropriate. Furthermore, the South Atlantic Council's SSC pointed out Harper et al. (2000) and Powers (2001) provide estimates of a maximum sustainable yield (MSY) of about 2.5 million lbs. Therefore, ABC would equal about 80%MSY, which is the SSC felt was consistent with the range of P* they have used in their ABC control rule.

Alternative 2 (Preferred) would set the ACL equal to the ABC. The NS1 guidelines indicate the ACL may typically be very close to the ABC. **Alternatives 3-5** would have a greater positive biological effect than **Alternative 2 (Preferred)** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels.

Alternative 2 (Preferred) as well as **Alternatives 3-5** would set the OY equivalent to the ABC. Taking no action on specifying OY could have negative biological effects as it could allow OY to be greater than the ABC. Setting OY equal to ABC would provide greater assurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible.

Similar to the relationship between OFL and ABC, OY is prescribed on the basis of the MSY from the fishery, as reduced by relevant economic, social or ecological factors. In the case of an overfished fishery, OY provides for rebuilding to a level consistent with producing MSY in such a fishery. For overfished stocks, ABC must also be set to reflect the annual catch that is consistent with the rebuilding plan for that stock. In NS1, use of the phrase, "achieving, on a continuing basis, the optimum yield from each fishery" means producing, from each stock, stock complex or fishery a long-term series of catches such that the average catch is equal to OY, overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible.

Alternatives 1 (No Action)-5 are unlikely to have any adverse affects on protected species. Previous ESA consultations determined the golden crab fishery was not likely to adversely affect any ESA-listed species. **Alternatives 1 (No Action)-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species.

4.7.2.2 Economic Effects

Under **Alternative 1 (No Action)** there is no upper limit placed on how much golden crab can be landed by the 11 permitted vessels in the fishery. Although current landings are moderate (around 570,000 lbs), rising demand and the adoption of new technologies such as re-circulating seawater systems are likely to increase production, potentially increasing the risk of overfishing.[10] The rate of technological growth is presently unknown.

Alternatives 2 (Preferred) to **5** call for the adoption of progressively more conservative ACLs. Given the moderate landings occurring in the golden crab fishery at this time, direct adverse economic effects are expected to be minimal in the short-term under **Alternatives 2 (Preferred)** to **5** relative to **Alternative 1 (No Action)**. Given that lack of an ACL could lead to overfishing

[10] Re-circulating systems reduce mortality markedly, increase product quality, and allow for greater take of live golden crab.

in the future, **Alternatives 2 (Preferred)** to **5** would yield greater long-term economic benefits than **Alternative 1 (No Action)**. **Alternative 2 (Preferred)** provides the greatest long-term economic benefits while **Alternative 5** provides the smallest long-term economic benefits when making a comparison between **Alternatives 2 (Preferred)-5**, with **Alternatives 3** and **4** falling in between. If there is uncertainty regarding identification of the ACL and there is no buffer established between ACL and ABC, overfishing is more likely to occur. Typically, the higher the risk of overfishing, the lower the long-term economic benefits and the higher the short-term economic benefits. **Alternative 2 (Preferred)** seems economically optimal given the relatively small amount of landings (and low risk of overfishing) compared to the recommended ABC of 2 million pounds and allows for the golden crab fishery to expand.

Expansion of harvest in the golden crab fishery is expected over the next 5-10 years. Several golden crab fishery participants have implemented a re-circulating seawater system that allows them to decrease mortality significantly and land greater amounts of golden crab live and in better conditions than packing them with ice. As a result, more and higher quality crabs are being marketed and many are being sold internationally. Subsequently, ex-vessel prices have increased significantly. This has attracted the attention of new participants looking to purchase one of the 11 permits in the fishery to begin fishing in one of the 3 fishing zones. However, historical participants have expressed concerns that new entrants could harvest large amounts of crab, and/or harm the bottom habitat because they are unfamiliar with it.

Consequently, several golden crab fishery participants have asked the South Atlantic Council to pursue a catch share program for the fishery to: 1) increase the barriers to entry and thereby help protect the sensitive coral habitat golden crab live near; 2) create a system that will enable greater enforcement and monitoring; and 3) provide for a management system that encourages greater financial security and stability. The South Atlantic Council is developing Golden Crab Amendment 6 to explore the possibility of a catch share program for the fishery.

Table 4-131 shows the anticipated single year changes in landings and gross revenue relative to **Alternative 1 (No Action)** under different annual growth in production scenarios. For simplicity, three annual growth-in-production scenarios were considered, ranging from 5% to 15%. **Alternative 1 (No Action)** assumes that the status quo catch is the 5-year average ranging from 2005-2009. **Table 4-131** shows that the one-year projected landings under the various scenarios were not binding relative to the proposed ACLs; thus, the relative low changes in expected landings and revenue. Landings and gross revenue were derived from Crosson (2010).[11]

[11] Crosson, Scott B. 2010. Trends in the South Atlantic Golden Crab Fishery. NOAA Technical Memorandum NOAA Fisheries Service-SEFSC-608.

Table 4-131. Anticipated change in golden crab landings and gross revenue for alternatives under **Action 31**.

Alternatives	ACL	5% Growth Scenario		
		Expected landings (lbs)	Change in landings relative to Alt 1 (lbs)	Change in gross revenue relative to Alt 1 ($)
Alternative 1	None	-	-	-
Alternative 2	**2,000,000**	**598,604**	**28,505**	**47,033**
Alternative 3	1,700,000	598,604	28,505	47,033
Alternative 4	1,500,000	598,604	28,505	47,033
Alternative 5	1,300,000	598,604	28,505	47,033
Alternatives	**ACL**	**10% Growth Scenario**		
		Expected landings (lbs)	**Change in landings relative to Alt 1 (lbs)**	**Change in gross revenue relative to Alt 1 ($)**
Alternative 1	None	-	-	-
Alternative 2	**2,000,000**	**627,109**	**57,010**	**94,066**
Alternative 3	1,700,000	627,109	57,010	94,066
Alternative 4	1,500,000	627,109	57,010	94,066
Alternative 5	1,300,000	627,109	57,010	94,066
Alternatives	**ACL**	**15% Growth Scenario**		
		Expected landings (lbs)	**Change in landings relative to Alt 1 (lbs)**	**Change in gross revenue relative to Alt 1 ($)**
Alternative 1	None	-	-	-
Alternative 2	**2,000,000**	**655,614**	**85,515**	**141,100**
Alternative 3	1,700,000	655,614	85,515	141,100
Alternative 4	1,500,000	655,614	85,515	141,100
Alternative 5	1,300,000	655,614	85,515	141,100

4.7.2.3 Social Effects

Establishing an ACL for golden crab will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternatives 2 (Preferred)**, **3 or 4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector with **Alternative 2 (Preferred)** being the least restrictive. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long-term consequences if a stock is vulnerable.

