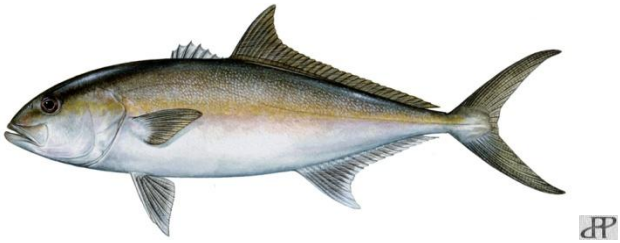
Tab B, No. 7
1/20/15

Options Paper: Modifications to Greater Amberjack Allowable Harvest and Management Measures



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ENVIRONMENTAL ASSESSMENT COVER SHEET

Name of Action

Modifications to Greater Amberjack Allowable Harvest and Management Measures

Responsible Agencies and Contact Persons

Gulf of Mexico Fishery Management Council (Council)
2203 North Lois Avenue, Suite 1100
Tampa, Florida 33607
John Froeschke (john.froeschke@gulfcouncil.org)

813-348-1630
813-348-1711 (fax)
gulfcouncil@gulfcouncil.org
http://www.gulfcouncil.org

National Marine Fisheries Service (Lead Agency)
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
Rich Malinowski (Rich.Malinowski@noaa.gov)

727-824-5305
727-824-5308 (fax)
http://sero.nmfs.noaa.gov

Type of Action

( ) Administrative
(X) Draft

( ) Legislative
( ) Final

ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
AMs	Accountability measures
ALS	accumulated landings system
B_{MSY}	Stock biomass level capable of producing an equilibrium yield of MSY
Council	Gulf of Mexico Fishery Management Council
CS	consumer surplus
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential fish habitat
EIS	Environmental impact statement
ELMR	Estuarine living marine resources
ESA	Endangered Species Act
FL	fork length
F_{MSY}	Fishing mortality rate corresponding to an equilibrium yield of MSY
$F_{30\% SPR}$	Fishing mortality corresponding to 30% spawning potential ratio
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
HAPC	Habitat area of particular concern
IRFA	Initial regulatory flexibility analysis
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
mp	million pounds
MRFSS	Marine Recreational Fisheries Survey and Statistics
MRIP	Marine Recreational Information Program
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	Same as NMFS
NOR	net operating revenues
NOS	National Ocean Service
NS1	National Standard 1 guidelines
OFL	Overfishing level
OY	Optimum yield
PS	Producer surplus
RIR	Regulatory impact review
SAV	Submerged aquatic vegetation
Secretary	Secretary of Commerce
SEDAR	Southeast Data, Assessment and Review
SEFSC	Southeast Fisheries Science Center

SERO	Southeast Regional Office
SSBR	Spawning stock biomass per recruit
SSC	Scientific and Statistical Committee
SPR	Spawning potential ratio
TAC	Total allowable catch
TPWD	Texas Parks and Wildlife Department
ww	whole weight
YPR	Yield per recruit

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CHAPTER 1. INTRODUCTION

1.1 Background

The greater amberjack stock assessment was completed and reviewed by the Scientific and Statistical Committee (SSC) at their June 2014 meeting. The SSC accepted the 2014 Southeast Data, Assessment and Review (SEDAR)greater amberjack assessment as the best scientific information available. The SSC determined that greater amberjack was overfished and experiencing overfishing and the stock did not meet the 10-year rebuilding plan that ended in 2012. The National Standard 1 (NS1) guidelines state that when a stock has exceeded its maximum rebuilding time and is not yet rebuilt, the yield should be set at the yield corresponding to $F_{REBUILD}$ or to 75% of maximum fishing mortality threshold (MFMT), whichever is less. A target rebuild date is required to calculate $F_{REBUILD}$ but has not been specified by the Gulf of Mexico Fishery Management Council (Council). Based on this information, the SSC used the Acceptable Biological Catch (ABC) Control Rule to establish the overfishing limit (OFL) and ABC for a time period of four years beginning in 2015 equivalent to 75% of MFMT.

Secretarial Amendment 2 to the Reef Fish Fishery Management Plan (FMP) established a rebuilding plan for greater amberjack based on a stock assessment conducted in 2000. That assessment determined that the greater amberjack stock was overfished and undergoing overfishing as of 1998 (Turner et al. 2000). Management measures to reduce the recreational bag limit from three to one fish were implemented in January 1997 and the commercial seasonal closure from March through May was implemented in January 1998; however, these closures were not incorporated into the assessment. The projected effects of these management measures were expected to eliminate overfishing; therefore, no new management measures were implemented.

In 2003, a greater amberjack rebuilding plan was established through implementation of Secretarial Amendment 2, and its associated rule. In 2006, a stock assessment was completed and determined the greater amberjack stock was not recovering at the rate previously projected. The stock was declared to be overfished and experiencing overfishing (SEDAR 9 2006). The Gulf of Mexico Fisheries Management Council and National Marine Fisheries Service (NMFS) developed and implemented Amendment 30A, on August 4, 2008, to the Reef Fish Fisheries Management Plan (FMP) in response to the stock assessment results to end overfishing and rebuild the stock by 2012 (GMFMC 2008). The minimum reduction required to rebuild the stock by 2012 was 40% of current fish mortality. The total allowable catch (TAC) implemented in Amendment 30A was 1,871,000 pounds whole weight (pounds) for 2008 through 2010 (GMFMC 2008). Amendment 30A also established quotas for the recreational and commercial sector equal to 1,368,000 and 503,000 pounds, respectively. Amendment 30A also implemented sector accountability measures specifying that if either sector exceeds their sector allocation of total allowable catch (TAC), the Regional Administrator can close that sector for the remainder of the year. Additionally, if the sector's landings exceed their share of TAC, the Regional Administrator will reduce the fishing season for the time necessary to recover the overage in the following fishing year. The Greater Amberjack 2010 SEDAR 9 update stock assessment also

determined that the stock remained overfished and continued to experience overfishing. Amendment 35 to the Reef Fish FMP reduced stock's TAC to1,780,000 pounds in effort to end overfishing and rebuild the stock (Commercial ACL equal to 481,000 pounds , and a recreational ACL equal to1,299,000 pounds , were also established based on the sector allocation established in Amendment 30A.

1.2 Landings Data

Table 1.2.1. Commercial and recreational landings of greater amberjack (pounds whole weight) from 2002 to 2013. Recreational landings include MRIP, Headboat, and TPWD landings.

Year	Headboat	Charter	Private	Recreational Total	Commercial	Grand Total
2002	160,636	1,114,754	857,969	2,133,359	703,303	2,836,662
2003	199,347	1,072,018	1,630,455	2,901,820	857,125	3,758,945
2004	108,769	1,068,819	1,214,641	2,392,230	871,016	3,263,246
2005	61,281	365,893	1,089,984	1,517,158	662,285	2,179,443
2006	79,892	1,030,943	589,348	1,700,183	566,384	2,266,567
2007	59,436	516,253	291,797	867,485	589,235	1,456,720
2008	54,544	478,614	785,504	1,318,662	439,176	1,757,838
2009	103,191	653,160	723,955	1,480,306	601,446	2,081,752
2010	53,203	460,740	711,279	1,225,222	534,095	1,759,317
2011	62,835	583,813	303,351	949,999	508,489	1,458,488
2012	99,680	546,086	592,952	1,238,719	307,921	1,546,640
2013	73,246	604,626	938,757	1,616,629	457,821	2,074,450

SOURCES: SEFSC Recreational (8/5/2014) and Commercial (7/10/2014) ACL Datasets. Recreational landings exclude Monroe County, Florida.

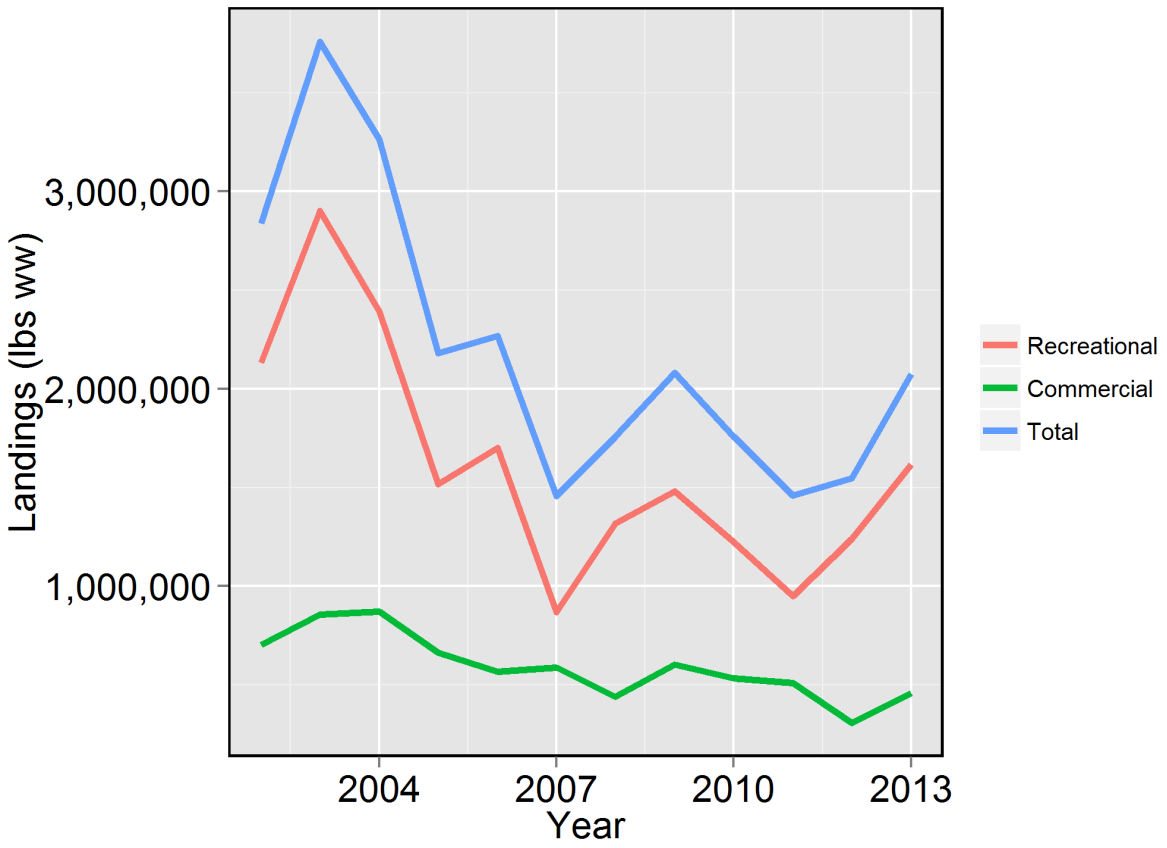

Figure 1.2.1. Recreational, commercial, and total landings in pounds whole weight of greater amberjack from 2002 through 2013. Recreational landings were estimated (AB1) from the MRIP, TPWD, and Headboat Surveys. Commercial data included long line, vertical line and all other applicable gear types (e.g., trolling and diving with a spear). SOURCES: SEFSC Recreational (8/5/2014) and Commercial (7/10/2014) ACL Datasets.

1.3 Greater Amberjack Reproductive Biology

Murie and Parkyn (2008) examined the reproductive biology of greater amberjack throughout the Gulf of Mexico using fishery-dependent and fishery-independent data from 1989 through 2008. They found that females were significantly larger than males and peak spawning occurred during March and April each year. By May, they documented low gonad weights consistent with the end of the seasonal spawning period. Comparatively, studies in the U.S. South Atlantic have estimated that the greater amberjack peak spawning season occurs in April and May (Sedberry et al. 2006; Harris et al. 2007).

Harris et al. (2007) suggest that there are known spawning aggregations of greater amberjack targeted by fishers in the U.S. South Atlantic, but no evidence of this has been presented. Observations in Belize documented greater amberjack in pair courtship when they were in a school of approximately 120 fish (Graham and Castellanos 2003). However, no evidence aggregation or indication of spawning aggregations was presented by Murie and Parkyn (2008) Gulf of Mexico study or other earlier Gulf studies.

1.4 Purpose and Need

The purpose of this amendment is to modify the ACL/ACT and other management measures in order to end the overfishing of greater amberjack stock in the Gulf of Mexico. The need for this amendment is that the current acceptable biological catch (ABC) of 1,780,000 pounds established in Amendment 35 to the Reef Fish FMP exceeds the 1,720,000 pound ABC recommendation for 2015 (GMFMC 2012); and section 600.310(g)(3) of the National Standard 1 ACL and accountability measure (AM) guidelines which states that the system of ACLs and AMs should be re-evaluated, and modified if necessary, if catch exceeds the ACL for a given stock or stock complex more than once in the last four years.

The greater amberjack Stock ACL has been exceeded twice in the last four years; therefore, this document includes a range of draft alternatives for adjusting the Stock ACL, as well as subsequent recreational and commercial management measures to improve effectiveness of the Stock ACL and benefits to greater amberjack in the Gulf of Mexico.

1.5 History of Management

The Reef Fish FMP [with its associated environmental impact statement (EIS)] was implemented in November 1984. The original list of species included in the management unit consisted of snappers, groupers, and sea basses. Gray triggerfish and *Seriola* species, including greater amberjack, were in a second list of species included in the fishery, but not in the management unit. The species in this list were not considered to be target species because they were generally taken incidentally to the directed fishery for species in the management unit. Their inclusion in the Reef Fish FMP was for purposes of data collection, and their take was not regulated.

Amendment 1 [with its associated environmental assessment (EA), regulatory impact review (RIR), and initial regulatory flexibility analysis (IRFA)] to the Reef Fish FMP, implemented in 1990, added greater amberjack and lesser amberjack to the list of species in the management unit. It set a greater amberjack recreational minimum size limit of 28 inches fork length (FL) and a three-fish recreational bag limit, and a commercial minimum size limit of 36 inches FL. This amendment set as a primary objective of the FMP the stabilization of long-term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age to achieve at least 20% spawning stock biomass per recruit (SSBR), relative to the SSBR that would occur with no fishing. A framework procedure for specification of TAC was created to allow for annual management changes. This amendment also established a commercial vessel reef fish permit as a requirement for harvest in excess of the bag limit and for the sale of reef fish.

Amendment 4 (with its associated EA and RIR), implemented in May 1992, added the remaining *Seriola* species (banded rudderfish and Almaco jack) to the management unit, and established a moratorium on the issuance of new commercial reef fish vessel permits for a maximum period of three years.

Amendment 5 (with its associated supplemental EIS, RIR, and IRFA), implemented in February 1994, required that all finfish except for oceanic migratory species be landed with head and fins attached, and closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations.

Amendment 12 (with its associated EA and RIR), submitted in December 1995 and implemented in January 1997, reduced the greater amberjack bag limit from three fish to one fish per person, and created an aggregate bag limit of 20 reef fish for all reef fish species not having a bag limit (including lesser amberjack, banded rudderfish, Almaco jack and gray triggerfish). NOAA Fisheries Service disapproved proposed provisions to include lesser amberjack and banded rudderfish along with greater amberjack in an aggregate one-fish bag limit and to establish a 28-inch FL minimum size limit for those species.

Amendment 15 (with its associated EA, RIR, and IRFA), implemented in January 1998, closed the commercial sector for greater amberjack Gulf-wide during the months of March, April, and May. A regulatory amendment in August 1999 (with its associated EA, RIR, and IRFA) closed two areas (i.e., create two marine reserves), 115 and 104 square nautical miles respectively, year-round to all fishing under the jurisdiction of the Council with a four-year sunset closure.