4.7.2.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act, and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. Other administrative burdens that may result from all of action alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.7.2.5 Council Conclusions

Optimum yield is a long-term average amount of desired yield from a stock, stock complex, or fishery. Setting OY equal to ABC would provide greater insurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible. An ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing. The NS1 guidelines specify that Councils can choose to account for management uncertainty by setting the ACL below the ABC. For the species in this amendment, however, the Council chose to set ACL equal to ABC and account for management uncertainty via setting ACTs where appropriate. However, the South Atlantic Council opted to set ACTs for the recreational sector only since recreational landings have a much higher associated uncertainty than commercial landings. Since there is no recreational component in the golden crab fishery, no measures are being put in place to account for management uncertainty. The South Atlantic Council reasoned that this is a small fishery and the current quota monitoring system adequately keeps track of the landings. Similar to the approach for other species in this amendment, the South Atlantic Council chose to set ACL equal to OY to prevent a situation in which the OY from the fishery was not being achieved.

The Golden Crab Advisory Panel did not meet to consider the actions the South Atlantic Council is proposing in this amendment. However, the few active members in the fishery have been active participants in the development of this amendment and have stated their support for the South Atlantic Council's approach to managing the fishery.

The SSC did not have any recommendations on the specification of ACL as this is a management limit. However, the SSC discussed the golden crab fishery at length during their August 2010 meeting in Charleston, South Carolina while they formulated an ABC recommendation (See **Section 2.6.1**). The SSC report from that meeting states:

The SSC discussed comments provided by industry representatives regarding the fishery, and how this fishery might fit into the range of unassessed stock categories discussed the previous day (nil-no fishery, small fishery, moderate fishery, or moderate-high fishery). The SSC

concluded that this is a small fishery, but the catch is large enough to warrant including it in the fishery but not enough to be of concern. Based on the rationale from earlier discussions, it was suggested that ABC and ACL could be set above historical catch levels.

The SSC further discussed requesting an annual data update for unassessed stocks, including golden crab. The update should include landings, areas fished, size composition, etc. The SSC would evaluate the information and suggest changing the ABC if necessary.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Alternative 2 (Preferred)** best meets the purpose and need to implement measures expected to prevent overfishing of golden crab and achieve optimum yield (OY) while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternative also best meets the objectives of the Golden Crab Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.7.3 Action 33: Establish Accountability Measures for Golden Crab

Alternative 1 (No Action). Do not establish accountability measures for Golden Crab.

Alternative 2 (Preferred). After the ACL is met or projected to be met, all harvest, purchase, and sale of golden crab is prohibited.

Alternative 3 (Preferred). If the ACL is exceeded, the RA shall publish a notice to reduce the ACL in the following season by the amount of the overage only if the species is overfished.

4.7.3.1 Biological Effects

Alternative 1 (No Action) is the least biologically beneficial AM alternative for golden crab, and is not legally feasible since no AM would be established for the species as required under the Magnuson-Stevens Act. The most biologically beneficial of the alternatives would be **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** combined. These alternatives together would close the entire golden crab fishery when the ACL is projected to be met, and also correct for any overages through a post-season AM if the fishery is declared overfished. **Alternative 2 (Preferred)** would require in-season monitoring. In the case of golden crab all landings are reported through dealer reports; therefore, in-season monitoring would likely project, with a reasonable level of accuracy, when the ACL would be met. The more accurate this projection is the lower the risk of closing the fishery too soon or too late would be.

Alternative 3 (Preferred) would provide protection to golden crab in the form of an ACL or ACT reduction following the year in which an ACL overage occurred (but only if the species was assessed as overfished). The ACL or would be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met

earlier in the year. If the ACL is repeatedly exceeded and subsequent year's seasons are repeatedly shortened, a derby fishery for golden crab could develop. Currently, the South Atlantic Council is developing a catch share program from golden crab that would address the potential development of a derby fishery.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the golden crab fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2 (Preferred)** and **3 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2 (Preferred)** and **3 (Preferred)** are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.7.3.2 Economic Effects

Failure to implement an AM for the golden crab fishery under **Alternative 1 (No Action)** could result in overages and the smallest long-term economic benefits relative to the other alternatives since the risk of overfishing is the greatest. **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** would likely generate greater adverse economic effects in the short-term but greater long-term economic benefits relative to **Alternative 1 (No Action)** since they provide a hedge against overfishing. **Alternative 2 (Preferred)** would be precautionary but would not likely generate the greatest long-term economic benefits since it does not provide a mechanism for addressing overages, if these occur. While **Alternative 2 (Preferred)** would have less adverse short-term economic effects, **Alternative 3 (Preferred)** may have greater long-term positive economic effects, but could adversely affect market and financial stability in the short term if an overage occurs. Since **Action 33** is administrative in nature, and thus does not directly affect participants in the golden crab fishery, the effects under **Alternative 2 (Preferred)** and **Alternative 3 (Preferred)** are indirect.

4.7.3.3 Social Effects

Alternative 1 (No Action) would not establish accountability measures for Golden Crab and could make it difficult to manage if overages were to occur. **Alternative 2 (Preferred)**, would prohibit all harvest, purchase, and sale of golden crab after the ACL is projected to be met. This alternative would not provide for any accountability for any overages like **Alternative 3 (Preferred)** would provide. The combination of **Alternatives 2 (Preferred) and 3 (Preferred)** may have more long term positive social effects, but could have negative short term effects that affect market viability.

4.7.3.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. The primary burden on the administrative environment from **Preferred Alternatives 2** and **3** would result from the need to track landings during the fishing season and orchestrate the subsequent implementation of AMs when needed. This administrative burden is likely to be minimal.

4.7.3.5 Council Conclusions

Similar to the approach they have taken with other species in this amendment, the South Atlantic Council chose not to specify a commercial ACT for the golden crab fishery because the current quota monitoring system seems adequate to account for any management uncertainty. Hence the AMs the South Atlantic Council is proposing for this fishery only specify actions that would come into play when the ACL is met or projected to be met.

Alternative 2 (Preferred) would prohibit all harvest, purchase, and sale of golden crab after the ACL is met or projected to be met. **Alternative 3 (Preferred)** would then correct for an ACL overage post-season if one were to occur during the fishing season by implementing a payback provision, but only if the species was declared overfished. The South Atlantic Council chose to make this distinction to be consistent with how they chose to address paybacks in other FMPs (e.g., CMP species). The rationale is that the current in-season monitoring of commercial catches will be sufficient to prevent any overages from occurring.

The Golden Crab Advisory Panel did not meet to consider the actions the South Atlantic Council is proposing in this amendment. However, the few active members in the fishery have been active participants in the development of this amendment and have stated their support for the South Atlantic Council's approach to managing the fishery.

The SSC did not have any recommendations on this action.

The Law Enforcement Advisory Panel (LEAP) did not have a recommendation for this action.

The South Atlantic Council concluded that **Preferred Alternatives 2** and **3** best meet the purpose and need to implement measures expected to prevent overfishing of golden crab and achieve OY while minimizing, to the extent practicable, adverse social and economic effects. The preferred alternatives also best meet the objectives of the Golden Crab Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.0 Cumulative Effects

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

Various approaches for assessing cumulative effects have been identified, including checklists, matrices, indices, and detailed models (MacDonald 2000). The Council on Environmental Quality (CEQ) offers guidance on conducting a Cumulative Effects Analysis (CEA) in a report titled "Considering Cumulative Effects under the National Environmental Policy Act". The report outlines 11 items for consideration in drafting a CEA for a proposed action.

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

This 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.

5.1 Biological

SCOPING FOR CUMULATIVE EFFECTS

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

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

I. The direct and indirect effects of the proposed actions **(Section 4.0)**;
II. Which resources, ecosystems, and human communities are affected **(Section 3.0)**; and
III. Which effects are important from a cumulative effects perspective **(information revealed in this Cumulative Effects Analysis (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 Maine through east Florida to Key West, which is also the areas of jurisdiction for the South Atlantic Fishery Management Council, Mid Atlantic Fishery Management Council, and New England Fishery Management Council. 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 Atlantic exclusive economic zone. The ranges of affected species are described in **Section 3.2.1**. The most measurable and substantial effects would be limited to the Atlantic region from Maine to Florida.

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. Monitoring should continue indefinitely for all species to ensure that management measures are adequate for preventing overfishing in the future.

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 region. These actions, when added to the proposed management measures, may result in cumulative effects on the biophysical environment.

I. Fishery-related actions affecting species in the Comprehensive ACL Amendment.

A. Past

The reader is referred to **Appendix D** for past regulatory activity for the species addressed in the Comprehensive ACL Amendment. These include bag and size limits, spawning season closures, commercial quotas, gear prohibitions and limitations, area closures, and a commercial limited access system.

Amendment 13C to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2006) became effective October 23, 2006. The amendment addresses overfishing for snowy grouper, golden tilefish, black sea bass, and vermilion snapper. The amendment also allows for a moderate increase in the harvest of red porgy as stocks continue to rebuild.

Amendment 14 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2007) was implemented on February 12, 2009. Implementing regulations for Amendment 14 established eight Type 2 Marine Protected Areas (MPAs) (see **Figure 5-1**) within which, all fishing for snapper grouper species is prohibited as is the use of shark bottom longline gear. Within the MPAs trolling for pelagic species is permitted. The MPAs range in area from 50 to 506 square nautical miles and are located off of North Carolina, South Carolina, Georgia and Florida. The MPAs are expected to enhance the optimum size, age, and genetic structure of slow-growing, long-lived, deepwater snapper grouper species. A Type 2 MPA is an area within which fishing for or retention of snapper grouper species is prohibited but other types of legal fishing, such as trolling, are allowed. The prohibition on possession does not apply to a person aboard a vessel that is in transit with fishing gear appropriately stowed. MPAs are being used as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deepwater snapper grouper species (speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish).

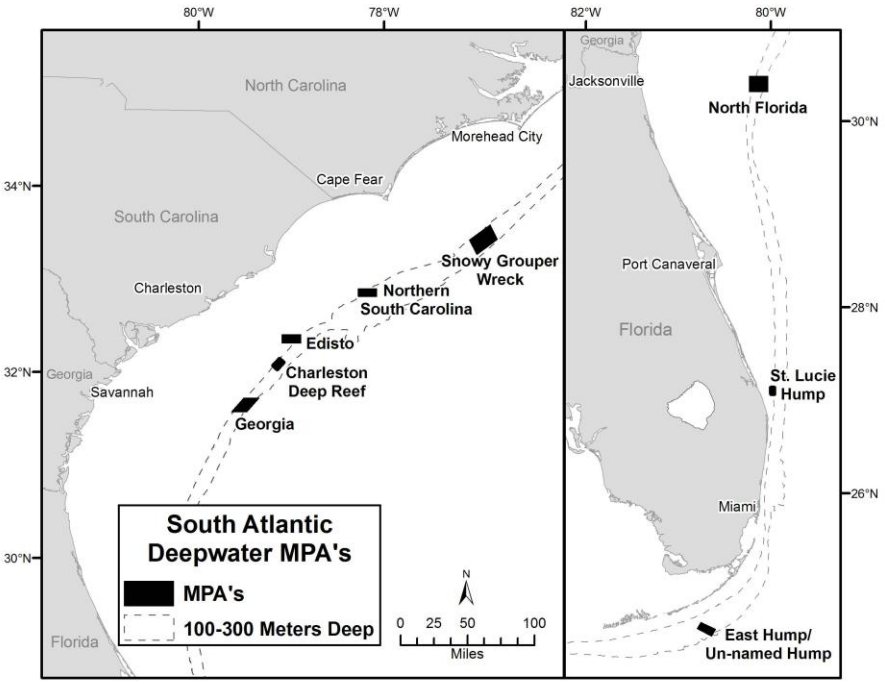

Figure 5-1. Marine protected areas implemented under Snapper Grouper Amendment 14 (SAFMC 2007).

The final rule for Amendment 16 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2009a), which was partially approved by the Secretary of Commerce, published on June 29, 2009. Amendment 16 includes provisions to extend the shallow water grouper spawning season closure, create a five month seasonal closure for vermilion snapper, require the use of dehooking gear if needed, reduce the aggregate bag limit from five to three grouper, and reduce the bag limit for black grouper and gag to one gag or black grouper combined within the aggregate bag limit. The expected effects of these measures include significant reductions in landings and overall mortality of several shallow water snapper grouper species including, gag, black grouper, red grouper, and vermilion snapper.

On September 1, 2009, Amendment 15B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2008b) was approved by the Secretary. Management measures in Amendment 15B that affect species in the Comprehensive ACL Amendment include prohibition of the sale of bag limit caught snapper grouper species for fishermen not holding a Federal commercial permit for South Atlantic snapper grouper, an action to adopt, when implemented, the Atlantic Coastal Cooperative Statistics Program release, discard and protected species module to assess and monitor bycatch, allocations for snowy grouper, and management reference points for golden tilefish.

Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1; SAFMC 2010c), implemented in July, 2010 consists of regulatory actions that focus on deepwater coral ecosystem conservation and non-regulatory actions that update existing essential fish habitat (EFH) information.

Management actions in CE-BA 1 include the establishment of deepwater Coral HAPCs (CHAPCs) to protect what is currently thought to be the largest contiguous distribution (>23,000 square miles) of pristine deepwater coral ecosystems in the world. Actions in the amendment prohibit the use of bottom damaging fishing gear and allow for the creation of allowable fishing zones within the CHAPCs in the historical fishing grounds of the golden crab and deepwater shrimp fisheries. CE-BA 1 also provides spatial information on designated EFH in the SAFMC Habitat Plan (SAFMC 1998c).

The final rule for Amendment 17B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2010b) was published on December 30, 2010, and includes a deepwater snapper grouper closure seaward of 240 ft in addition to establishing annual catch limits and accountability measures for species experiencing overfishing.

The final rule for Amendment 17A to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2010a) was published on December 3, 2010, extending the prohibition of red snapper in federal waters throughout the South Atlantic exclusive economic zone**.** Amendment 17A addresses management measures to end overfishing of red snapper and rebuild the stock, including ACLs and AMs. Amendment 17A also includes a regulation requiring the use of non-stainless circle hooks north of 28 degrees N. latitude.