Generic Sustainable Fisheries Act Amendment (with its associated EA, RIR, and IRFA), partially approved and implemented in November 1999, set the MFMT for greater amberjack at $F_{30\% SPR}$. Estimates of MSY, MSST, and OY were disapproved because they were based on spawning potential ratio (SPR) proxies rather than biomass-based estimates.

Amendment 16B (with its associated EA, RIR, and IRFA), implemented in November 1999, set a slot limit of 14 to 22 inches FL for banded rudderfish and lesser amberjack for both the commercial and recreational fisheries, and an aggregate recreational bag limit of five fish for banded rudderfish and lesser amberjack.

Secretarial Amendment 2, implemented in July, 2003 for greater amberjack, specified MSY as the yield associated with $F_{30\% SPR}$ (proxy for F_{MSY}) when the stock is at equilibrium, OY as the yield associated with an $F_{40\% SPR}$ when the stock is at equilibrium, MFMT equal to $F_{30\%SPR}$, and MSST equal to (1-M)*B_{MSY} or 75% of B_{MSY}. It also set a rebuilding plan limiting the harvest to 2.9 mp for 2003-2005, 5.2 mp for 2006-2008, 7,000,000pounds for 2009-2011, and for 7,.900,000 pounds for 2012. This was expected to rebuild the stock in seven years. Regulations implemented in 1997 and 1998 (Amendments 12 and 15 to the Reef Fish FMP) were deemed sufficient to comply with the rebuilding plan so no new regulations were implemented.

Amendment 30A implemented August 2008, was developed to stop overfishing of gray triggerfish and greater amberjack. The amendment established annual catch limits and accountability measures for greater amberjack and gray triggerfish. For greater amberjack, it modified the rebuilding plan, increased the recreational minimum size limit to 30 inches FL, set a zero bag limit for captain and crew of for-hire vessels, and set commercial and recreational quotas.

Temporary Rule implemented in June 2010, specified the greater amberjack accountability measures for annual catch limits for the 2010 fishing season. The accountability measures developed in Amendment 30A required the commercial and recreational quotas for greater amberjack to be reduced to compensate for the harvest being exceeded in 2009. The commercial quota was reduced from 503,000 pounds whole weight to 373,072 pounds , while the recreational harvest was reduced from 1,368,000 pounds to 1,243,184 pounds.

Regulatory Amendment implemented in June 2011, specified the greater amberjack recreational closed season from June 1 – July 31 (76 FR 23904). The intended effect of this final rule is to mitigate the social and economic impacts associated with implementing in-season closures. As well as allowing the recreational sector to have the ability to fish for at least one targeted and prized fish species such as red snapper.

Amendment 35

In response to a 2010 update stock assessment, the Council approved Amendment 35 to the Reef Fish FMP on October 4, 2012. The final rule that became effective on December 13, 2012, implemented a new annual catch limit (ACL) equal to the acceptable biological catch at 1,780,000 pounds, which was less than the current annual catch limit of 1,830,000 pounds. Reducing the stock ACL by 18% from no action was expected to end overfishing; however,

whether overfishing has ended would remain unknown until completion of the next benchmark assessment, in 2013. The rule also established a commercial trip limit of 2,000 pounds ww throughout the fishing year. The commercial trip limit was anticipated to provide a longer fishing season for the commercial sector. The annual commercial closed season will be March 1 through May 31, and re-opens on June 1st, as long as the annual catch target has not been exceeded or is projected to be exceeded. The Council also considered bag limits and closed season management measures for the recreational fishing sector but did not alter any recreational management measures.

Table 1.5.1. Summary of recent annual commercial landings relative to management targets (pounds whole weight). The accountability measures implemented in Reef Fish Amendment 30a (GMFMC 2008) require that annual commercial harvest exceeding the commercial ACL be deducted from the commercial ACL in the subsequent calendar year. In these cases, the adjusted commercial ACL values are indicated in parentheses. Also, these overage adjustments are made on preliminary landings as final landings are not completed by the beginning of the subsequent calendar year. This may result in minor deviations from the final overage (if any) and the overage deduction.

Year	Commercial ACT	Commercial ACL	Stock OFL	Commercial Harvest	Harvest - ACL	Closure date
2008		503,000	MFMT	439,176	-63,824	
2009		503,000	MFMT	601,446	98,446	11/7/2009
2010		503,000 (373,072)	MFMT	534,095	161,023	10/28/2010
2011		503,000 (342,091)	MFMT	508,489	166,398	6/18/2011
2012		503,000 (237,438)	2,380,000	307,921	70,483	3/1/2012
2013	338,167	481,000 (410,167)	2,380,000	457,821	47,654	7/1/2013
2014	409,000	481,000	2,380,000			8/25/2014

Table 1.5.2. Summary of recent annual recreational landings relative to management targets (pounds whole weight). The accountability measures implemented in Reef Fish Amendment 30a (GMFMC 2008) requires that annual recreational harvest exceeding the recreational ACL be deducted from the recreational ACL in the subsequent calendar year. In these cases, the adjusted recreational ACL values are indicated in parentheses. Also, these overage adjustments are made on preliminary landings as final landings are not available at the beginning of the subsequent fishing year. This results is minor deviations from the final overage (if any) and the overage deduction.

Year	Recreational ACT	Recreational ACL	Stock ACL	Stock OFL	Recreational Harvest	Harvest-ACL	Closure date
2008		1,368,000	1,871,000	MFMT	1,318,662	-49,338	
2009		1,368,000	1,871,000	MFMT	1,480,306	112,306	10/24/09
2010		1,368,000 (1,243,184)	1,871,000	MFMT	1,225,222	-17,962	
2011	1,368,000	1,368,000 (1,315,224)	1,871,000	MFMT	949,999	-365,225	
2012	1,299,000	1,368,000	1,780,000	2,380,000	1,238,719	-129,281	
2013	1,299,000	1,299,000	1,780,000	2,380,000	1,616,629	317,629	
2014	888,839	1,299,000 (1,063,538)	1,780,000	2,380,000			8/25/14

CHAPTER 2. MANAGEMENT OPTIONS

2.1 Action 1 - Modifications to the Greater Amberjack Annual Catch Limits and Annual Catch Targets

All weights are in pounds whole weight.

Option 1. Maintain the acceptable biological catch (ABC), annual catch limit (ACL), and annual catch target (ACT) at the 2014 level until the next assessment.

		Recreational		Commercial	
Year	**ABC/Stock**	**ACL**	**ACT**	**ACL**	**ACT**
2014	1,780,000	1,299,000	1,130,000	481,000	409,000

Option 2. Use the ABC schedule recommended by the Scientific and Statistical Committee (SSC) from 2015 to 2018.

Sub-Option a. No ACT buffer (i.e., ABC = ACL = ACT); note this option would require modification of the accountability measures.

		Recreational		Commercial	
Year	ABC/Stock ACL	ACL	ACT	ACL	ACT
2015	1,720,000	1,255,600	1,255,600	464,400	464,400
2016	2,230,000	1,627,900	1,627,900	602,100	602,100
2017	2,490,000	1,817,700	1,817,700	672,300	672,300
2018	2,620,000	1,912,600	1,912,600	707,400	707,400

Sub-Option b. Apply ACL/ACT Control Rule:

Commercial Buffer =15%

Recreational Buffer = of 13%

		Recreational		Commercial	
Year	ABC/Stock ACL	ACL	ACT	ACL	ACT
2015	1,720,000	1,255,600	1,092,372	464,400	394,740
2016	2,230,000	1,627,900	1,416,273	602,100	511,785
2017	2,490,000	1,817,700	1,581,399	672,300	571,455
2018	2,620,000	1,912,600	1,663,962	707,400	601,290

Sub-Option c. Apply a 20% buffer to set the ACL and ACT for 2015-2018

		Recreational		Commercial	
Year	ABC/Stock ACL	ACL	ACT	ACL	ACT
2015	1,720,000	1,255,600	1,004,480	464,400	371,520
2016	2,230,000	1,627,900	1,302,320	602,100	481,680
2017	2,490,000	1,817,700	1,454,160	672,300	537,840
2018	2,620,000	1,912,600	1,530,080	707,400	565,920

Option 3. Set a constant ABC at the level recommended the Scientific and Statistical Committee (SSC) for 2015.

Sub-Option a. No ACL buffer; note this option would require modification of the accountability measures.

		Recreational		Commercial	
Year	ABC/Stock ACL	ACL	ACT	ACL	ACT
2015 +	1,720,000	1,255,600	1,255,600	464,400	464,400

Sub-Option b. Apply ACL/ACT Control Rule:

Commercial Buffer = 15%

Recreational Buffer = 13%

		Recreational		Commercial	
Year	ABC/Stock ACL	ACL	ACT	ACL	ACT
2015 +	1,720,000	1,255,600	1,092,372	464,400	394,740

Sub-Option c. Use a 20% buffer to set the ACL and ACT for 2015-2018

		Recreational		Commercial	
Year	ABC/Stock ACL	ACL	ACT	ACL	ACT
2015 +	1,720,000	1,255,600	1,004,480	464,400	371,520

Option 4. Set the stock ACL at zero. No landings of greater amberjack.

Discussion:

The SEDAR 33 (2014) stock assessment indicated that the greater amberjack stock remains overfished and is experiencing overfishing (as of 2012, most recent year included in the assessment). The status determination criteria used to make these determinations were established in Secretarial Amendment 2, implemented in July 2003 and are defined as follows: maximum sustainable yield (MSY) is the yield associated with $F_{30\% \text{ SPR}}$ (proxy for MSY) when the stock is at equilibrium, optimum yield (OY) is the yield associated with an $F_{40\% \text{ SPR}}$ when the stock is at equilibrium, maximum fishing mortality threshold (MFMT) is equal to $F_{30\%SPR}$, and minimum stock size threshold (MSST) is equal to (1-M)*$B_{MSY,}$ or 75% of biomass at maximum sustainable yield (B_{MSY}. Natural mortality (M) equals 0.25 for greater amberjack.

Action 1 includes options to modify the ABC, ACL, and ACT for greater amberjack in response to results from the SEDAR 33 (2014) and subsequent SSC review and recommendations for ABC.

Amendment 35 to the Reef Fish Fishery Management Plan (FMP) established a stock ABC of 1,780,000 pounds, which exceeds the current ABC recommendation of 1,720,000 pounds for the 2015. The ABC established in Amendment 35 of the Reef Fish FMP was set using Tier 3b of the ABC control rule where the ABC was set at the mean of recent landings. This procedure was adopted by the SSC as the projections from the stock assessment were unstable and highly uncertain (SEDAR 9 update. 2010).

The recommendations made by the SSC after reviewing SEDAR 33 (2014) will replace the previous ABC and OFL recommendations (GMFMC 2012). A ten year rebuilding plan ended in 2012 without rebuilding the Greater amberjack stock and guidance on a new rebuilding plan is necessary from the Gulf Council.

An additional goal of this framework action is to re-evaluate the stock ACL as both the recreational and commercial sectors exceeded their quotas twice in the last four years. The National Standard 1 guidelines (NS1) section 600.310 (g)(3) states "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".

Option 1 is the no action alternative and would retain the current ABC/stock ACL. Based on the greater amberjack SEDAR 33 Update (2014) and subsequent SSC review and ABC recommendations the Council would be exceeding the ABC in 2015 (albeit only by 60,000 pounds). Therefore, this alternative is not a viable option.

Option 2 would modify the rebuilding plan and set the stock ACL at the ABC recommended by the SSC for the years 2015 to 2018. Based on the 73% recreational and 27% commercial allocation the respective sector quotas would be 1,255,600 pounds for the recreational sector (2015) and 464,400 pounds for the commercial sector (2015). **Option 2** would also establish combined sector ACLs that that are 60,000 pounds below the current stock ACL followed by increases in 2016 - 2018. However, at the August 2014 SSC meeting (Tampa, FL) the SSC discussed the harvest projections from SEDAR 33 (Gulf of Mexico Greater Amberjack) and the ABC schedule recommended by the SSC at the June 2014 meeting. The additional discussion occurred because the stock is overfished and experiencing overfishing, the previous 10 year rebuilding plan was not met, and that stock biomass has been relatively stable (at overfished levels) for a long-period while experiencing harvest levels below what is currently projected to rebuild the stock in upcoming years. The SSC discussed that historical stock assessment model projections were quite uncertain, and retrospectively, were overly optimistic about the productivity of the stock. A SSC member stated that the current stock assessment differed in terms of modeling environment and approach from previous assessments and the current SS3 modeling environment allowed a length structured assessment with uncertainty in both lengths and landings. These are substantial improvements over previous stock assessments and should add reliability to the results and projections relative to previous assessments of greater amberjack.

The SSC discussed that current fishing recommendations (**Option 2**) are based on 75% of F_{MSY} as a specific timeline for rebuilding the stock has not been provided to the SSC. If a rebuilding target date were provided, a harvest schedule to meet this timeline could be calculated and the result could suggest a greater or reduced ABC is necessary to meet the rebuilding deadline. If the Gulf Council

provided a rebuilding target date, the SEFSC could produce a probability of overfishing for various yield strategies that reflects the desired risk tolerance by the Gulf Council.

Greater Amberjack is currently managed to harvest the ACL. The ACT may be reduced from the ACL to incorporate uncertainty in the manage structure to constrain harvest to the desired catch level. **Option 2** includes three sub-options. **Sub-option a** would not apply a buffer between the ACL and ACT and assumes that management practices are effective to constrain catch to the ACL.

Sub-option b would apply the existing ACL/ACT Control Rule that results in an ACT buffer of 15% for the commercial sector (i.e., management target) and the recreational ACT would be reduced by 13% of the ACL to accommodate uncertainty in the effectiveness of the management strategy to constrain catch. The Council established an ACL/ACT Control Rule in the Generic ACL Amendment (GMFMC 2011). The Council developed the ACL/ACT Control Rule so it could objectively and efficiently assign catch limits and targets that take into account management uncertainty (GMFMC 2011). The rule uses different levels of information about catch levels, sector overages, stock management practices, and data quality to assign levels of reduction for either sector ACLs or ACTs.

Sub-option c would not use the ACL/ACT Control Rule and instead apply a 20% buffer, effectively reducing the management target 20% from the ACL. The rationale for **sub-option c** is that recreational harvest has exceeded the sector ACL previously and this would provide a larger buffer and increase the likelihood of rebuilding this stock to target biomass levels.

Option 3 (including all **sub-options**) is identical in 2015, however, does not allow for increases in the ACL and ACT in years (2016 - 2018) as compared to **Option 2**. As with **Option 2, sub-option a** would set the ACT equal to the ACL (i.e., no buffer). **Sub-option b** would apply the ACL/ACT Control Rule corresponding to a 15% commercial buffer and a 13% recreational buffer for each year 2015 to 2018 inclusive. **Sub-option c** would apply a constant 20% buffer between the ACL and ACT from 2015 through 2018.

Option 4 would set the stock ACL and stock ACT at zero and is a reasonable option given that this stock is overfished and experiencing overfishing despite previous management efforts to rebuild the stock within the ten year rebuilding plan. **Option 4** would provide the greatest likelihood of rebuilding the stock albeit with the greatest short-term, negative socio-economic impact to the reef fish fishery.

Post-season AMs such as overage adjustments would only occur if the respective sector ACL was exceeded. Any ACL overage by a sector would then reduce the respective sectors ACL and ACT the following year, by the amount of the sector ACL overage.

For both **Option 2** and **Option 3** the **sub-options** under consideration would retain the same ABC. However, **sub-options 2a** and **3a** would result in AMs being triggered immediately if the ACL is exceeded as it is equivalent to the ABC. **Sub-options 2b** and **3b** would provide additional flexibility by establishing an ACT (commercial sector buffer =15% and the recreational buffer =13%). **Sub-options 2a** and **3a** would establish an ACT value as the "target" yet accountability measures would not be triggered unless the ACL was exceeded. **Sub-options 2c** and **3c** would also establish an ACT

value as the "target" yet with larger buffers (5% larger commercial; 7% larger recreational) than **sub-options 2b** and **3b**. While **sub-options 2c** and **3c** would further reduce the likelihood of exceeding the ACL and aid in preventing overages that have occurred frequently in the management of this species; however, if the buffer is too large, it could prevent the fishery from achieving OY.

2.2 Action 2 - Recreational Management Measures

Action 2.1: Modify the Recreational Minimum Size Limit for Greater Amberjack

Option 1: No Action – do not modify the current minimum size limit of 30 inches FL
Option 2: Modify the minimum size limit for greater amberjack to 32 inches FL
Option 3: Modify the minimum size limit for greater amberjack to 34 inches FL
Option 4: Modify the minimum size limit for greater amberjack to 36 inches FL

Discussion:
Action 2 includes options to modify the recreational minimum size limit for greater amberjack. **Option 1** would maintain the current recreational minimum size limit of 30 inches FL. Based on recreational landings in 2009-2010 the most frequently landed greater amberjack was 31 inches FL (Figure 2.2.1). However, a 30 inch FL greater amberjack is approximately 2 years old and has not likely reproduced yet based on size at maturity data (Figure 2.2.2). At the current 30 inch FL minimum size limit 11% (95% confidence interval (0 - 23%)) of the females in the population have achieved reproductive maturity (Table 2.2.1).

Option 2 would modify the minimum size limit for greater amberjack to 32 inches FL. At 32 inches FL 45% of females (95% confidence interval (23 - 66%)) are reproductively mature. **Option 3** would modify the minimum size limit for greater amberjack to 34 inches FL. At 34 inches FL 85% of females (95% confidence interval (69 - 100%)) are reproductively mature. **Option 4** would modify the minimum size limit for greater amberjack to 36 inches FL. At 36 inches FL 97% of females (95% confidence interval (92 - 100%)) are reproductively mature. For **Option 3** or **Option 4**, greater than 50% of female greater amberjack are estimated to be reproductively mature and **Option 4** would be consistent with the commercial sector's minimum size limit. As minimum size limits increase from 30 inches FL, dead discards are estimated to increase and subsequent estimates of changes in harvest and dead discards for various minimum size limits could be calculated. Dead discard mortality is estimated at 20% and would be used to estimate increases in total dead discards with various minimum size limits consistent with SEDAR 33 (2014) SEDAR 9 Update (2010).

Spawning potential ratio (SPR) (Figure 2.2.3) and yield-per-recruit (YPR) (Figure 2.2.4) were calculated for a range of fishing mortality rates for three different minimum size limits following SERO-LAPP-2011-4. The calculations incorporated discard selectivity and discard mortality for sub-legal fish and harvest selectivity within 2 inches of the minimum size limit. SPR and YPR calculations were updated with SEDAR 33 (2014) parameter estimates of length-weight conversion, von Bertalanffy growth model, length at maturity model, natural mortality, fishing mortality, and discard mortality.

Spawning potential ratio addresses the spawning potential of the stock relative to the stock with no fishing mortality. The largest minimum size limit considered (**Option 4**; 36 inches fork length) resulted in the largest spawning potential for the stock. Yield per recruit addresses the fishing mortality rate that produces the maximum yield of the fishery. The smallest minimum size considered (**Option 1**; 30 inches fork length) resulted in the largest yield of the fishery. Thus, the SPR and YPR results reveal a trade-off between SPR and YPR. If the management goal is to achieve a higher SPR, then increasing the minimum size would be beneficial; however, this results in less

YPR. If the management goal is to maximize yield then the current minimum size limit of 30 inches fork length appears appropriate.

The SPR and YPR analysis presented herein only takes into account growth and mortality. Recruitment is assumed to be constant which is likely unrealistic since recruitment typically varies over time with changing stock size and environmental conditions. Thus, there is uncertainty associated with these results. Also, this analysis does not address the issue of determining a fishing mortality rate that will produce a maximum yield that is likely to be sustainable.

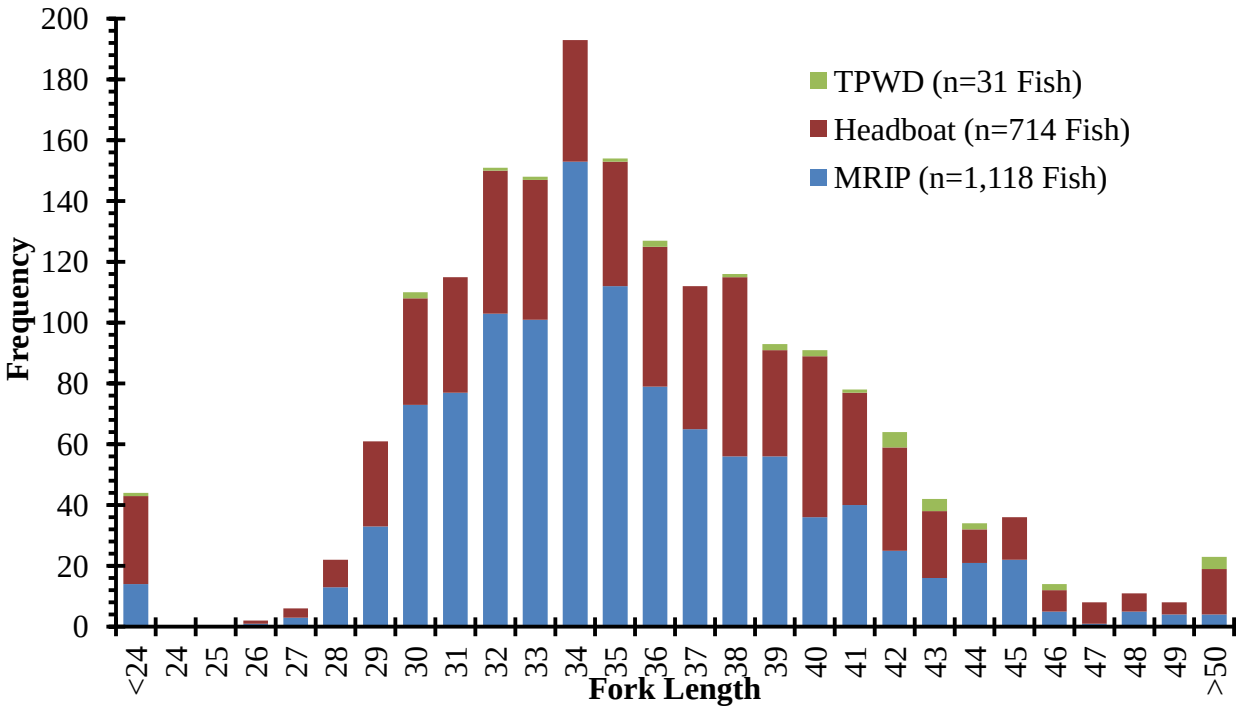

Figure 2.2.1. Size frequency distribution of recreational greater amberjack landings in 2012-2013 in the Gulf of Mexico. The current minimum size limit is 30 inches fork length. Note: Landings in blue = Marine Recreational Information Program and Statistics (MRIP), red = Headboat, and green = Texas Parks and Wildlife Division. Source: SERO 2014.

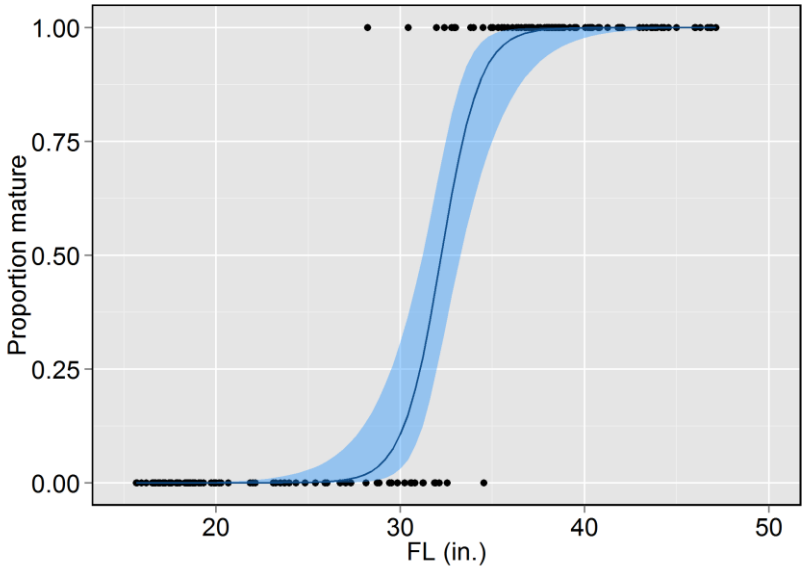

Figure 2.2.2. Proportion of mature females by length for greater amberjack in the Gulf of Mexico. Solid line represents the logistic regression model, blue shaded region represents 95% confidence interval. Filled black circles are individual samples that were noted as mature or immature. Source: D. Murie, personal communication and SERO 2014.

Table 2.2.1. Proportion of mature females at selected lengths for greater amberjack in the Gulf of Mexico. At each selected length, the proportion of mature females is estimated using logistic regression. The 95% lower (LCL) and upper (UCL) confidence limits are also provided.

Proportion of mature females			
Fork length (in)	**Proportion mature**	**LCL**	**UCL**
30	0.11	0.00	0.23
32	0.45	0.23	0.66
34	0.85	0.69	1.00
36	0.97	0.92	1.00

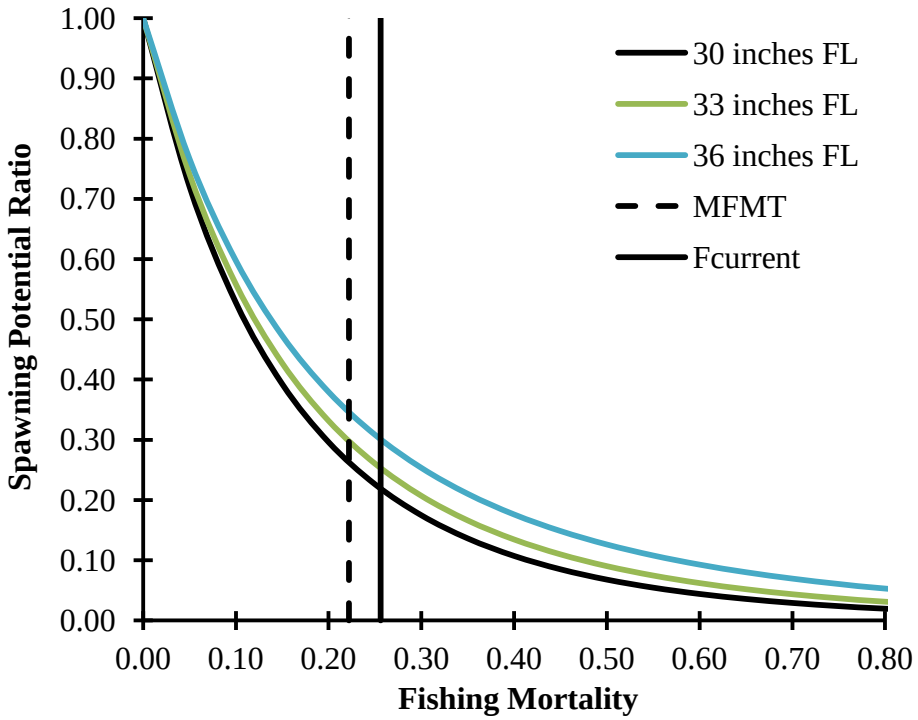

Figure 2.2.3. Gulf of Mexico greater amberjack spawning potential ratio plotted against fishing mortality rates for three different minimum size limits. The black bar represents the current fishing morality rate (Fcurrent = 0.256) and the dashed line represents the Maximum Fishing Mortality Threshold (MFMT = 0.222) as stated in SEDAR 33.

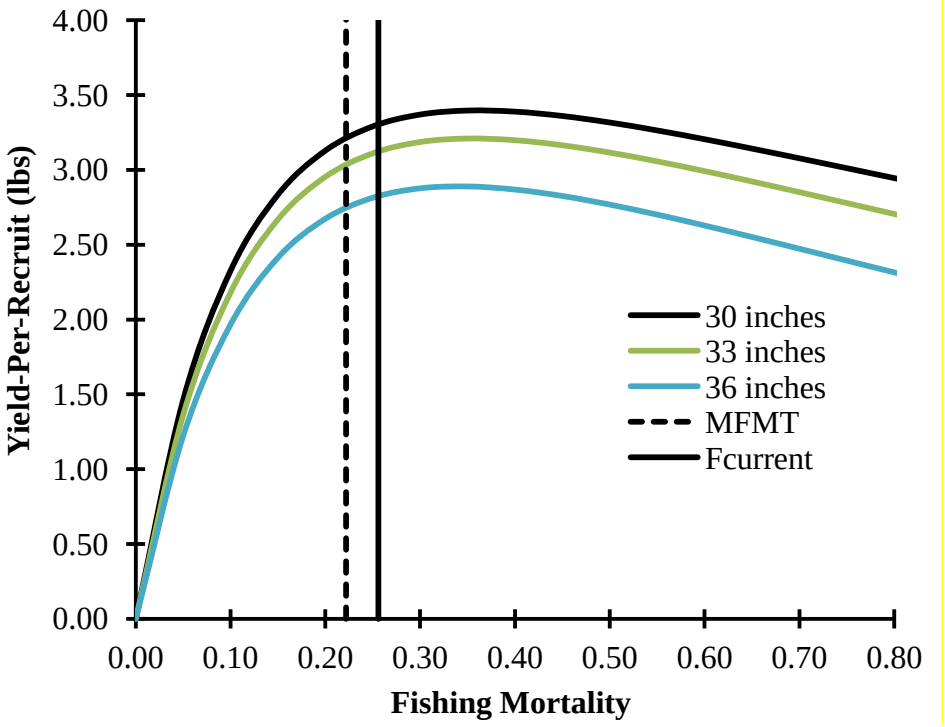

Figure 2.2.4. Gulf of Mexico greater amberjack yield-per-recruit plotted against fishing mortality rates for three different minimum size limits. The black bar represents the current fishing morality rate (Fcurrent = 0.256) and the dashed line represents the Maximum Fishing Mortality Threshold (MFMT = 0.222) as stated in SEDAR 33.

Action 2.2: Modify the Recreational Closed Seasons for Greater Amberjack

Option 1: No Action – do not modify the current June 1 - July 31 closed season
Option 2: Eliminate the closed season and open January 1 until the ACT is harvested
Option 3: Modify the recreational seasonal closure to March 1 - May 31
Option 4: Modify the recreational seasonal closures to be:
January 1 – May 31 and November 1 – December 31

Discussion:
Minimum size limits are not the only management measure that can be used to accomplish the management goal of 30% SPR. Another measure the Council is considering is modification to the closed season. The primary reason for a fixed recreational closed season is to eliminate in-season quota closures in the fall, which can be very disruptive to the fishery.

Option 1 would maintain the current fixed closed season June 1-July 31. The primary reason behind this fixed recreational closed season was to eliminate in-season quota closures and allow one highly targeted species to be open when the other was closed (red snapper and greater amberjack). In addition, by establishing a fixed closed season the fishery is more likely to stay open through the remainder of the calendar year.

Option 2 would eliminate the fixed closed season (June 1-July 31) and the recreational fishery would open January 1 until quota is filled. This was the recreational fishing season until the implementation of the 2010 Regulatory Amendment (GMFMC 2010b) which established a fixed closed season June 1-July 31, 2011. This fixed closure was a management tool implemented to slow harvest and reduce the probability of an early fall closure which can be disruptive to the fishery.