The Council voted to approve Regulatory Amendment 10 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 10; SAFMC 2011a) during its December 2010 meeting for submission to the Secretary of Commerce, with the preferred management alternative to eliminate the large area closure established through Amendment 17A for all snapper grouper species off the coasts of southern Georgia and north/central Florida. The regulatory amendment modified measures implemented in Amendment 17A to end overfishing for red snapper. The amendment was based on updated stock assessment information for red snapper (SEDAR 24) and was approved by the Secretary of Commerce in April 2011. The Final Rule was effective on May 31, 2011.

Regulatory Amendment 9 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 9; SAFMC 2011b) was approved by the Council in March 2011 and the Final Rule published June 15, 2011. The amendment, as approved by the Secretary of Commerce, reduced the bag limit for black sea bass from 15 fish per person to 5 fish per person (effective June 22, 2011), established trip limits on vermilion snapper and gag (effective July 15, 2011), and increased the trip limit for greater amberjack (effective July 15, 2011).

Approved in 2003, the FMP for *Sargassum* Pelagic Habitat of the South Atlantic Region (SAFMC 2002) protects *Sargassum*, a free-floating seaweed, from extensive commercial harvest. *Sargassum* provides habitat to a wide variety of marine organisms including invertebrates, fish, sea turtles and marine birds. The approved plan includes strong limitations on future commercial harvest. Restrictions include prohibition of harvest south of the NC/SC state boundary, a total allowable catch of 5,000 lbs wet weight per year, limiting harvest to November through June to protect turtles, requiring observers onboard any vessel harvesting *Sargassum*, prohibiting harvest within 100 miles of shore, and gear specifications.

Approved in 2004, the FMP for the Dolphin and Wahoo Fishery of the Atlantic (SAFMC 2003a) established historical allocations for dolphin and wahoo between the commercial and recreational sectors. Recognizing the significant importance of the dolphin wahoo fishery to the recreational fishing community in the Atlantic, the goal of the plan is to maintain the current harvest levels of dolphin and ensure that no new fisheries develop.

Approved in 1996, the FMP for the Golden Crab Fishery of the South Atlantic Region (SAFMC 1995) was developed cooperatively with fishermen to create a sustainable fishery through the establishment of a limited entry system, fishing zones, and protective measures for the crabs. Amendment 3 to the FMP (SAFMC 2000b) extended the authorization to use wire cable for mainlines attached to golden crab traps to December, 31, 2002; modified escape panel sizes for traps; addressed permit renewal requirements including removal of the 5,000 pound harvest requirement for renewing biannual permits and addressed the minimum harvest requirement for permit holders in the Southern Zone; allowed up to a 20% increase in vessel size from the vessel size of the original permit; created a sub-zone within the Southern Zone with specified conditions; allowed two new vessels to be permitted to fish only in the Northern Zone using an earlier list of those wanting to enter the fishery; specified status determination criteria; and modified the FMP framework to allow modifications to the sub-zone.

B. Present

In addition to fishery management issues being addressed in this amendment, several other amendments have been developed concurrently and are in the process of approval and implementation. Current management measures, including quota closures, seasonal closures, and area closures are described in the respective sections addressing various species in this document.

C. Reasonably Foreseeable Future

The Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; under review) contains actions to establish ACLs and AMs for octocorals, transfer management of octocorals to the state of Florida, modify regulations in special management zones, and amend FMPs to designate new essential fish habitat-habitat areas of particular concern. The Council sent CE-BA 2 for review by the Secretary of Commerce on July 15, 2011.

Amendment 10 to the FMP for the Spiny Lobster Fishery in the Gulf of Mexico and South Atlantic (Spiny Lobster Amendment 10; under review) was developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs as well as management actions for spiny lobster. The Councils sent Spiny Lobster 10 for review by the Secretary of Commerce on July 20, 2011.

Amendment 18 to the FMP for the Coastal Pelagic Resources in the Atlantic and Gulf of Mexico (Mackerel Amendment 18; under review) was developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs for species in the FMP for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico. The Councils sent Mackerel 18 for review by the Secretary of Commerce in September 2011.

Regulatory Amendment 11 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (under review) eliminates the deepwater closure (beyond 240 feet) that was implemented through Amendment 17B to protect speckled hind and warsaw grouper. Regulatory Amendment 11 was sent for formal review on September 28, 2011.

Amendment 18A to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (under development), includes actions to limit effort in the black sea bass fishery through an endorsement program, limit bycatch in the commercial pot fishery, revise MSA parameters based on the latest stock assessment (SEDAR 25), and improve the accuracy and timing of fisheries statistics.

Amendment 18B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (under development) includes actions to limit participation in the golden tilefish fishery through establishment of an endorsement program, change the golden tilefish fishing year, revise MSA parameters based on the latest stock assessment (SEDAR 25).

Amendment 20A (under development) would update the Individual Transferable Quota program for wreckfish.

Amendment 24 (under development) would establish a rebuilding plan for red grouper, establish MSY, OY, ACL and AMs.

Amendment 6 to the Golden Crab FMP (under development) would consider a possible catch share program for this fishery.

II. Non-Council and other non-fishery related actions, including natural events affecting snapper grouper species, dolphin, wahoo, and golden crab.

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 included in the Comprehensive ACL Amendment. Annual variability in natural conditions such as water temperature, currents, food availability, predator abundance, etc. can affect recruitment. This natural variability in year class strength is difficult to predict as it is a function of many interactive and synergistic factors that cannot all be measured (Rothschild 1986). Furthermore, natural factors such as storms, red tide, cold water upwelling, etc. can affect the survival of juveniles and adults ; however, it is very difficult to quantify the magnitude of mortality these factors may have on a stock. Alteration of preferred habitats for species could affect survival at any stage in their life cycles. However, estimates of the abundance, which utilize any number of preferred habitats, as well as, determining the impact habitat alteration may have on a stock, is problematic.

The snapper grouper ecosystem includes many species, which occupy the same habitat at the same time. Dolphin and wahoo are also taken when fishermen target snapper grouper species. Other natural events such as spawning seasons, and aggregations of fish in spawning condition can make some species especially vulnerable to targeted fishing pressure. Such natural behaviors are discussed in further detail in **Section 3.2** of this document, and is hereby incorporated by reference. Golden crab are specifically targeted and there is not interaction with snapper grouper or dolphin wahoo fisheries. Furthermore, there is currently no fishery for *Sargassum*.

The BP/Deepwater Horizon oil spill event, which occurred in the Gulf of Mexico on April 20, 2010, is not expected to impact fisheries operating in the Atlantic. Oil from the spill site has not been detected in the Atlantic region, and is not likely to pose a threat to Atlantic species included in the Comprehensive ACL Amendment.

Finally, the space industry in Florida centered on Cape Canaveral is experiencing severe difficulties due to the ramping down and cancellation of the Space Shuttle Program. This program's loss coupled with additional fishery closures will negatively impact this region. However, declining economic conditions due to decline in the space industry may lessen the pace of waterfront development and associated adverse social and economic pressures on fishery infrastructure.

AFFECTED ENVIRONMENT

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

In terms of the biophysical environment, the resources/ecosystems identified in earlier steps of the CEA are the fish populations directly or indirectly affected by the regulations. This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components. Information on species most affected by this amendment are provided in **Section 3.2.1** of this document.