Option 3 would eliminate the fixed closed season (June 1-July 31) and establish a recreational fixed closed season from March 1-May 31. This alternative would be consistent with the commercial fixed closed season and would also protect greater amberjack during peak spawning.

Option 4 would eliminate the fixed closed season (June 1-July 31) and establish recreational fixed closed seasons from January 1-May 31 and from November 1-December 31 providing protection for spawning greater amberjack and allowing recreational fishing effort to occur throughout the summer into early fall (September-October).

Action 2.1 and **Action 2.2** consider management options to 1) achieve the ACT selected in Action 1 and 2) consider changes in minimum size limits and or closed seasons to maximize benefits from the greater amberjack stock while ending overfishing and allowing for rebuilding of the stock. A recreational decision tool was developed to evaluate combinations of size limits and closed season on the total removals of the stock (catch + dead discards) as well as the number of days required to harvest the ACT (catch, not including dead discards). This permits evaluation of tradeoffs in management options to maximize benefits (e.g., season length) and minimize negative attributes (e.g., dead discards). The estimated season length for combinations of minimum size limits (**Action 2.1, Options 1 -4)** and recreational closed seasons (**Action 2.2, Options 1 -4**) are presented in Table 2.2.1. These estimates are restricted to calendar year 2015 as some options include constant ACT values and uncertainty increases with each successive year of the projection. As such, the number of days presented in Table 2.2.1 represent the best estimate and are considered useful in a comparative sense. The combinations yielding the longest season length include a 36 inch minimum size limit (FL) and a closed season during June and July when harvest rates are typically greatest. The split season closure (i.e., **Action 2.2, Option 4**) is predicted to yield the shortest fishing season of all the options considered, as the closed seasons occur in relatively low-effort periods, thus requiring longer closed seasons to achieve the same level of reductions.

Table 2.2.2 Season length in days under selected closed season and ACT alternatives.

Closed Seasons	Size Limit	ACT Alt 1	ACT Alt 2			ACT Alt 3		
		no buffer	no buffer	13% buffer	20% buffer	no buffer	13% buffer	20% buffer
June 1 - July 31	**30**	182	199	179	172	199	179	172
January 1 until ACT harvested	**30**	190	200	187	181	200	187	181
March 1 to May 31	**30**	145	157	142	135	157	142	135
January 1 – May 31 and November 1 – December 31	**30**	97	114	92	85	114	92	85
June 1 - July 31	**32**	196	214	191	180	214	191	180
January 1 until ACT harvested	**32**	199	209	195	188	209	195	188
March 1 to May 31	**32**	152	170	149	142	170	149	142
January 1 – May 31 and November 1 – December 31	**32**	108	126	102	91	126	102	91
June 1 - July 31	**34**	215	233	209	196	233	209	196
January 1 until ACT harvested	**34**	211	222	208	200	222	208	200
March 1 to May 31	**34**	168	187	162	150	187	162	150
January 1 – May 31 and November 1 – December 31	**34**	123	142	118	104	142	118	104
June 1 - July 31	**36**	258	304	237	222	304	237	222
January 1 until ACT harvested	**36**	227	240	224	215	240	224	215
March 1 to May 31	**36**	192	226	185	170	226	185	170
January 1 – May 31 and November 1 – December 31	**36**	147	153	140	125	153	140	125

2.3 Action 3 - Commercial Management Measures

Option 1: No Action – Maintain the 2,000 pound whole weight trip limit
Option 2: Establish a 1,500 pound whole weight trip limit for greater amberjack
Option 3: Establish a 1,000 pound whole weight trip limit for greater amberjack
Option 4: Establish a 750 pound whole weight trip limit for greater amberjack
Option 5: Establish a 500 pound whole weight trip limit for greater amberjack

Discussion:

Action 3 includes options to reduce commercial trip limits for greater amberjack. A 2,000 pound commercial trip limit was implemented in December 13, 2012 (GMFMC 2012) in effort to reduce harvest rates and prevent quota overages. Prior to implementation of the 2,000 commercial trip limit, the commercial ACL was exceeded each year from 2009 to 2012. While the 2,000 pound trip limit moderately reduced the average poundage landed per trip, the commercial ACL was exceeded in 2013. If the current stock (and/or commercial ACL) is reduced from status quo to meet the objectives of the rebuilding plan (i.e., Action 1), an additional reduction to the commercial trip limit could be considered to meet the ACL. **Option 1** would retain the existing 2,000 trip limit established in Reef Fish Amendment 35 (GMFMC 2012)(Table 2.3.1). **Options 2 - 4** would reduce the commercial greater amberjack trip limits to 1,500 lbs ww (Option 2); 1,000 lbs ww (Option 3), 500 lbs ww (Option 4) respectively. The reduced trip limits are expected to reduce the rate of harvest and the likelihood of exceeding the ACL. This could be an effective management measure if necessary to prevent ACL overages in the future.

To estimate season lengths necessary to harvest the commercial ACT, a decision tool was developed to compare management options (1-3). Estimates are restricted to fishing year 2015 as projection uncertainty increases with each subsequent year estimated. These season lengths are reported as a range since they are dependent upon the ACT value selected in **Action 1**. **Option 1** (2,000 pound trip limit) would have the shortest season of the options under consideration and the season is projected to range from 75 to 92 days (assuming January 1, 2015 opening date) (Table 2.3.2). **Option 2** would slow the overall harvest rate of the fleet by restraining trip harvest to 1,500 pounds and the projected season length ranges from 84 to 109 days. **Option 3** would enact a 1,000 pound trip limit with a projected season length ranging from 113 to 148 days. **Option 4** (750 pound trip limit) would require 145 to 189 days to harvest the ACT. **Option 5** (500 pound trip limit) is the smallest trip limit under consideration which may be undesirable. However, If no buffer between the ACL and ACT is selected as Preferred in Action 1, **Option 5** could allow the season to remain open all-year (except March to May closure) while harvesting 100% of the ACT. In all cases, **Option 5** would have the longest season length at the expense of the smallest allowable harvest per trip.
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Table 2.3.1. Total greater amberjack commercial landings (2008 - 2013). The commercial ACL was exceeded each year from 2009 to 2013. A 2,000 pound whole weight trip limit was implemented in December 2012, (fully implemented in 2013). Note, the ACL was adjusted for prior year overages in some years as explained in **Table 1.5.1**.

Year	Total Landings (ww)	ACL (ww)	Closure Date
2008	439,176	503,000	
2009	601,446	503,000	11/7/2009
2010	534,095	373,072	10/28/2010
2011	508,489	342,091	6/18/2011
2012	307,921	314,734	3/1/2012
2013	457,821	410,157	7/1/2013

Table 2.3.2. Estimated commercial season length (i.e., days open) under three management options. The table represents the number of fishing necessary to harvest the Annual Catch Target (ACT) as specified in Action 1. The color scale ranges from yellow (i.e., fewest days) to green (i.e., most days).

Trip Limit (lbs ww)	ACT Option 1	ACT Option 2			ACT Option 3		
	no buffer	no buffer	15% buffer	20% buffer	no buffer	15% buffer	20% buffer
2000 (status quo)	82	92	79	75	92	79	75
1500	93	109	89	84	109	89	84
1000	127	148	122	113	148	122	113
750	162	189	156	145	189	156	145
500	240	273	231	216	273	231	216

CHAPTER 3. AFFECTED ENVIRONMENT

3.1 Description of the Physical Environment

The Gulf has a total area of approximately 600,000 square miles (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel (Figure 3.1.1). Oceanographic conditions are affected by the Loop Current, discharge of freshwater into the northern Gulf, and a semi-permanent, anti-cyclonic gyre in the western Gulf. The Gulf includes both temperate and tropical waters (McEachran and Fechhelm 2005). Mean annual sea surface temperatures ranged from 73 through 83º F (23-28º C) including bays and bayous (Figure 3.1.1) between 1982 and 2009, according to satellite-derived measurements (NODC 2012: http://accession.nodc.noaa.gov/0072888). In general, mean sea surface temperature increases from north to south with large seasonal variations in shallow waters.

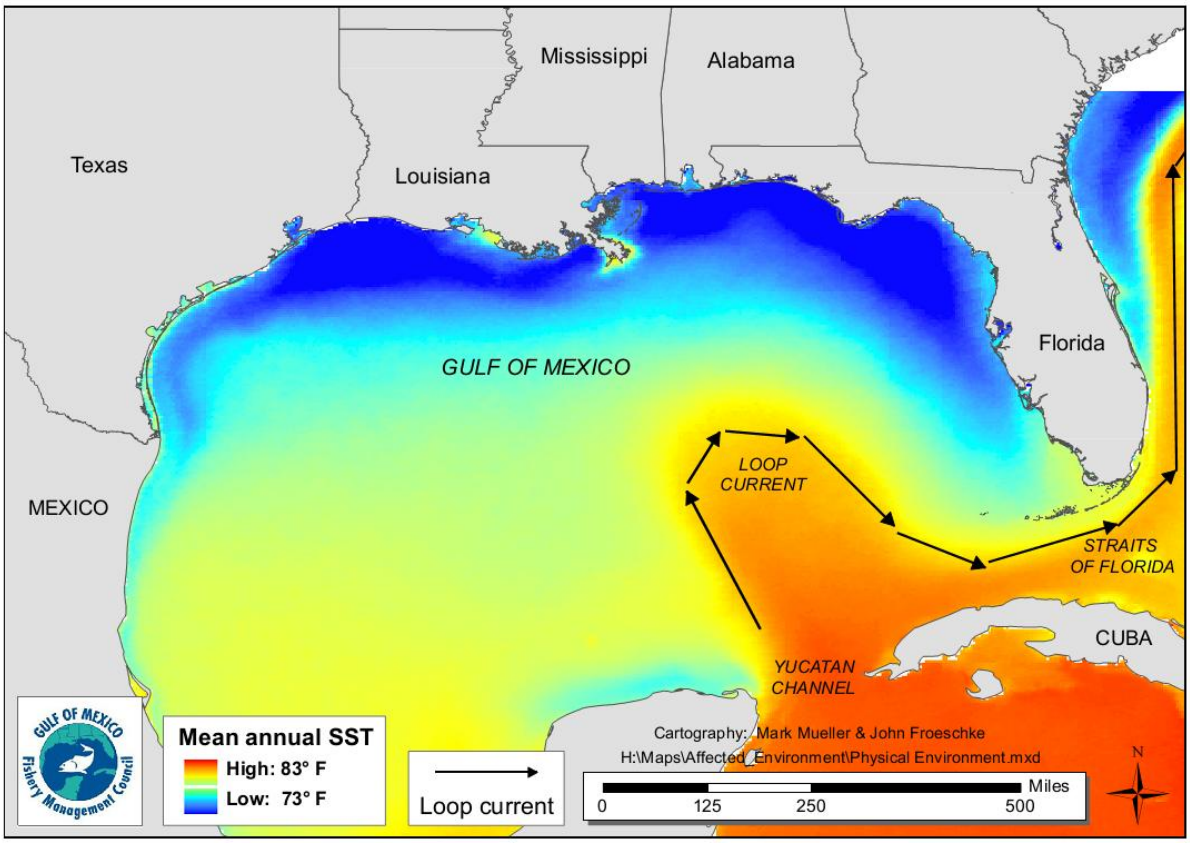

Figure 3.1.1. Mean annual sea surface temperature derived from the Advanced Very High Resolution Radiometer Pathfinder Version 5 sea surface temperature data set (http://pathfinder.nodc.noaa.gov).

The physical environment for Gulf reef fish is detailed in the Environmental Impact Statement for the Generic Essential Fish Habitat (EFH) Amendment (GMFMC 2004a) and the Generic ACL/AM Amendment (GMFMC 2011) which are hereby incorporated by reference.

Habitat Areas of Particular Concern (HAPC)

Generic Amendment 3 (GMFMC 2005) for addressing EFH, HAPC, and adverse effects of fishing in the following fishery management plans of the Gulf Reef Fish Resources, Red Drum, and Coastal Migratory Pelagics is hereby incorporated by reference.

Environmental Sites of Special Interest Relevant to Reef Fish, Red Drum, Coastal Migratory Pelagics, Spiny Lobster, Red Drum, and Coral and Coral Reefs (Figure 3.1.2)

Longline/Buoy Gear Area Closure – Permanent closure to use of these gears for reef fish harvest inshore of 20 fathoms (36.6 meters) off the Florida shelf and inshore of 50 fathoms (91.4 meters) for the remainder of the Gulf, and encompasses 72,300 square nautical miles (nm^2) or 133,344 km^2 (GMFMC 1989). Bottom longline gear is prohibited inshore of 35 fathoms (54.3 meters) during the months of June through August in the eastern Gulf (GMFMC 2009), but is not depicted in Figure 3.2.1.

Madison-Swanson and Steamboat Lumps Marine Reserves - No-take marine reserves (total area is 219 nm^2 or 405 km^2) sited based on gag spawning aggregation areas where all fishing is prohibited except surface trolling from May through October (GMFMC 1999; 2003).

The Edges Marine Reserve – All fishing is prohibited in this area (390 nm^2 or 1,338 km^2) from January through April and possession of any fish species is prohibited, except for such possession aboard a vessel in transit with fishing gear stowed as specified. The provisions of this do not apply to highly migratory species (GMFMC 2008).

Tortugas North and South Marine Reserves – No-take marine reserves (185 nm^2) cooperatively implemented by the state of Florida, National Ocean Service, the Gulf of Mexico Fishery Management Council (Council), and the National Park Service in Generic Amendment 2 Establishing the Tortugas Marine Reserves (GMFMC 2001).

Reef and bank areas designated as Habitat Areas of Particular Concern (HAPCs) in the northwestern Gulf include – East and West Flower Garden Banks, Stetson Bank, Sonnier Bank, MacNeil Bank, 29 Fathom, Rankin Bright Bank, Geyer Bank, McGrail Bank, Bouma Bank, Rezak Sidner Bank, Alderice Bank, and Jakkula Bank – pristine coral areas protected by preventing the use of some fishing gear that interacts with the bottom and prohibited use of anchors (totaling 263.2 nm^2 or 487.4 km^2). Subsequently, three of these areas were established as marine sanctuaries (i.e., East and West Flower Garden Banks and Stetson Bank). Bottom anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots on coral reefs are prohibited in the East and West Flower Garden Banks, McGrail Bank, and on significant coral resources on Stetson Bank (GMFMC 2005). A weak link in the tickler chain of bottom trawls on all habitats throughout the EEZ is required. A weak link is defined as a length or section of the tickler chain that has a breaking strength less than the chain itself and is easily seen as such when visually inspected. An education program for the protection of coral reefs when using various fishing gears in coral reef areas for recreational and commercial fishermen was also developed.

Florida Middle Grounds HAPC - Pristine soft coral area (348 nm^2 or 644.5 km^2) that is protected by prohibiting the following gear types: bottom longlines, trawls, dredges, pots and traps (GMFMC and SAFMC 1982).

Pulley Ridge HAPC - A portion of the HAPC (2,300 nm^2 or 4,259 km^2) where deepwater hermatypic coral reefs are found is closed to anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots (GMFMC 2005).

Alabama Special Management Zone – For vessels operating as a charter vessel or headboat, a vessel that does not have a commercial permit for Gulf reef fish, or a vessel with such a permit fishing for Gulf reef fish, fishing is limited to hook-and-line gear with no more than three hooks. Nonconforming gear is restricted to recreational bag limits, or for reef fish without a bag limit, to 5% by weight of all fish aboard (GMFMC 1993).