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

This step is important in outlining the current and probable stress factors on species identified in the previous steps. The goal is to determine whether these species are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds can be identified for some resources, which are levels of impact beyond which the resources cannot be sustained in a stable state. Other thresholds are established through numerical standards, qualitative standards, or management goals. The CEA should address whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

<u>Fish populations</u>

The Comprehensive ACL Amendment addresses species in FMPs that are not undergoing overfishing. This document specifies thresholds for these species to ensure future overfishing does not occur and to ensure these stocks can be maintained at sustainable levels.

Climate change

Global climate changes could have significant effects on Atlantic fisheries. However, the extent of these effects is not known at this time, specifically for the Atlantic. 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).

Actions from this amendment could decrease the carbon footprint from fishing if some fishermen stop or reduce their number and duration of trips due to the establishment of catch limits that could restrict fishing effort to ensure overfishing does not occur. It is unclear how climate change would affect species in the Atlantic. 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 species in the future, but the level of impacts cannot be quantified at this time, nor is the timeframe known in which these impacts will occur. Actions in this document are expected to reduce or cap harvest of species managed by the Council; thus these actions may partially mitigate the negative impacts of global climate change on these species.

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

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects. SEDAR assessments show trends in biomass, fishing mortality, fish weight, and fish length going back to the earliest periods of data collection. Most species addressed by the Comprehensive ACL Amendment have not been assessed through the SEDAR process. For a detailed discussion of the baseline conditions of species addressed in this document the reader is referred to **Section 3.3**.

DETERMINING THE ENVIRONMENTAL CONSEQUENCES OF CUMULATIVE EFFECTS

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

Table 5-1. The cause and effect relationship of fishing and regulatory actions for snapper grouper species within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
1960s-1983	Growth overfishing of many reef fish species.	Declines in mean size and weight of many species including black sea bass.
August 1983	4" trawl mesh size to achieve a 12" TL commercial vermilion snapper minimum size limit (SAFMC 1983).	Protected youngest spawning age classes.
Pre-January 12, 1989	Habitat destruction, growth overfishing of vermilion snapper.	Damage to snapper grouper habitat, decreased yield per recruit of vermilion snapper.
January 1989	Trawl prohibition to harvest fish (SAFMC 1988).	Increase yield per recruit of vermilion snapper; eliminate trawl damage to live bottom habitat.
Pre-January 1, 1992	Overfishing of many reef species including vermilion snapper, and gag.	Spawning stock ratio of these species is estimated to be less than 30% indicating that they are overfished.
January 1992	Prohibited gear: fish traps south of Cape Canaveral, FL; entanglement nets; longline gear inside of 50 fathoms; powerheads and bangsticks in designated SMZs off SC. Size/Bag limits: 10" TL vermilion snapper (recreational only); 12" TL vermilion snapper (commercial only); 10 vermilion snapper/person/day; aggregate grouper bag limit of 5/person/day; and 20" TL gag, red, black, scamp, yellowfin, and yellowmouth grouper size limit (SAFMC 1991).	Protected smaller spawning age classes of vermilion snapper.
Pre-June 27, 1994	Damage to *Oculina* habitat.	Noticeable decrease in numbers and species diversity in areas of *Oculina* off FL
July 1994	Prohibition of fishing for and retention of snapper grouper species (HAPC renamed OECA; SAFMC 1993)	Initiated the recovery of snapper grouper species in OECA.
1992-1999	Declining trends in biomass and overfishing continue for a number of snapper grouper species including vermilion snapper and gag.	Spawning potential ratio for vermilion snapper and gag is less than 30% indicating that they are overfished.
February 24, 1999	Gag and black: 24" total length (recreational and commercial); 2 gag or black grouper bag limit within 5 grouper aggregate; March-April commercial closure. Vermilion snapper:" total length (recreational). Aggregate bag limit of no more than 20 fish/person/day for all snapper grouper species without a bag limit (1998a).	F for gag vermilion snapper remains declines but is still above F_{MSY}.

Time period/dates	Cause	Observed and/or Expected Effects
October 23, 2006	Snapper grouper FMP Amendment 13C (SAFMC 2006)	Commercial vermilion snapper quota set at 1.1 million lbs gutted weight; recreational vermilion snapper size limit increased to 12" TL to prevent vermilion snapper overfishing
Effective February 12, 2009	Snapper grouper FMP Amendment 14 (SAFMC 2007)	Use marine protected areas (MPAs) as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deepwater snapper grouper species (e.g., speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish). Gag vermilion snapper occur in some of these areas.
Effective March 20, 2008	Snapper grouper FMP Amendment 15A (SAFMC 2008a)	Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Effective Dates Dec 16, 2009, to Feb 16, 2010.	Snapper grouper FMP Amendment 15B (SAFMC 2008b)	End double counting in the commercial and recreational reporting systems by prohibiting the sale of bag-limit caught snapper grouper, and minimize impacts on sea turtles and smalltooth sawfish.
Effective July 29, 2009	Snapper grouper FMP Amendment 16 (SAFMC 2009a)	Protect spawning aggregations and snapper grouper in spawning condition by increasing the length of the spawning season closure, decrease discard mortality by requiring the use of dehooking tools, reduce overall harvest of gag and vermilion snapper to end overfishing.
Effective January 4, 2010	Red Snapper Interim Rule (NMFS 2010)	Prohibit commercial and recreational harvest of red snapper from January 4, 2010, to June 2, 2010 with a possible 186-day extension. Reduce overfishing of red snapper while long-term measures to end overfishing are addressed in Amendment 17A.
Effective dates are as follows: Prohibition on the harvest and possession of red snapper (December 3, 2010); area closure for South	Snapper Grouper FMP Amendment 17A (SAFMC 2010a)	SFA parameters for red snapper; ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; accountability measures. Establish rebuilding plan for red snapper.

Time period/dates	Cause	Observed and/or Expected Effects
Atlantic snapper grouper (January 3, 2011); and circle hook requirement (March 3, 2011).		
Effective January 3, 2011	Emergency Rule	Delayed the implementation of the snapper grouper area closure until June 1st, 2011
Effective January 31, 2011	Snapper Grouper Amendment 17B (SAFMC 2010b)	ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; AMs, for species undergoing overfishing.
Effective July 22, 2010	Comprehensive Ecosystem-Based Amendment 1 (Amendment 19 to the Snapper Grouper FMP)	Provided spatial information on designated EFH in the SAFMC Habitat Plan (SAFMC 1998c).
Effective may 31, 2011	Regulatory Amendment 10	Eliminated the area closure established through Amendment 17A for all snapper grouper species off the coasts of southern Georgia and north/central Florida.
Effective July 15, 2011	Regulatory Amendment 9	Control derby fisheries for black sea bass, vermilion snapper, gag, and greater amberjack.
Target 2012	Snapper Grouper FMP Amendment 18A	Prevent overexploitation in the black sea bass commercial sector, improve data collection timeliness and data quality.
Target 2012	Snapper Grouper FMP Amendment 18B	Prevent overexploitation in the golden tilefish commercial sector.
Target 2011	Comprehensive ACL Amendment (Amendment 23 to the Snapper Grouper FMP)	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.
Target 2012	Amendment 20A (Wreckfish)	Review the current ITQ program and update the ITQ program as necessary to comply with MSA LAPP requirements.
Target 2012	Amendment 24	Rebuilding plan for red grouper

Table 5-2. The cause and effect relationship of fishing and regulatory actions for dolphin and wahoo within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
June 28, 2004	Fishery Management Plan (SAFMC 2003a)	Required vessel owners to obtain commercial vessel, and charter vessel/headboat permits, require dealers to obtain permits, establish bag limits and a minimum size limit (dolphin only), and prohibit sale without a commercial vessel permit; specify allowable gear.
July 22, 2010	Comprehensive Ecosystem-Based Amendment 1 (Amendment 1 to the Dolphin Wahoo FMP)	Provided spatial information on designated EFH in the SAFMC Habitat Plan (SAFMC 1998c).
Target 2011	Comprehensive ACL Amendment (Amendment 2 to the Dolphin Wahoo FMP)	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.

Table 5-3. The cause and effect relationship of fishing and regulatory actions for golden crab within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
September 1996	Fishery Management Plan (SAFMC 1995)	Establish a management program with regulations on traps, limits on participants in fishery, establish permit system, identification of locations where gear can be fished.
June 3, 2002	Amendment 3 (SAFMC 2000b)	Modify escape panel sizes for traps, address permit renewal and minimum harvest requirements.
July 2010	Amendment 4 (SAFMC 2010c)	Established Allowable Golden Crab Fishing Areas within the Deepwater Coral HAPCs
Target 2011	Comprehensive ACL Amendment (Amendment 5 to the Golden Crab FMP)	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.
Target 2012	Amendment 6	Would establish a catch-share program for the golden crab fishery.

Approved in 2003, the FMP for *Sargassum* Pelagic Habitat of the South Atlantic Region (SAFMC 2002) protects *Sargassum*, a free-floating seaweed, from extensive commercial harvest. The approved plan includes strong limitations on future commercial harvest. Restrictions include prohibition of harvest south of the NC/SC state boundary, a total allowable catch of 5,000 lbs wet weight per year, limiting harvest to November through June to protect turtles, requiring observers onboard any vessel harvesting *Sargassum*, prohibiting harvest within 100 miles of shore, and gear specifications.

9. Determine the magnitude and significance of cumulative effects.

Proposed management actions, as summarized in **Section 2** of this document, would remove some species from South Atlantic Snapper Grouper FMU; consider multi-species groupings for specifying ACLs, ACTs, and AMs; establish ABC control rules; ABCs, ACLs, ACTs, and AMs for species not undergoing overfishing; consider designating some snapper grouper species as ecosystem component species; specify allocations among the commercial, recreational, and for-hire sectors for species not undergoing overfishing; and modify management measures to limit total mortality to the ACL. Detailed discussions of the magnitude and significance of the preferred alternatives appear in **Section 4.0** of this consolidated document. Also included is a brief discussion of their combined effects on the snapper grouper, dolphin wahoo, and golden crab fishery management units (FMUs), and the ecosystem.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
The cumulative effects on the biophysical environment are expected to be positive. Avoidance, minimization, and mitigation are not applicable.

11. Monitor the cumulative effects of the selected alternative and adopt management.
The effects of the proposed action are, and will continue to be, monitored through collection of data by NOAA Fisheries Service, states, stock assessments and stock assessment updates, life history studies, and other scientific observations.

5.2 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, notably fish trap and longline restrictions, have also affected snapper grouper harvests and economic performance. The limited access program implemented in 1998/1999 substantially affected the number of participants in the snapper grouper fishery. The 1996 FMP for the Golden Crab Fishery (SAFMC 1995) established a limited entry system, fishing zones, and protective measures for the crabs. Approved in 2004, the FMP for the Dolphin and Wahoo Fishery of the Atlantic (SAFMC 2003a) established historical allocations for dolphin and wahoo between the commercial and recreational sectors with the goal of maintaining harvest at levels observed in the 1990a and ensuring that no new fisheries develop.

Amendment 3 to the Golden Crab FMP (SAFMC 2000b) extended the authorization to use wire cable for mainlines attached to golden crab traps to December, 31, 2002; modified escape panel sizes for traps; addressed permit renewal requirements including removal of the 5,000 pound harvest requirement for renewing biannual permits and addressed the minimum harvest requirement for permit holders in the Southern Zone; allowed up to a 20% increase in vessel size from the vessel size of the original permit; created a sub-zone within the Southern Zone with specified conditions; allowed two new vessels to be permitted to fish only in the Northern Zone using an earlier list of those wanting to enter the fishery; specified status determination criteria; and modified the FMP framework to allow modifications to the sub-zone.

Approved in 2003, the FMP for *Sargassum* Pelagic Habitat (SAFMC 2002) of the South Atlantic Region protects *Sargassum*, a free-floating seaweed, from extensive commercial harvest. *Sargassum* provides habitat to a wide variety of marine organisms including invertebrates, fish, sea turtles and marine birds. The approved plan includes strong limitations on future commercial harvest. Restrictions include prohibition of harvest south of the NC/SC state boundary, a total allowable catch of 5,000 lbs wet weight per year, limiting harvest to November through June to protect turtles, requiring observers onboard any vessel harvesting *Sargassum*, prohibiting harvest within 100 miles of shore, and gear specifications.

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.

Given the variety of factors that affect fisheries, persistent data issues, and the complexity of trying to identify cause-and-effect relationships, it is not possible to differentiate actual or cumulative regulatory effects from external cause-induced effects. For each regulatory action, expected effects are projected. However, these projections typically only minimally, if at all, are capable of incorporating the variety of external factors, and evaluation in hindsight is similarly incapable of isolating regulatory effects from other factors, as in, what portion of a change was due to the regulation versus due to input cost changes, random species availability variability, the sale of a fish house for condominium development, or even simply fishermen behavioral changes unrelated to the regulation.

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. The adoption of limited access privilege programs for the snapper grouper fishery would allow a simplified regulatory environment since trip or seasonal restrictions may no longer be needed and effort issues should be addressed by internal access-rights transfer, 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.

A description of the human environment, including a description of the commercial and recreational snapper grouper fishery, dolphin and wahoo fishery, golden crab fishery as well as associated key fishing communities is contained in **Section 3.8** and incorporated herein by reference. There is currently no fishery for *Sargassum*. A description of the history of management of the fisheries addressed in this document is contained in Appendix D and is incorporated herein by reference. A description of the cumulative effects of actions in Amendments 17A and 17B, which established ACLs and AMs for snapper grouper species are contained in those amendments and incorporated herein by reference (SAFMC 2010a; SAFMC 2010b).

A detailed description of the expected social and economic impacts of the actions in this document is contained elsewhere in Sections 4 and 5 and is incorporated herein by reference. In general, the actions in the Comprehensive ACL Amendment are expected to establish ACLs and AMs for species in four FMPs that are not experiencing overfishing. Actions in the Comprehensive ACL Amendment, however, are expected to have different effects in different areas. At any rate, the actions contained in this document are expected to prevent overfishing

from occurring and to support the achievement of OY in the respective fisheries over time, resulting in social and economic gains.