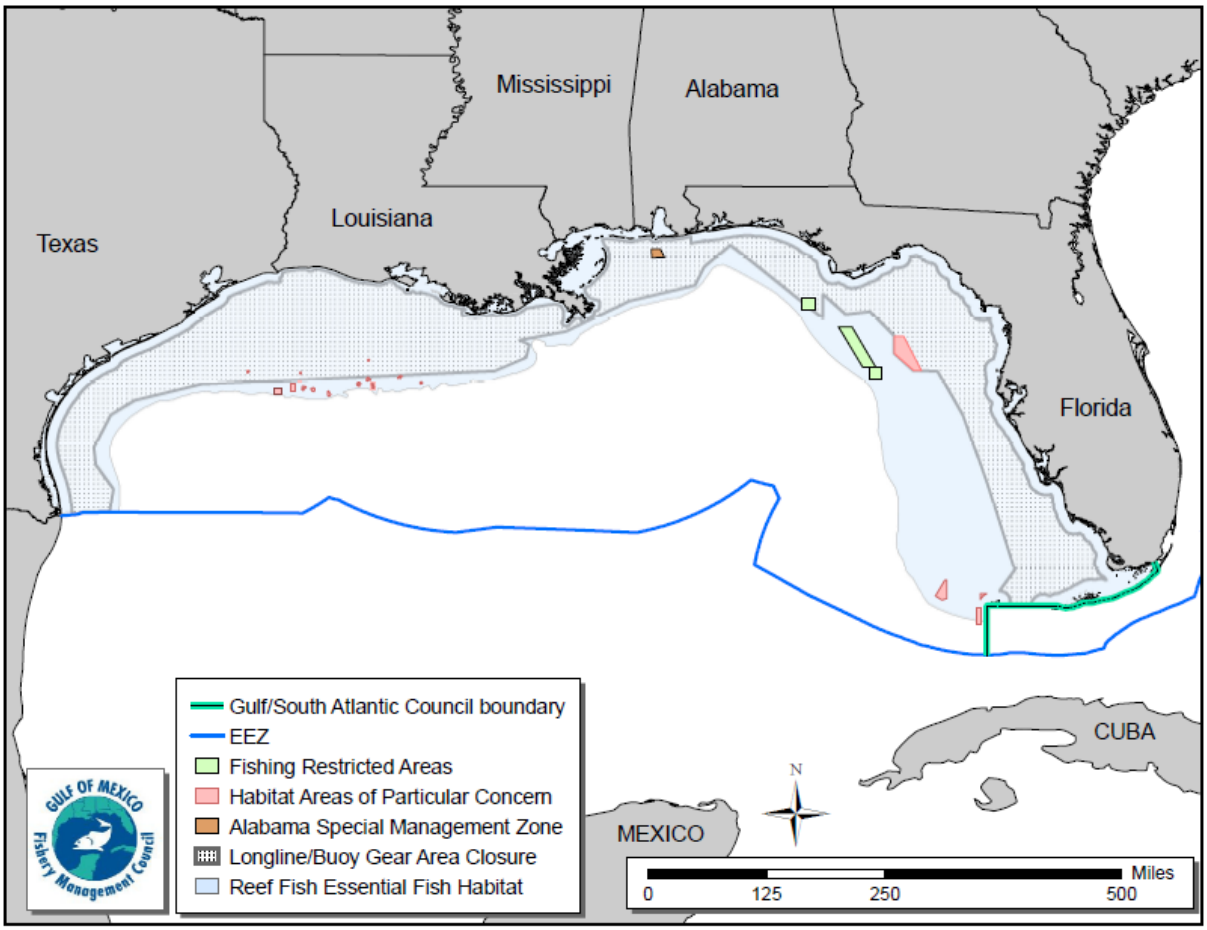

Figure 3.1.2. Map of most fishery management closed areas in the Gulf.

3.1.1 Deepwater Horizon

The Deepwater Horizon MC252 oil spill in 2010 affected at least one-third of the Gulf of Mexico area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the Deepwater Horizon MC252 oil spill on the physical environment are

expected to be significant and may be long-term. Oil was dispersed on the surface, and because of the heavy use of dispersants (both at the surface and at the wellhead), oil was also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed onto shore in several areas of the Gulf of Mexico as were non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are persistent in the environment and can be transported hundreds of miles.

Surface or submerged oil during the Deepwater Horizon MC252 event could have restricted the normal processes of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column, thus affecting the long-standing hypoxic zone located west of the Mississippi River on the Louisiana continental shelf. In addition, microbes in the water that break down oil and dispersant also consume oxygen, which could lead to further oxygen depletion. Zooplankton that feed on algae could also be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow.

3.2 Description of the Biological Environment

Greater Amberjack Life History and Biology

Recent studies conducted in the South Atlantic have consistently estimated that greater amberjack peak spawning occurs in April and May (Sedberry et al. 2006; Harris et al. 2007); whereas, studies conducted in the Gulf of Mexico have consistently estimated that peak spawning occurs a month earlier during March and April (Wells and Rooker 2002; Murie and Parkyn 2008).

Early studies on greater amberjack conducted in south Florida indicated that maximum gonad development occurred in the spring months (Burch 1979). Studies in the 1990s on greater amberjack in the Gulf of Mexico estimated the spawning season off Louisiana peaked in April-June based on increased gonad weight (Beasley 1993) and in May and June by Thompson et al. (1991). Wells and Rooker (2002) conducted studies in the northwestern Gulf of Mexico on larval and juvenile fish associated with floating *Sargassum* spp. Based on the size and season larvae and juvenile greater amberjack were captured, peak spawning season occurred in March and April.

Sedberry et al. (2006) documented greater amberjack spawning in the South Atlantic on both the middle and outer shelf as well as on upper-slope reefs from 49 - 709 ft (15 - 216 m) depth, but spawning females were found at deeper depths from 148 - 400 ft (45 - 122 m). They collected spawning females from January to June, and estimated peak spawning occurred in April and May. Harris et al. (2007) completed a fishery-dependent and fishery-independent study on greater amberjack reproductive biology in the southeastern U.S. Atlantic from 2000 - 2004. Greater amberjack in spawning condition were captured from North Carolina to the Florida Keys; however, spawning was concentrated in areas off south Florida and the Florida Keys. Harris et al. (2007) documented evidence of spawning from January - June with peak spawning during April and May. Female greater amberjack were significantly larger than males (Harris 2004; Harris et al. 2007). For males, the size at which 50% of individuals were mature was 25

inches fork length (FL) (644 mm FL) and for females was 29 inches FL (733 mm FL). They estimated a spawning season of approximately 73 days off south Florida, with a spawning period of 5 days, estimating that an individual female could spawn as frequently as 14 times during the season. Female fecundity increased with size, but was essentially constant throughout the spawning season. Greater amberjack are extremely fecund releasing 18 to 59 million eggs per female in a single spawning season (Harris et al. 2007).

Murie and Parkyn (2008) completed a recent study on reproductive biology of greater amberjack throughout the Gulf of Mexico using fishery-dependent as well as fishery-independent data from 1989 - 2008. They also found females were significantly larger than males but that peak spawning occurred during March and April, and by May, they documented low gonad weights indicating spawning was ending. For females, 50% of individuals were mature at 35 inches FL (900 mm FL), larger than what Harris et al. (2007) documented off south Florida.

It was suggested in the Harris et al. (2007) study that there are known spawning aggregations of greater amberjack targeted by fishers in the South Atlantic, but no evidence of this was presented. Observations by SCUBA divers in Belize documented greater amberjack in pair courtship when they were in a school of approximately 120 fish (Graham and Castellanos 2005). However, no aggregation or indication of spawning aggregations was discussed by the Murie and Parkyn (2008) Gulf of Mexico study or other earlier Gulf of Mexico studies.

After spawning, eggs and larvae of greater amberjack are pelagic. Smaller juvenile greater amberjack less than 1 inch standard length (SL) (20 mm SL) were found associated with pelagic *Sargassum* spp. mats (Bortone et al. 1977; Wells and Rooker 2004). Juveniles then shift to demersal habitats (5 - 6 months), where they congregate around reefs, rocky outcrops, and wrecks (GMFMC 2004a). Since greater amberjack are only seasonally abundant in certain parts of their range, they likely utilize a variety of habitats and/or areas each year. Greater amberjack have been documented on artificial structures as well as natural reefs (Ingram and Patterson 2001). Greater amberjack in the Gulf of Mexico have been reported to live as long as 15 years and commonly reach sizes greater than 40 inches FL (1,016 mm FL) (Manooch and Potts 1997).

Status of the Greater Amberjack Stock

See Section 1.1 under the Introduction.

General Information on Reef Fish Species

The National Ocean Service (NOS) of NOAA collaborated with NOAA Fisheries Service and the Council to develop distributions of reef fish (and other species) in the Gulf of Mexico (SEA 1998). The NOS staff obtained fishery-independent data sets for the Gulf of Mexico, including Southeast Area Monitoring and Assessment Program (SEAMAP), and state trawl surveys. Data from the Estuarine Living Marine Resources (ELMR) Program contain information on the relative abundance of specific species (highly abundant, abundant, common, rare, not found, and no data) for a series of estuaries, by five life stages (adult, spawning, egg, larvae, and juvenile) and month for five seasonal salinity zones (0-0.5, 0.5-5, 5-15, 15-25, and >25 parts per million). The NOS staff analyzed these data to determine relative abundance of the mapped species by

estuary, salinity zone, and month. For some species not in the ELMR database, distribution was classified as only observed or not observed for adult, juvenile, and spawning stages.

In general, reef fish are widely distributed in the Gulf of Mexico, occupying both pelagic and benthic habitats during their life cycle. Habitat types and life history stages are summarized in Table 3.2.1 and can be found in more detail in GMFMC (2004a). In general, both eggs and larval stages are planktonic. Larvae feed on zooplankton and phytoplankton. Exceptions to these generalizations include gray triggerfish that lay their eggs in depressions in the sandy bottom, and gray snapper where larvae are found around submerged aquatic vegetation (SAV). Juvenile and adult reef fish are typically demersal, and are usually associated with bottom topographies on the continental shelf less than 328 ft (100 m) which have high relief, i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. However, several species are found over sand and soft-bottom substrates. Juvenile red snapper are common on mud bottoms in the northern Gulf of Mexico, particularly off Texas through Alabama. Also, some juvenile snappers (e.g. mutton, gray, red, lane, and yellowtail snappers) and groupers (e.g. goliath grouper, red, gag, and yellowfin groupers) have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems (GMFMC 1981). More detail on hard bottom substrate and coral can be found in the fishery management plan (FMP) for Corals and Coral Reefs (GMFMC and SAFMC 1982).

Table 3.2.1. Summary of habitat use by life history stage for species in the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico. This table was adapted from Table 3.2.7 in the final draft of the EIS from the Council's EFH generic amendment (GMFMC 2004a) and consolidated in this amendment.

Common name	Eggs	Larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Red snapper	Pelagic	Pelagic	Hard bottoms, Sand/ shell bottoms, Soft bottoms	Hard bottoms, Sand/ shell bottoms, Soft bottoms	Hard bottoms, Reefs	Sand/ shell bottoms
Queen snapper	Pelagic	Pelagic	Unknown	Unknown	Hard bottoms	
Mutton snapper	Reefs	Reefs	Mangroves, Reefs, SAV, Emergent marshes	Mangroves, Reefs, SAV, Emergent marshes	Reefs, SAV	Shoals/ Banks, Shelf edge/slope
Blackfin snapper	Pelagic		Hard bottoms	Hard bottoms	Hard bottoms, Shelf edge/slope	Hard bottoms, Shelf edge/slope
Cubera snapper	Pelagic		Mangroves, Emergent marshes, SAV	Mangroves, Emergent marshes, SAV	Mangroves, Reefs	Reefs
Gray snapper	Pelagic, Reefs	Pelagic, Reefs	Mangroves, Emergent marshes, Seagrasses	Mangroves, Emergent marshes, SAV	Emergent marshes, Hard bottoms, Reefs, Sand/ shell bottoms, Soft bottoms	
Lane snapper	Pelagic		Mangroves, Reefs, Sand/ shell bottoms, SAV, Soft bottoms	Mangroves, Reefs, Sand/ shell bottoms, SAV, Soft bottoms	Reefs, Sand/ shell bottoms, Shoals/ Banks	Shelf edge/slope
Silk snapper	Unknown	Unknown	Unknown	Unknown	Shelf edge	
Yellowtail snapper	Pelagic		Mangroves, SAV, Soft bottoms	Reefs	Hard bottoms, Reefs, Shoals/ Banks	
Wenchman	Pelagic	Pelagic			Hard bottoms, Shelf edge/slope	Shelf edge/slope

Common name	Eggs	Larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Vermilion snapper	Pelagic		Hard bottoms, Reefs	Hard bottoms, Reefs	Hard bottoms, Reefs	
Gray triggerfish	Reefs	Drift algae, *Sargassum*	Drift algae, *Sargassum*	Drift algae, Reefs, *Sargassum*	Reefs, Sand/ shell bottoms	Reefs, Sand/ shell bottoms
Greater amberjack	Pelagic	Pelagic	Drift algae	Drift algae	Pelagic, Reefs	Pelagic
Lesser amberjack			Drift algae	Drift algae	Hard bottoms	Hard bottoms
Almaco jack	Pelagic		Drift algae	Drift algae	Pelagic	Pelagic
Banded rudderfish		Pelagic	Drift algae	Drift algae	Pelagic	Pelagic
Hogfish			SAV	SAV	Hard bottoms, Reefs	Reefs
Blueline tilefish	Pelagic	Pelagic			Hard bottoms, Sand/ shell bottoms, Shelf edge/slope, Soft bottoms	
Tilefish (golden)	Pelagic, Shelf edge/ slope	Pelagic	Hard bottoms, Shelf edge/slope, Soft bottoms	Hard bottoms, Shelf edge/slope, Soft bottoms	Hard bottoms, Shelf edge/slope, Soft bottoms	
Goldface tilefish	Unknown					
Speckled hind	Pelagic	Pelagic			Hard bottoms, Reefs	Shelf edge/slope
Yellowedge grouper	Pelagic	Pelagic		Hard bottoms	Hard bottoms	
Goliath grouper	Pelagic	Pelagic	Mangroves, Reefs, SAV	Hard bottoms, Mangroves, Reefs, SAV	Hard bottoms, Shoals/ Banks, Reefs	Reefs, Hard bottoms

Common name	Eggs	Larvae	Early Juveniles	Late juveniles	Adults	Spawning adults
Red grouper	Pelagic	Pelagic	Hard bottoms, Reefs, SAV	Hard bottoms, Reefs	Hard bottoms, Reefs	
Warsaw grouper	Pelagic	Pelagic		Reefs	Hard bottoms, Shelf edge/slope	
Snowy grouper	Pelagic	Pelagic	Reefs	Reefs	Hard bottoms, Reefs, Shelf edge/slope	
Black grouper	Pelagic	Pelagic	SAV	Hard bottoms, Reefs	Hard bottoms, Mangroves, Reefs	
Yellowmouth grouper	Pelagic	Pelagic	Mangroves	Mangroves, Reefs	Hard bottoms, Reefs	
Gag	Pelagic	Pelagic	SAV	Hard bottoms, Reefs, SAV	Hard bottoms, Reefs	
Scamp	Pelagic	Pelagic	Hard bottoms, Mangroves, Reefs	Hard bottoms, Mangroves, Reefs	Hard bottoms, Reefs	Reefs, Shelf edge/slope
Yellowfin grouper			SAV	Hard bottoms, SAV	Hard bottoms, Reefs	Hard bottoms

Status of Reef Fish Stocks

The Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico (Reef Fish FMP) currently encompasses 31 species (Table 3.2.2). Eleven other species were removed from the Reef Fish FMP in 2012 by the Council in their Generic ACL/AM Amendment. Stock assessments and stock assessment reviews can be found on the Council (www.gulfcouncil.org) and SEDAR (http://www.sefsc.noaa.gov/sedar) websites and have been conducted for 13 species:

- red snapper (SEDAR 7 2005; SEDAR 7 Update 2009; SEDAR 31 2013)
- vermilion snapper (Porch and Cass-Calay 2001; SEDAR 9 2006a; SEDAR 9 Update 2011b; SEDAR Update 2014)
- yellowtail snapper (Muller et al. 2003; SEDAR 3 2003)
- mutton snapper (SEDAR 15A 2008)
- gray triggerfish (Valle et al. 2001; SEDAR 9 2006b; SEDAR 9 Update 2011c and 2014)
- greater amberjack (Turner et al. 2000; SEDAR 9 2006c; SEDAR 9 Update 2010, SEDAR 33 2014)
- hogfish (Ault et al. 2003; SEDAR 6 2004a, SEDAR 37 2013)
- red grouper (NMFS 2002; SEDAR 12 2007; SEDAR 12 Update 2009)
- gag grouper (Turner et al. 2001; SEDAR 10 2006; SEDAR 10 Update 2009, SEDAR 33 2014)
- black grouper (SEDAR 19 2010)
- yellowedge grouper (Cass-Calay and Bahnick 2002; SEDAR 22 2011a)
- tilefish (golden) (SEDAR 22 2011b)
- goliath grouper (Porch et al. 2003; SEDAR 6 2004b; SEDAR 23 2011)

Utilizing the most current stock assessment information, the Gulf of Mexico fourth quarter report of the 2014 Status of U.S. Fisheries (http://www.nmfs.noaa.gov/sfa/statusoffisheries/2011/fourth/Q4%202011%20FSSI%20and%20nonFSSI%20StockStatus.pdf) classifies the 13 species as follows:

Overfished and Experiencing Overfishing:

- greater amberjack
- gray triggerfish

Not Overfished or Experiencing Overfishing:

- red snapper – most current stock assessment (SEDAR 31 2013)
- yellowtail snapper
- yellowedge grouper
- vermilion snapper
- black grouper
- red grouper
- gag grouper
- mutton snapper– not reflected in the 2011 Status of the Stocks
- hogfish – may be experiencing growth overfishing

Unknown:

- goliath grouper – benchmarks do not reflect appropriate stock dynamics
- snowy grouper
- speckled hind
- warsaw grouper
- yellowfin grouper
- SCAMP
- yellowmouth grouper
- cubera snapper
- gray snapper
- lane snapper
- queen snapper
- blackfin snapper
- silk snapper
- wenchman
- jacks complex (lesser amberjack, banded rudderfish)
- tilefish (golden) – insufficient data

Table 3.2.2. Species of the reef fish FMP grouped by family.
**Note: Goliath grouper is a protected grouper.

Common Name	Scientific Name	Stock Status
Family Balistidae – Triggerfishes		
gray triggerfish	*Balistes capriscus*	Overfished, overfishing
Family Carangidae – Jacks		
greater amberjack	*Seriola dumerili*	Overfished, overfishing
lesser amberjack	*Seriola fasciata*	Unknown
almaco jack	*Seriola rivoliana*	Unknown
banded rudderfish	*Seriola zonata*	Unknown
Family Labridae - Wrasses		
Hogfish	*Lachnolaimus maximus*	Not overfished, no overfishing
Family Malacanthidae - Tilefishes		
Tilefish (golden)	*Lopholatilus chamaeleonticeps*	Unknown
blueline tilefish	*Caulolatilus microps*	Unknown
goldface tilefish	*Caulolatilus chrysops*	Unknown
Family Serranidae - Groupers		
Gag	*Mycteroperca microlepis*	Overfished, overfishing
red grouper	*Epinephelus morio*	Not overfished, no overfishing
Scamp	*Mycteroperca phenax*	Unknown
black grouper	*Mycteroperca bonaci*	Not overfished, no overfishing
yellowedge grouper	*Epinephelus flavolimbatus*	Not overfished, no overfishing
snowy grouper	*Epinephelus niveatus*	Unknown
speckled hind	*Epinephelus drummondhayi*	Unknown
yellowmouth grouper	*Mycteroperca interstitialis*	Unknown
yellowfin grouper	*Mycteroperca venenosa*	Unknown
warsaw grouper	*Epinephelus nigritus*	Unknown
****goliath grouper**	*Epinephelus itajara*	Unknown, not overfishing
Family Lutjanidae - Snappers		
queen snapper	*Etelis oculatus*	Unknown
mutton snapper	*Lutjanus analis*	Unknown
blackfin snapper	*Lutjanus buccanella*	Unknown
red snapper	*Lutjanus campechanus*	Overfished, no overfishing
cubera snapper	*Lutjanus cyanopterus*	Unknown
gray snapper	*Lutjanus griseus*	Unknown
lane snapper	*Lutjanus synagris*	Unknown
silk snapper	*Lutjanus vivanus*	Unknown
yellowtail snapper	*Ocyurus chrysurus*	Not overfished, no overfishing
vermilion snapper	*Rhomboplites aurorubens*	Not overfished, no overfishing
Wenchman	*Pristipomoides aquilonaris*	Unknown

Protected Species

There are 28 different species of marine mammals that may occur in the Gulf of Mexico. All 28 species are protected under the Marine Mammal Protection Act (MMPA) and six are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback and North Atlantic right whales). Other species protected under the ESA occurring in the Gulf of Mexico include five sea turtle species (Kemp's Ridley, loggerhead, green, leatherback, and hawksbill); two fish species (Gulf sturgeon and smalltooth sawfish), and two coral species (elkhorn coral and staghorn coral). Information on the distribution, biology, and abundance of these protected species in the Gulf of Mexico is included in final EIS to the Gulf Council's Generic EFH Amendment (GMFMC 2004a) and the February 2005, October 2009, and September 2011 ESA biological opinions on the reef fish fishery (NMFS 2005; NMFS 2009; NMFS 2011). Marine Mammal Stock Assessment Reports and additional information are also available on the NMFS Office of Protected Species website: http://www.nmfs.noaa.gov/pr/species/.

The MMPA 2015 Proposed List of Fisheries (79 FR 14418) considers vertical line gear and longline gear as Category III gears. These gears are the dominant gear used in the Gulf of Mexico reef fish fishery - vertical line (90%) and longline (5.4%) gear. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Dolphins are the only species documented as interacting with these fisheries. Bottlenose dolphins prey upon on the bait, catch, and/or released discards of fish from the reef fish fishery. They are also a common predator around reef fish vessels, feeding on the discards.

All five species of sea turtles are adversely affected by the Gulf of Mexico reef fish fishery. Incidental captures are relatively infrequent, but occur in all commercial and recreational hook- and-line components of the reef fishery. Loggerhead sea turtles are by far the most frequently incidentally caught sea turtles. Captured sea turtles can be released alive or can be found dead upon retrieval of the gear as a result of forced submergence. Sea turtles released alive may later succumb to injuries sustained at the time of capture or from exacerbated trauma from fishing hooks or lines that were ingested, entangling, or otherwise still attached when they were released. Sea turtle release gear and handling protocols are required in the commercial and for- hire reef fish fisheries to minimize post-release mortality.

NMFS has conducted specific analyses (Section 7 consultations) to evaluate potential effects from the Gulf reef fish fishery on species and critical habitats protected under the ESA. On September 30, 2011, the Protected Resources Division released a biological opinion (Opinion), which concluded that the continued operation of the Gulf reef fish fishery is not likely to jeopardize the continued existence of sea turtles (loggerhead, Kemp's ridley, green, hawksbill, and leatherback) or smalltooth sawfish (NMFS 2011a). The Opinion also concluded that other ESA-listed species are not likely to be adversely affected by the FMP. An incidental take statement was issued specifying the amount and extent of anticipated take, along with reasonable and prudent measures and associated terms and conditions deemed necessary and appropriate to minimize the impact of these takes. The Gulf of Mexico Fishery Management Council

addressed further measures to reduce take in the reef fish fishery's longline component in Amendment 31 (GMFMC 2009).

Subsequent to the completion of the biological opinion, NMFS published final rules listing 20 new coral species (September 10, 2014), and designating critical habitat for the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles (July 10, 2014). NMFS addressed these changes in a series of consultation memoranda. In a consultation memorandum dated October 7, 2014, NMFS assessed the continued operation of the Gulf reef fish fishery's potential impact on the newly-listed coral species occurring in the Gulf (3 species of *Orbicella* and *Mycetophyllia ferox*) and concluded the fishery is not likely to adversely affect any of the protected coral species. Similarly, in a consultation memorandum dated September 16, 2014, NMFS assessed the continued authorization of South Atlantic and Gulf of Mexico fisheries' potential impacts on loggerhead critical habitat and concluded the Gulf reef fish fishery is not likely to adversely affect the newly designated critical habitat.

Smalltooth sawfish also interact with the Gulf of Mexico reef fish fishery, but to a much lesser extent. Smalltooth sawfish primarily occur in the Gulf of Mexico off peninsular Florida. Incidental captures in the commercial and recreational hook-and-line components of the reef fish fishery are rare events, with only eight smalltooth sawfish estimated to be incidentally caught every three years, and none are expected to result in mortality (NMFS 2011). Fishermen in this fishery are required to follow smalltooth sawfish safe handling guidelines. The long, toothed rostrum of the smalltooth sawfish causes this species to be particularly vulnerable to entanglement in fishing gear.

3.3 Description of the Economic Environment

A description of the greater amberjack stock is provided in Section 1.1. Additional details on the fishery for greater amberjack are provided in Amendment 30A to the Reef Fish FMP (GMFMC 2008) and Regulatory Framework Action to the Reef Fish FMP (Greater Amberjack Recreational Fishing Closure) (GMFMC 2011), and are incorporated herein by reference. The following section contains updated information on the economic environment of the greater amberjack fishery.

3.3.1 Economic Description of the Commercial Sector

The major source of data summarized in this description is the Federal Logbook System (FLS), supplemented by average prices calculated from the NMFS Accumulated Landings System (ALS) and price indices taken from the Bureau of Labor Statistics. Inflation adjusted revenues and prices are reported in real 2013 dollars. Landings are expressed in gutted weight to match the method for collecting ex-vessel price information. The gutted to whole weight conversion rate is 1.04.

Landings, Value, and Effort

The number of vessels that landed greater amberjack each year decreased rapidly from 2009 through 2012 and then increased modestly in 2013 (Table 3.3.1.1). The number of trips on which greater amberjack was landed, as well as landings of greater amberjack and landings of other species jointly caught with greater amberjack, exhibited similar trends during this time period. The number of non-greater amberjack trips taken by vessels that landed at least one pound of greater amberjack during the year, as well as landings on those trips, fluctuated from 2009 through 2013. On average (2009 through 2013), vessels that landed greater amberjack took 4.6 times as many non-greater amberjack trips as greater amberjack trips. Greater amberjack landings for those vessels accounted for only 4.7% of all species landings from all trips.

Table 3.3.1.1. Number of vessels, number of trips and landings by year.

Year	Number of vessels that caught GOM greater amberjack (> 0 lbs)	Number of trips that caught GOM greater amberjack	GOM greater amberjack landings (lbs gutted wt)	Other species' landings jointly caught with GOM greater amberjack (lbs gutted wt)	Number of GOM trips that only caught other species	Other species' landings on GOM trips without greater amberjack (lbs gutted wt)
2009	320	1,148	477,778	3,064,904	3,909	7,975,844
2010	222	634	472,090	1,617,077	2,379	5,484,925
2011	191	524	445,027	1,155,942	3,030	6,686,227
2012	142	314	270,223	692,299	2,458	5,698,505
2013	179	489	346,442	1,146,752	2,593	6,984,252
Average	211	622	402,312	1,535,395	2,874	6,565,951

Source: NMFS SEFSC Coastal Fisheries Logbook.

Ex-vessel revenues by year for greater amberjack and non-greater amberjack species are presented in Table 3.3.1.2. On average (2009 through 2013), greater amberjack revenues accounted for about 1.9% of total revenues earned by vessels that landed at least one pound of greater amberjack. On trips in which greater amberjack was harvested (2009 through 2013), species other than greater amberjack accounted for the majority of revenues on average. Total dockside revenue for vessels that landed greater amberjack fluctuated from 2009 through 2013 but did not change that much overall, whereas average total dockside revenue per vessel increased steadily.

Table 3.3.1.2. Number of vessels and ex-vessel revenues by year (2013 dollars)*.

Year	Number of vessels that caught GOM greater amberjack (> 0 lbs)	Dockside revenue from GOM greater amberjack only	Dockside revenue from 'other species' jointly caught with GOM greater amberjack only	Dockside revenue from 'other species' caught on GOM trips without greater amberjack	Total dockside revenue	Average total dockside revenue per vessel
2009	320	$599,315	$8,680,032	$22,974,684	$32,254,031	$100,794
2010	222	$545,065	$5,121,735	$17,469,806	$23,136,606	$104,219
2011	191	$559,961	$3,599,690	$20,876,537	$25,036,187	$131,080
2012	142	$337,302	$2,141,370	$18,128,951	$20,607,623	$145,124
2013	179	$510,558	$4,128,833	$25,410,189	$30,049,580	$167,875
Average	211	$510,440	$4,734,332	$20,972,033	$26,216,806	$129,818

Source: NMFS SEFSC Coastal Fisheries Logbook for landings and NMFS Accumulated Landings System for prices.
*Revenues converted to 2013 dollars using the 2013 annual Consumer Price Index (CPI) for all US urban consumers provided by the Bureau of Labor and Statistics (BLS).

Given the sole commercial management measure being considered in this framework action is a trip limit, it's useful to analyze the amount of recent effort and the number of vessels that would have been non-compliant had each proposed trip limit option been in place historically. This provides a sense of the proportion of total effort and vessels likely to be affected by the commercial trip limits going forward. Table 3.3.1.3 presents the average number of trips with landings in excess of each trip limit option and average number of vessels that took such trips (2009-2013)[1]. About 14% of greater amberjack trips on average had landings in excess of the 1500-lb trip limit, whereas 28% of those trips had greater amberjack landings in excess of the 500-lb trip limit option from 2009 through 2013. Fifteen percent of greater amberjack vessels reported landings in excess of the 1500-lb trip limit option and 31% of greater amberjack vessels reported landings in excess of the 500-lb trip limit on average (2009-2013). Lower trip limits

[1] The status quo 2000-lb trip limit implemented in 2013 is excluded from this table since averaging across years with non-consistent trip limits could be misleading and since it does not provide additional information in terms of potential displaced effort. About 11% of GAJ vessels, however, did report trip-level landings in excess of the 2000-lb trip limit in 2013. These trips accounted for 8% of all GAJ trips taken in 2013. Anecdotal evidence suggests many fishermen misinterpreted the trip limit as being in gutted weight rather than whole weight. The data supports this as well, showing a large drop in non-compliant vessels and trips when gutted weight is substituted for whole weight (19 vessels to 8 vessels and 38 trips to 10 trips respectively). NMFS released a bulletin on July 29, 2014 that reminded commercial reef fish fishermen that the trip limit is in whole weight and provided the gutted weight conversion.

may reduce profits and the severity of such impacts will be based on the overall dependence a vessel has on greater amberjack and the vessel's ability to substitute other species revenue. On average (2009-2013), there were 3 or fewer vessels that both derived the majority of their revenues from greater amberjack and took a trip with landings in excess of each trip limit option. It seems likely that these vessels would be the most severely impacted by a reduction in trip limits, though it is not possible to quantify the magnitude of such impacts given the uncertainty of future revenues, costs and behavioral responses of the fishermen. If trip limits successfully extend the greater amberjack season, some vessels, especially those that do not experience large reductions in their trip-level landings, may benefit from the opportunity to take additional trips. Other vessels may experience a decline in trip-level revenues to the point where it is no longer profitable to fish for greater amberjack.

Table 3.3.1.3. Number of trips with landings in excess of each trip limit option and number of vessels that took such trips (2009-2013 Average).

	Trip Limit (lbs, ww)		
	500	**1000**	**1500**
Number of trips with greater amberjack landings in excess of each trip limit option	176	115	87
(percent of total greater amberjack trips)	(28%)	(18%)	(14%)
Number of vessels that took a trip with greater amberjack landings in excess of each trip limit option	66	41	32
(percent of total greater amberjack vessels)	(31%)	(20%)	(15%)

Source: NMFS SEFSC Coastal Fisheries Logbook.

Imports

Imports of seafood products compete in the domestic seafood market and have in fact been dominant in many segments of the seafood market. They help determine the price for domestic seafood products and tend to set the price in market segments where they dominate. Seafood imports have downstream effects on the local fish market. At the harvest level for reef fish in general and greater amberjack in particular, imports affect the returns to fishermen through the ex-vessel prices they receive for their landings. As substitutes to domestic production of reef fish, including greater amberjack, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. The following describes the imports of fish products which directly compete with domestic harvest of reef fish, including greater amberjack.

Imports[2] of fresh snapper ranged from 21.5 million pounds product weight (pw) in 2009 to 23.2 million pounds pw in 2013 with minor fluctuations in between. Total revenue from fresh snapper imports increased steadily from $53.6 million (2013 dollars[3]) in 2009 to a five-year high of $67.9 million in 2013. Imports of fresh snappers primarily originated in Mexico, Central America, or South America, and entered the U.S. through the port of Miami. Imports of fresh snapper were highest on average (2009 through 2013) during the months March through May.

Imports of frozen snapper were substantially less than imports of fresh snapper from 2009 through 2013. The annual value of frozen snapper imports ranged from $17.2 million (2013 dollars) to $26.7 million during the time period, with a peak in 2011. Imports of frozen snapper primarily originated in South America (especially Brazil), Indonesia, and Mexico. The majority of frozen snapper imports entered the U.S. through the ports of Miami and New York. Imports of frozen snappers tended to be lowest during March, April and May when fresh snapper imports were the highest.

Imports of fresh grouper ranged from 8.3 million pounds pw worth $23.7 million (2013 dollars) in 2009 to 10 million pounds pw worth $36.2 million in 2013 with minor fluctuations in between. The bulk of fresh grouper imports originated in Mexico and entered the U.S. through Miami. From 2009 through 2013 fresh grouper imports were lowest on average during the month of March and higher the rest of the year, with a peak in July.

Imports of frozen grouper were minimal and stable from 2009 through 2013, ranging from 1 million pounds pw worth $2.1 million (2013 dollars) to 2 million pounds pw worth $3.5 million. Frozen grouper imports generally originated in Mexico and to a lesser extent, Asia and entered the U.S. through Miami and Tampa. There was an inverse relationship in monthly landings between frozen and fresh groupers, with average imports being the highest in March for frozen grouper and lower during other months.

Business Activity

The commercial harvest and subsequent sales and consumption of fish generates business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services, such as greater amberjack purchased at a local fish market and served during restaurant visits. These expenditures spur additional business activity in the region(s) where the harvest and purchases are made, such as jobs in local fish markets, grocers, restaurants, and fishing supply establishments. In the absence of the availability of a given species for purchase, consumers would spend their money on substitute goods and services. As a result, the analysis presented below represents a distributional analysis only; that is, it only shows how economic effects may be distributed through regional markets and should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

[2] 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.
[3] Converted to 2013 dollars using the 2013 annual Consumer Price Index (CPI) for all US urban consumers provided by the Bureau of Labor and Statistics (BLS).

Estimates of the U.S. average annual business activity associated with the commercial harvest of greater amberjack, and all species harvested by the vessels that harvested these greater amberjack, were derived using the model developed for and applied in NMFS (2011) and are provided in Table 3.3.1.4. This business activity is characterized as 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. It should be noted that the results provided should be interpreted with caution and demonstrate the limitations of these types of assessments. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species. Separate models to address individual species are not available. For example, the results provided here apply to a general reef fish category rather than just greater amberjack, and a harvester job is "generated" for approximately every $44,000 in ex-vessel revenue. These results contrast with the information provided in Section 3.3.1. which shows an average of 211 harvesters (vessels) with recorded landings of greater amberjack.

Table 3.3.1.4. Average annual business activity (2009 through 2013) associated with the commercial harvest of greater amberjack and the harvest of all species by vessels that landed greater amberjack. All monetary estimates are in 2013 dollars.

Species	Average Ex-vessel Value ($ thousands)	Total Jobs	Harvester Jobs	Output (Sales) Impacts ($ thousands)	Income Impacts ($ thousands)
Greater amberjack	$510	89	12	$6,721	$2,864
All species on all trips made by vessels that landed greater than one pound of greater amberjack in a year.	$26,217	4,566	596	$345,184	$147,114

3.3.2 Economic Description of the Recreational Sector

The Gulf recreational sector is comprised of the private and for-hire modes. The private mode includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire mode is composed of charter boats and headboats (also called partyboats). Charter boats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person. The type of service, from a vessel- or passenger-size perspective, affects the flexibility to search different fishing locations during the course of a trip and target different species since larger concentrations of fish are required to satisfy larger groups of anglers.

Landings

The recreational sector has been allocated 73% of the greater amberjack stock ACL each year since the implementation of Amendment 30A in August 2008 (GMFMC 2008). Recreational harvests of greater amberjack declined from 2009 through 2011 and then increased from 2011 to a five-year high in 2013 (Table 3.3.2.1).

Table 3.3.2.1. Recreational landings (lbs ww) and percent distribution of greater amberjack and reef fish, 2009 - 2013.

	Greater Amberjack (pounds ww)	Reef Fish (pounds ww)	Percent of Reef Fish*
2009	1,480,306	12,866,823	11.5%
2010	1,225,222	8,472,155	14.5%
2011	949,999	9,938,318	9.6%
2012	1,238,719	13,099,518	9.5%
2013	1,616,629	20,379,130	7.9%
Average	1,302,175	12,951,189	10.1%

Source: SEFSC MRIP ACL datasets (Aug 2014).
* Species managed under the Reef Fish FMP; see http://www.gulfcouncil.org/.

From 2009 through 2013, recreational landings of greater amberjack in west Florida were consistently higher than landings in any other state, accounting for over 75% of total Gulf-wide landings on average (Table 3.3.2. 2). Yearly landings fluctuated for all states.

Table 3.3.2.2. Recreational landings (lbs ww) and percent distribution of greater amberjack across all modes, by state, 2009 - 2013.

	AL	AL/FLW*	FLW	LA	LA/MS**	MS	TX
	Landings (pounds ww)						
2009	43,661	57,566	950,852	359,595	27,246	20,344	21,043
2010	85,833	33,860	1,002,601	78,238	2,485	0	22,205
2011	64,394	39,201	810,525	9,253	7,986	0	18,640
2012	58,005	66,054	924,292	151,875	10,390	0	28,103
2013	216,865	0	1,172,107	178,308	7,262	12,358	29,729
Avg	93,752	39,336	972,075	155,454	11,074	6,540	23,944
	Percent Distributions						
2009	2.9%	3.9%	64.2%	24.3%	1.8%	1.4%	1.4%
2010	7.0%	2.8%	81.8%	6.4%	0.2%	0.0%	1.8%
2011	6.8%	4.1%	85.3%	1.0%	0.8%	0.0%	2.0%
2012	4.7%	5.3%	74.6%	12.3%	0.8%	0.0%	2.3%
2013	13.4%	0.0%	72.5%	11.0%	0.4%	0.8%	1.8%
Avg	7.0%	3.2%	75.7%	11.0%	0.8%	0.4%	1.9%

Source: SEFSC MRIP ACL datasets (Aug 2014).

* Headboat landings are estimated jointly for west Florida and Alabama through 2012.

** Heaboat landings data from Louisiana and Mississippi are combined for confidentiality purposes.

The majority of recreational greater amberjack landings (93.9%) from 2009 through 2013 were reported by the private and charter vessel modes (Table 3.3.2.3). During this time period, average landings were about 15% higher for private vessels than charter vessels. Charter landings were, however, almost double those of the private mode in 2011. Headboat landings were consistently much lower than both charter and private modes, accounting for only 6.1% on average (2009 through 2013). There were no landings reported from shore for greater amberjack.

Table 3.3.2.3. Recreational landings (lbs ww) and percent distribution of greater amberjack across all states, by mode, 2009 - 2013.

	Landings (pounds ww)				Percent Distribution			
	Charter boat	**Headboat**	**Private**	**Shore**	**Charter boat**	**Headboat**	**Private**	**Shore**
2009	653,160	103,191	723,955	0	44.1%	7.0%	48.9%	0.0%
2010	460,740	53,203	711,279	0	37.6%	4.3%	58.1%	0.0%
2011	583,813	62,835	303,351	0	61.5%	6.6%	31.9%	0.0%
2012	546,086	99,680	592,952	0	44.1%	8.0%	47.9%	0.0%
2013	604,626	73,246	938,757	0	37.4%	4.5%	58.1%	0.0%
Avg	569,685	78,431	654,059	0	44.9%	6.1%	49.0%	0.0%

Source: SEFSC MRIP ACL datasets (Aug 2014).

As seen in Table 3.3.2.4, over the period 2009-2013, greater amberjack recreational landings generally started low at the beginning of each year, peaked in May through August, then tapered back down till the end of the year. Prior to the implementation of the June through July seasonal closure beginning in 2011, the majority of landings occurred during May through August. Following the implementation of the seasonal closure in 2011, the distribution of monthly landings changed somewhat, with a higher average percentage of annual landings occurring in March, April, September, and October.

Table 3.3.2.4. Recreational landings (lbs ww) and percent distribution of greater amberjack, by month, 2009-2013.

	Jan	Feb	Mar	Apr	May	Jun*	Jul*	Aug	Sep	Oct	Nov	Dec
	Landings (pounds ww)											
2009	95,126	85,920	40,854	39,536	339,464	328,513	230,162	230,162	44,466	45,948	77	79
2010	36,884	33,314	139,968	135,452	268,592	259,928	44,175	44,175	96,715	99,938	32,123	33,194
2011	32,421	29,283	52,927	51,220	196,240	-	-	247,109	144,619	149,440	22,987	23,753
2012	63,811	59,694	197,159	190,799	236,256	-	-	165,023	97,960	101,225	62,356	64,435
2013	15,284	13,805	199,921	193,472	293,793	-	-	404,001	225,802	233,328	18,306	18,916
Avg	48,705	44,403	126,166	122,096	266,869	NA**	NA**	218,094	121,912	125,976	27,170	28,075
	Percent Distribution											
2009	6.4%	5.8%	2.8%	2.7%	22.9%	22.2%	15.5%	15.5%	3.0%	3.1%	0.0%	0.0%
2010	3.0%	2.7%	11.4%	11.1%	21.9%	21.2%	3.6%	3.6%	7.9%	8.2%	2.6%	2.7%
2011	3.4%	3.1%	5.6%	5.4%	20.7%	-	-	26.0%	15.2%	15.7%	2.4%	2.5%
2012	5.2%	4.8%	15.9%	15.4%	19.1%	-	-	13.3%	7.9%	8.2%	5.0%	5.2%
2013	0.9%	0.9%	12.4%	12.0%	18.2%	-	-	25.0%	14.0%	14.4%	1.1%	1.2%
Avg	3.8%	3.5%	9.6%	9.3%	20.6%	NA**	NA**	16.7%	9.6%	9.9%	2.2%	2.3%

Source: SEFSC MRIP ACL datasets (Aug 2014).
Note: Landings in each wave are assumed uniformly distributed across open months.
*A June 1st through July 31 closure was implemented in 2011.
** Averages for June and July are not applicable due to the closures. The average percent distribution row will not sum to 100% as a result.

Angler Effort

Recreational effort derived from the Marine Recreational Information Program (MRIP) database can be characterized in terms of the number of trips as follows:

- Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or the second primary target for the trip. The species did not have to be caught.

- Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
- Total recreational trips - The total estimated number of recreational trips in the Gulf, regardless of target intent or catch success.

A target trip may be considered an angler's revealed preference for a certain species, and thus may carry more relevant information when assessing the economic effects of regulations on the subject species than the other two measures of recreational effort. Given the subject nature of this amendment, the following discussion focuses on target trips for greater amberjack.

On average, greater amberjack target trips[4] accounted for 3.3% of target reef fish trips and target reef fish trips accounted for 5.6% of total angler trips for the years 2009 through 2013 in the Gulf (Table 3.3.2.5). This excludes headboat trips and trips from Texas, for which target data is unavailable. Both greater amberjack and reef fish target trips were at five-year highs in 2013 following a period of reduced effort starting in 2010. The reduction in effort in 2010 could be due in part to the Deepwater Horizon oil spill and associated closures (see Section 3.2.1). There is a subtle downward trend from 2009 through 2013 in the percent of reef fish target trips made up of greater amberjack target trips.

Table 3.3.2.5. Target trips for greater amberjack and reef fish, 2009 -2013.

	Greater Amberjack Target Trips*		Reef Fish Target Trips*	
	Trips	**Percent[1]**	**Trips**	**Percent[2]**
2009	48,972	3.6%	1,351,092	6.0%
2010	31,195	3.4%	906,060	4.4%
2011	36,208	3.8%	958,092	4.3%
2012	35,222	3.2%	1,112,276	4.9%
2013	50,719	2.5%	2,053,975	8.2%
Average	40,463	3.3%	1,276,299	5.6%

Source: MRIP database, NOAA Fisheries, NMFS, SERO.
* Target data for headboats and the state of Texas are unavailable and are not included.
[1]Percent of reef fish target trips. [2]Percent of total angler trips.

On average, the highest number of estimated greater amberjack target trips for the Gulf occurred in Florida (81.3%), followed by Alabama (10.7%) and Louisiana (7.7%) (Table 3.3.2.6). Mississippi recorded greater amberjack target effort in 2009, but not in subsequent years. The number of target trips in Florida decreased substantially in 2010, increased gradually from 2010

[4] Monroe County, FL is excluded from all target effort metrics to be consistent with greater amberjack landings post-stratification. This potentially underestimates total reef fish target effort in the Gulf, since not all species in the reef fish complex require post-stratification.

through 2012 and then rose quickly in 2013 to a five-year high. Target effort in Alabama fluctuated with a peak in 2011. The number of target trips in Louisiana dropped drastically in 2010 and 2011, then increased heavily in 2012 and 2013, but did not return to 2009 levels. As discussed earlier, it may be likely that the severe declines in target effort in Louisiana during 2010 and 2011 were due in part to the 2010 oil spill. The potential impact of the oil spill is not, however, apparent for Alabama, which experienced increases in the number of estimated target trips in 2010 and 2011.

Table 3.3.2.6. Greater amberjack target trips and percent distribution across all modes by state, 2009 - 2013.

	Greater Amberjack Target Trips*				Percent Distribution			
	AL	FLW	LA	MS	AL	FLW	LA	MS
2009	1,838	38,053	8,437	644	3.8%	77.7%	17.2%	1.3%
2010	3,758	26,466	970	-	12.0%	84.8%	3.1%	0.0%
2011	7,874	28,148	186	-	21.7%	77.7%	0.5%	0.0%
2012	2,341	30,229	2,652	-	6.6%	85.8%	7.5%	0.0%
2013	4,748	40,820	5,152	-	9.4%	80.5%	10.2%	0.0%
Average	4,112	32,743	3,479	129	10.7%	81.3%	7.7%	0.3%

Source: MRIP database, NOAA Fisheries, NMFS, SERO.
* Target data for headboats and the state of Texas are unavailable and are not included.