Current and future amendments are expected to add to this cumulative effect. ACLs, AMs and management measures are being developed in CE-BA 2 (SAFMC under review), Amendment 18 to the Coastal Migratory Pelagics FMP (SAFMC under review), and Amendment 10 to the Spiny Lobster FMP (SAFMC under review). CE-BA 2 contains actions to establish ACLs and AMs for octocorals, transfer management of octocorals to the state of Florida, modify regulations in special management zones, and amend FMPs to designate new essential fish habitat-habitat areas of particular concern. Amendment 18 to the Coastal Migratory Pelagics FMP is being developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs for species in the FMP for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico. Amendment 10 to the Spiny Lobster FMP is being developed by the South Atlantic Council and the Gulf of Mexico Council to establish ACLs and AMs as well as management actions for spiny lobster including tailing permits, the use of undersized lobster as an attractant, and gear markings on trap lines.

Furthermore, additional actions are being considered for snapper grouper species in Amendment 18A, Amendment 18B, Amendment 24, and Regulatory Amendment 9 (SAFMC 2011b) . Snapper Grouper Amendment 18A (SAFMC under development) will examine limiting participation and effort in the golden tilefish and black sea bass pot fisheries, among other actions. While restrictions of this nature would 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.

Snapper Grouper Amendments 20A and 20B (SAFMC under development) will include a formal review of the current wreckfish individual transferable quota (ITQ) program and will update/modify that program according to recommendations from the review. Depending on the actual management measures adopted, this amendment could provide increased or decreased opportunities for those whose fishing operations have been restricted by the present and past snapper grouper amendments.

Amendment 18 to the Coastal Migratory Pelagics FMP (SAFMC under review) will establish ACLs, AMs, and ACTs for king mackerel, Spanish mackerel, and cobia, and Spiny Lobster Amendment 10 (SAFMC under review) will establish ACLs, AMs, and ACTs for lobsters. Snapper grouper fishermen, and associated businesses and communities, who also participate in these fisheries could potentially face limited prospects for continued participation in multiple fisheries, at least in the short-term, as a result of these amendments.

Snapper Grouper Amendment 24 (SAFMC under development) will establish a rebuilding program for red grouper, which has recently been determined to be overfished and experiencing overfishing. Regulatory Amendment 9 (SAFMC 2011b) addressed trip limits for vermilion

snapper, gag, and greater amberjack. Regulatory Amendment 9 also modified the bag limit for black sea bass.

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.

6.0 Other Things to Consider

6.1 Unavoidable Adverse Impacts

There are several unavoidable adverse effects on the socioeconomic environment that may result from the implementation of the Comprehensive ACL Amendment. A brief summary of those effects follows.

6.2 Effects of the Fishery on Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require NMFS and the Councils to describe and identify EFH for each life stage of each managed species. The Act also directs NMFS and the Councils to identify actions to encourage the conservation and enhancement of EFH and identify measures to minimize to the extent practicable the adverse effects of fishing on EFH.

The biological and administrative impacts of the proposed actions are described in **Section 4.0**, including impacts on habitat. If the species in the preferred alternatives are removed from the FMU the EFH identifications and descriptions for those species would not be incorporated in the description of EFH for the Snapper Grouper fishery in the South Atlantic. However, taking into account the considerable overlap of the distribution and life history habitat requirements of the remaining species in the Snapper Grouper FMU, and other fisheries managed by the SAFMC, no individual habitat type or geographic area previously identified as EFH would lose that designation.

No actions proposed in this document are anticipated to have any adverse impact on EFH or EFH-Habitat Areas of Particular Concern (HAPC) for managed species including species in the snapper grouper complex. No additional impacts of fishing on EFH were identified during the public hearing process. Therefore the South Atlantic Council has determined no new measures to address impacts on EFH are necessary at this time.

Although the proposed actions are not considered to have an adverse impact on EFH requiring consultation, having particular habitat types designated as EFH for multiple life stages of multiple species provides a relative indicator of the overall value of a particular habitat which serve to strengthen the basis of NMFS EFH Conservation Recommendations. However, because the proposed action will not result in any individual habitat type or geographic area previously identified as EFH to lose that designation, the Councils' intent to protect and conserve EFH and NMFS's authority to implement that conservation mandate through the EFH consultation process is not considered to be eliminated.

The South Atlantic Council's adopted habitat policies, which may directly affect the area of concern, are available for download through the Habitat/Ecosystem section of the South Atlantic Council's website:
http://www.safmc.net/EcosystemManagement/HabitatProtection/HabitatPolicies/tabid/245/Default.aspx.

NOTE: The Final EFH Rule, published on January 17, 2002, (67 FR 2343) replaced the interim Final Rule of December 19, 1997 on which the original EFH and EFH-HAPC designations were made. The Final Rule directs the Councils to periodically update EFH and EFH-HAPC information and designations within fishery management plans. As was done with the original Habitat Plan, a series of technical workshops were conducted by South Atlantic Council habitat staff and a draft plan that includes new information has been completed pursuant to the Final EFH Rule.

6.3 Damage to Ocean and Coastal Habitats

The alternatives and proposed actions are not expected to have any adverse effect on the ocean and coastal habitat.

Management measures implemented in the original Snapper Grouper Fishery Management Plan through Amendment 7 (SAFMC 1994a) combined have significantly reduced the impact of the snapper grouper fishery on essential fish habitat (EFH). The South Atlantic Council has reduced the impact of the fishery and protected EFH by prohibiting the use of poisons and explosives; prohibiting use of fish traps and entanglement nets in the exclusive economic zone; banning use of bottom trawls on live/hard bottom habitat north of Cape Canaveral, Florida; restricting use of bottom longline to depths greater than 50 fathoms north of St. Lucie Inlet; and prohibiting use of black sea bass pots south of Cape Canaveral, Florida. These gear restrictions have significantly reduced the impact of the fishery on coral and live/hard bottom habitat in the South Atlantic Region.

Additional management measures in Amendment 8 (SAFMC 1997a), including specifying allowable bait nets and capping effort, have protected habitat by making existing regulations more enforceable. Establishing a controlled effort program limited overall fishing effort and to the extent there is damage to the habitat from the fishery (e.g. black sea bass pots, anchors from fishing vessels, impacts of weights used on fishing lines and bottom longlines), limited such impacts.

In addition, measures in Amendment 9 (SAFMC 1998b), that include further restricting longlines to retention of only deepwater species and requiring that black sea bass pot have escape panels with degradable fasteners, reduce the catch of undersized fish and bycatch and ensure that the pot, if lost, will not continue to “ghost” fish. Amendment 13C (SAFMC 2006) increased mesh size in the back panel of pots, which has reduced bycatch and retention of undersized fish. Amendment 15B (SAFMC 2008b) implemented sea turtle bycatch release equipment requirements, and sea turtle and smalltooth sawfish handling protocols and/or guidelines in the permitted commercial and for-hire snapper grouper fishery.

Amendment 16 (SAFMC 2009a), implemented an action to reduce bycatch by requiring fishermen to use dehooking devices. Limiting the overall fishing mortality reduces the likelihood of over-harvesting of species with the resulting loss in genetic diversity, ecosystem diversity, and sustainability.

Measures adopted in the Coral and Shrimp FMPs have further restricted access by fishermen that had potential adverse impacts on essential snapper grouper habitat. These measures include the designation of the *Oculina* Bank HAPC and the rock shrimp closed area (see the Shrimp and Coral FMP/Amendment documents for additional information).

The South Atlantic Council's Comprehensive Habitat Amendment (SAFMC 1998d) contains measures that expanded the *Oculina* Bank Habitat of Particular Concern (HAPC) and added two additional satellite HAPCs. Amendment 14 (SAFMC 2007), established marine protected areas where fishing for or retention of snapper grouper species would be prohibited. Furthermore, the Comprehensive Ecosystem Based Amendment 1 (CE-BA 1) (SAFMC 2010c) established deepwater coral habitat of particular concern to protect what is believed to be the largest distribution (>23,000 square miles) of pristine deepwater coral ecosystems in the world. CE-BA 1 also created allowable gear areas for the golden crab fishery and shrimp fishery access areas for the deepwater shrimp fishery. The establishment of these areas allows for the continuation of these fisheries in their historical fishing grounds with little or no negative impacts to protected deepwater coral habitat.

Management measures implemented in the Golden Crab FMP (SAFMC 1995) has reduced the impact of the golden crab fishery on EFH. The Golden Crab FMP set up a management program for the golden crab fishery in the South Atlantic EEZ, established a limited entry system, and divided the fishery into three zones.

The Dolphin Wahoo FMP (SAFMC 2003a) has reduced the impact of the dolphin and wahoo fishery on EFH. The Dolphin Wahoo FMP closed the longline fisheries for dolphin and wahoo in areas closed to the use of such gear for highly migratory pelagic species, and specified EFH and EFH habitat areas of particular concern.

6.4 Relationship of Short-Term Uses and Short-Term Productivity

The relationship between short-term uses and long-term productivity will be affected by the Comprehensive ACL Amendment. The proposed actions could reduce the harvest of species in FMPs for Snapper Grouper and prevent increased harvest from occurring for species in FMPs for Dolphin Wahoo, Golden Crab, and Sargassum. The Comprehensive ACL Amendment would establish annual catch levels (ACLs) and accountability measures (AMs) for federally managed species as required by the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act. The ACLs are set at levels that prevent overfishing, and the AMs are management controls established to ensure that ACLs are not exceeded, or they may correct for overages if ACLs are exceeded during a fishing season.

The Comprehensive ACL Amendment would also remove snapper species which have small landings or are predominantly taken in state waters. Rare species, which are being considered for removal, currently constitute a minor portion of the overall snapper grouper landings. Species which are predominantly taken in state waters can be more appropriately managed by the states. Therefore, removal of species from the snapper grouper FMU is likely to cause changes in the short-term with respect to who manages some species. Actions in this Comprehensive ACL Amendment are expected to benefit the long-term productivity of these species.

6.5 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are defined as commitments that cannot be reversed, except perhaps in the extreme long-term, whereas irretrievable commitments are lost for a period of time. There are no irreversible commitments in the Comprehensive ACL Amendment. Action 1 would remove some snapper grouper species from the FMU, which have small landings or are predominantly caught in state waters. Removal of species from the FMU does not mean the species cannot be added back into the FMU at a future date if it is determined landings have substantially increased or a species is not being effectively managed by a state.

While the proposed actions would result in irretrievable losses in consumer surplus and angler expenditures, failing to take action could compromise the long-term sustainability of the stocks. Since the FMPs for Snapper Grouper, Dolphin Wahoo, and Golden Crab and their implementing regulations are always subject to future changes, proceeding with the development of this amendment does not represent an irreversible or irretrievable commitment of resources. NOAA Fisheries Service always has discretion to amend its regulations and may do so at any time, subject to the Administrative Procedures Act.

6.6 Unavailable or Incomplete Information

The Council on Environmental Quality, in its implementing regulations for the National Environmental Policy Act (NEPA), addressed incomplete or unavailable information at 40 CFR 1502.22 (a) and (b). There are two tests to be applied: 1) Does the incomplete or unavailable information involve "reasonable foreseeable adverse effects…;" and 2) is the information about these effects "essential to a reasoned choice among alternatives…".

Stock assessments have been conducted for gag, red grouper, red porgy, black grouper, golden tilefish, red snapper, vermilion snapper, black sea bass, greater amberjack, and mutton snapper, which are addressed in this document, using the best available data available. Status determinations for these species were derived from the Southeast Data Assessment and Review (SEDAR) process, which involves a series of three workshops designed to ensure each stock assessment reflects the best available scientific information. The findings and conclusions of each SEDAR workshop are documented in a series of reports, which are ultimately reviewed and discussed by the South Atlantic Council and their Scientific and Statistical Committee (SSC). SEDAR participants, the South Atlantic Council advisory committees, the South Atlantic Council, and NOAA Fisheries Service staff reviewed and considered any concerns about the adequacy of the data. The South Atlantic Council's SSC determined that these assessments are based on the best available data.

The South Atlantic Council's Snapper Grouper Committee acknowledged, while stock assessment findings can be associated with different degrees of uncertainty, there is no reason to assume such uncertainty leads to unrealistically optimistic conclusions about stock status. Rather, the stocks could be in worse shape than indicated by the stock assessment. Uncertainty due to unavailable or incomplete information should not be used as a reason to avoid taking action. Therefore, there are reasonable foreseeable significant adverse effects of not taking action to end overfishing. Failure to take action could result in a worsening of stock status,

persistent foregone economic benefits, and more severe corrective actions to end overfishing in the future.

Many species addressed in this amendment have not had a formal SEDAR stock assessment due to data limitations or are scheduled to be assessed in the future. Where information is unavailable or incomplete, acceptable biological catch control rules and annual catch limits are designed to adopt a conservative approach to increase the probability overfishing does not occur. None of the impacts of decisions made despite the above mentioned unavailable and incomplete information would be catastrophic in nature as described in Section 1502.22(4) of implementing regulations for the NEPA.

7.0 List of Preparers

Name	Title	Agency	Division	Location
David Dale	EFH Specialist	NMFS	HC	SERO
Rick DeVictor	Environmental Impact Scientist	NMFS	SF	SERO
Myra Brouwer	Fishery Scientist	SAFMC	N/A	SAFMC
Nick Farmer	Data Analyst	NMFS	SF	SERO
Roger Pugliese	Sr. Fishery Biologist	SAFMC	N/A	SAFMC
Andy Herndon	Biologist	NMFS	PR	SERO
Stephen Holiman	Economist	NMFS	SF	SERO
Michael Jepson	Anthropologist	NMFS	SF	SERO
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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

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8.0 List of Agencies, Organizations, and Persons To Whom Copies of the Statement Are Sent

Responsible Agency

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List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Marine Protected Areas Advisory Panel
SAFMC Dolphin Wahoo Advisory Panel
SAFMC Golden Crab Advisory Panel
SAFMC Habitat and Environmental Protection Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
Gulf of Mexico 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

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SAFMC (South Atlantic Fishery Management Council). 2008a. Amendment 15A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

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