On average, approximately 75% of the estimated target trips for greater amberjack were recorded by anglers in private boats and the rest, by charter vessels (Table 3.3.2.7). No greater amberjack target trips were recorded by the shore-mode anglers. The number of private angler target trips decreased annually to a five-year low in 2011, then increased annually through 2013, almost returning to 2009 levels. The estimated number of target trips for charter anglers fluctuated with a peak in 2011.

Table 3.3.2.7. Greater amberjack target trips and percent distribution across all states, 2009 - 2013.

	Greater Amberjack Target Trips*			Percent Distribution		
	Shore	Charter	Private	Shore	Charter	Private
2009	0	8,294	40,679	0.0%	16.9%	83.1%
2010	0	5,534	25,661	0.0%	17.7%	82.3%
2011	0	15,165	21,043	0.0%	41.9%	58.1%
2012	0	9,427	25,795	0.0%	26.8%	73.2%
2013	0	11,168	39,551	0.0%	22.0%	78.0%
Average	0	9,918	30,546	0.0%	25.1%	74.9%

Source: MRIP database, NOAA Fisheries, NMFS, SERO.
* Target data for headboats and the state of Texas are unavailable and are not included.

On average, target effort for greater amberjack was concentrated most heavily in the months March through May and August through September (Table 3.3.2.8). Target effort was low or

zero in June and July following the implementation of the seasonal closure in 2011. The monthly distribution of target effort generally coincided with the monthly distribution of landings.

Table 3.3.2.8. Greater amberjack target trips and percent distribution across all modes and states, by month, 2009 - 2013.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Greater Amberjack Target Trips*											
2009	772	7,062	809	7,275	4,584	19,461	4,819	2,165	1445	0	580	0
2010	0	1810	5,437	150	9,974	342	2,007	888	3,214	3,653	3,721	0
2011	0	0	1,737	2,785	5,501	0	0	14,653	7447	1409	0	2,675
2012	1,851	262	5,107	9,337	3,032	441	0	8,205	1,862	1,103	1309	2712
2013	50	3,363	13,497	0	11,986	0	1,348	9,263	6,683	1,478	1,241	1,811
Avg	535	2,499	5,317	3,909	7,015	4,049	1,635	7,035	4,130	1,529	1,370	1,440
	Percent Distribution											
2009	1.6%	14.4%	1.7%	14.9%	9.4%	39.7%	9.8%	4.4%	3.0%	0.0%	1.2%	0.0%
2010	0.0%	5.8%	17.4%	0.5%	32.0%	1.1%	6.4%	2.8%	10.3%	11.7%	11.9%	0.0%
2011	0.0%	0.0%	4.8%	7.7%	15.2%	0.0%	0.0%	40.5%	20.6%	3.9%	0.0%	7.4%
2012	5.3%	0.7%	14.5%	26.5%	8.6%	1.3%	0.0%	23.3%	5.3%	3.1%	3.7%	7.7%
2013	0.1%	6.6%	26.6%	0.0%	23.6%	0.0%	2.7%	18.3%	13.2%	2.9%	2.4%	3.6%
Avg	1.4%	5.5%	13.0%	9.9%	17.8%	8.4%	3.8%	17.9%	10.5%	4.3%	3.9%	3.7%

Source: MRIP database, NOAA Fisheries, NMFS, SERO.
* Target data for headboats and the state of Texas are unavailable and are not included.
Note: There are some target trips shown during the June through July closure implemented in 2011. This is likely due to a small number of intercepted angler trips with high sample weights that either targeted greater amberjack for catch and release purposes or mistakenly reported greater amberjack as one of their primary targets.

Similar analysis of recreational effort is not possible for the headboat mode because headboat data are not collected at the angler level. Estimates of effort by the headboat mode 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 stationary "fishing for demersal species" nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are demersal or reef fish trips by intent. In a study of the for-hire fishing industry in the Gulf, Sutton et al. (1999) found that the mean percentage of time spent targeting greater amberjack for the entire year for all party boat (headboat) operators in the Gulf was 5.10%[5].

The distribution of headboat effort (angler days) by geographic area is presented in Table 3.3.2.9. For purposes of data collection, the headboat data collection program divides the Gulf into several areas. In Table 3.3.2.9, FLW refers to areas in Florida from the Dry Tortugas through the

[5] No newer studies have been identified which discuss greater amberjack targeting behavior of headboats in the Gulf.

Florida Middle Grounds, FL-AL covers northwest Florida and Alabama, MS refers to the entire coastline of Mississippi, LA refers to the entire coastline of Louisiana, and TX includes areas in Texas from Sabine Pass-Freeport south to Port Isabel. On average, the area from the Dry Tortugas through the Florida Middle Grounds accounted for 40.2% of total headboat angler days in the Gulf, followed by northwest Florida through Alabama (33.2%), Texas (25.2%), Louisiana (<1%) and Mississippi (<1%). Western Florida, Northwest Florida through Alabama, and Texas all experienced declines in angler days in 2010, but then saw steady increases to five-year highs in 2013. In Louisiana, the number of headboat angler days dropped precipitously in 2010, increased in 2011, but then decreased again in 2012 and 2013. In Mississippi, the number of angler days increased substantially in 2011 and then remained mostly stable through 2013.

Table 3.3.2.9. Headboat angler days and percent distribution, by state, 2009 - 2013.

	Angler Days					Percent Distribution				
	FLW	**FL-AL***	**LA**	**TX**	**MS****	**FLW**	**FL-AL**	**LA**	**TX**	**MS**
2009	76,815	65,623	3268	50,737	-	39.1%	33.4%	1.7%	25.8%	-
2010	70,424	40,594	217	47,154	498	44.3%	25.5%	0.1%	29.7%	0.3%
2011	79,722	77,303	1,886	47,284	1,771	38.3%	37.2%	0.9%	22.7%	0.9%
2012	84,205	77,770	1,839	51,776	1,841	38.7%	35.8%	0.8%	23.8%	0.8%
2013	94,752	80,048	1,579	55,749	1,827	40.5%	34.2%	0.7%	23.8%	0.8%
Average	81,184	68,268	1,758	50,540	1,484	40.2%	33.2%	0.8%	25.2%	0.7%

Source: NMFS Southeast Region Headboat Survey (SRHS).
*For 2013, SRHS data was reported separately for NW Florida and Alabama, but has been combined here for consistency with previous years.
** No headboats in Mississippi were included in the SRHS in 2009.

Headboat effort in terms of angler days for the entire Gulf was concentrated most heavily during the summer months of June through August on average (2009 through 2013) (Table 3.3.2.10). The monthly trend in angler days was very similar across years, building gradually from January through May, rising sharply to a peak in June and July, dropping rapidly through September, increasing slightly in October, then tapering through December.

Table 3.3.2.10. Headboat angler days and percent distribution, by month, 2009 - 2013.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Headboat Angler Days											
2009	7,611	8,525	14,444	15,513	17,089	36,749	38,955	25,060	9,201	9,745	6,889	6,662
2010	4,962	5,709	13,186	18,077	14,029	26,495	22,616	14,378	8,759	16,328	9,488	4,860
2011	5,242	9,174	16,378	17,626	16,148	39,775	42,089	22,513	10,766	12,609	8,514	7,132
2012	7,924	9,364	18,326	16,404	17,708	39,662	46,468	21,440	12,629	13,281	7,135	7,090
2013	8,630	9,576	16,759	16,426	17,150	47,791	38,304	27,610	12,697	21,256	8,654	9,102
Avg	6,874	8,470	15,819	16,809	16,425	38,094	37,686	22,200	10,810	14,644	8,136	6,969
	Percent Distribution											
2009	3.9%	4.3%	7.4%	7.9%	8.7%	18.7%	19.8%	12.8%	4.7%	5.0%	3.5%	3.4%
2010	3.1%	3.6%	8.3%	11.4%	8.8%	16.7%	14.2%	9.0%	5.5%	10.3%	6.0%	3.1%
2011	2.5%	4.4%	7.9%	8.5%	7.8%	19.1%	20.2%	10.8%	5.2%	6.1%	4.1%	3.4%
2012	3.6%	4.3%	8.4%	7.5%	8.1%	18.2%	21.4%	9.9%	5.8%	6.1%	3.3%	3.3%
2013	3.7%	4.1%	7.2%	7.0%	7.3%	20.4%	16.4%	11.8%	5.4%	9.1%	3.7%	3.9%
Avg	3.4%	4.1%	7.8%	8.5%	8.2%	18.6%	18.4%	10.9%	5.3%	7.3%	4.1%	3.4%

Source: NMFS Southeast Region Headboat Survey (SRHS).

Permits

For-hire vessels are required to have a Charter/Headboat for Reef Fish permit (for-hire permit) to fish for or possess reef fish species in the Gulf EEZ (a similar, but separate, permit is required for coastal migratory pelagic species). This sector is currently under a permit limitation program since June, 2006. On September 22, 2014, there were 1,195 valid (non-expired) or renewable[6] Gulf for-hire permits.

For 2009 through 2013, an average of 1,364 for-hire vessels were permitted to harvest reef fish in the Gulf (Table 3.3.2.11). Florida, with an average of 819 permitted vessels, was the foremost homeport state of for-hire vessels, followed by Texas (222), Alabama (147), Louisiana (111), and Mississippi (48). An average of 17 vessels had homeports in states outside the Gulf.

The total number of Gulf reef fish for-hire permits steadily declined from 2009 through 2013 (Table 3.3.2.11). Florida was the driving force behind this trend, though there were similar trends in Mississippi, Texas, and all non-Gulf states combined. Alabama and Louisiana saw modest increases in the number of for-hire permitted vessels during the time period.

[6] A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration.

Table 3.3.2.11. Number of vessels with a Gulf for-hire permit by homeport state, 2009- 2013.

	FL	AL	MS	LA	TX	OTHERS	TOTAL
2009	871	143	50	103	232	18	1,417
2010	840	142	50	103	229	21	1,385
2011	810	143	48	116	219	17	1,353
2012	792	151	46	116	214	17	1,336
2013	783	155	45	115	215	14	1,327
Average	819	147	48	111	222	17	1364

Source: Southeast Permits Database, NOAA Fisheries, SERO.

Based on permits data alone, it is not possible to distinguish headboats from charter boats, but the 2013 headboat survey program included 70 headboats in the Gulf. The majority of headboats were located in Florida (37), followed by Texas (16), Alabama (9), Mississippi (5), and Louisiana (3) (K. Brennen, NMFS SEFSC, pers. comm.)[7].

There are no specific federal permitting requirements for recreational anglers to fish for or harvest reef fish, including greater amberjack. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed amendment.

Economic Value

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. Haab et al. (2012) estimated the CS (willingness to pay (WTP) per fish) for snapper in the Southeastern U.S. using four separate econometric modeling techniques. The finite mixture model, which takes into account variation in the preferences of fishermen, had the best prediction rates of the four models and as such was selected for this analysis[8]. The WTP

[7] Sixty-seven vessels were registered in the SHRS as of April 8, 2014.

[8] Haab et al. (2012) did not explicitly account for endogenous stratification and avidity bias in the MRFSS data which could potentially inflate the estimates. The WTP estimates from the four models used in their study ranged from $9-$25 (2000 dollars) and the one that was selected for use here was at the bottom of the range, so the bias may not be that big of an issue. In addition, given its popularity as a sport fish, greater amberjack may be more valuable to anglers than many of the other snapper species included in the model.

per snapper estimated by this model is $12.18 (2013 dollars)[9]. Although this estimate is not specific to greater amberjack, their study did include the amberjack genus as part of the snapper group. This value may seem low and may be strongly influenced by the pooling effect inherent to the model in which it was estimated. For comparison purposes, the estimated value of the consumer surplus for catching and keeping a second grouper on an angler trip is approximately $102 (values updated to 2013 dollars), and decreases thereafter (approximately $68 for a third grouper, $50 for a fourth grouper, and $39 for a fifth grouper) (Carter and Liese 2012). Values by specific grouper species are not available.

The foregoing estimates of economic value should not be confused with economic impacts associated with recreational fishing expenditures. Although 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.

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. The 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 (NOR)[10] were generated for the charter and headboat operations. The estimated NOR values are $158.06 (2013 dollars) per charter angler trip and $51.96 (2013 dollars) per headboat angler trip (D. Carter and C. Liese, NMFS SEFSC, pers. comm.) [11].

Business Activity

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

Estimates of the business activity (economic impacts) associated with recreational angling for greater amberjack were derived using average impact coefficients for recreational angling for all species, as derived from an add-on survey to the MRFSS to collect economic expenditure information, as described and utilized in NMFS (2011). Estimates of the average expenditures

[9] Converted to 2013 dollars using the 2013 annual Consumer Price Index (CPI) for all US urban consumers provided by the Bureau of Labor and Statistics (BLS).
[10] Net operating revenues are trip revenues minus trip-based variable costs and do not include fixed costs. These represent the total returns used to pay all labor wages, returns to capital, and owner profits.
[11] Estimates were converted to 2013 dollars using the 2013 June CPI for all US urban consumers provided by the BLS.

by recreational anglers are also provided in NMFS (2011) and are incorporated herein by reference.

Recreational fishing generates business activity (economic impacts). Business activity for the recreational sector is characterized in the form of full-time equivalent jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Estimates of the average greater amberjack target effort (2009-2013) and associated business activity (2013 dollars) are provided in Table 3.3.2.12. The average impact coefficients, or multipliers, used in the model are invariant to the "type" of effort and can therefore be directly used to measure the impact of other effort measures such as greater amberjack catch trips. To calculate the multipliers from Table 3.3.2.12, simply divide the desired impact measure (output impact, value-added impact, or jobs) associated with a given state and mode by the number of target trips for that state and mode.

The estimates provided in Table 3.3.2.12 only apply at the state-level. These numbers should not be added across the region. Addition of the state-level estimates to produce a regional (or national) total could either under- or over-estimate the actual amount of total business activity because of the complex relationship between different jurisdictions and the expenditure/impact multipliers. Neither regional nor national estimates are available at this time.

Florida clearly received the greatest level of economic impact from greater amberjack in comparison to the other Gulf states, which is not surprising given the majority of greater amberjack target trips are estimated to be taken by Florida anglers (Table 3.3.2.12). Although not shown in Table 3.3.2.12, Florida also had the highest multipliers for all impact measures associated with the charter mode. Louisiana had the highest multipliers for output impact and value-added impact for the private angler mode and was tied with Alabama for the highest jobs impact multiplier for the private angler mode.

Estimates of the business activity associated with headboat effort are not available. Headboat vessels are not covered in the MRFSS/MRIP, so, in addition to the absence of estimates of target effort, estimation of the appropriate business activity coefficients for headboat effort has not been conducted.

Table 3.3.2.12. Summary of greater amberjack target trips (2009-2013 average) and associated business activity (2013 dollars). Output and value added impacts are not additive.

	Alabama	West Florida	Louisiana	Mississippi	Texas
	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	3,098	24,401	2,918	129	*
Output Impact	$167,403	$1,319,539	$220,547	$4,533	*
Value Added Impact	$90,593	$747,195	$105,982	$2,306	*
Jobs	2	11	2	0	*
	Charter Mode				
Target Trips	1,014	8,342	561	0	*
Output Impact	$648,122	$6,117,419	$271,425	$0	*
Value Added Impact	$443,540	$4,089,823	$186,638	$0	*
Jobs	6	54	2	0	*
	All Modes				
Target Trips	4,112	32,743	3,479	129	*
Output Impact	$815,525	$7,436,958	$491,972	$4,533	*
Value Added Impact	$534,133	$4,837,018	$292,619	$2,306	*
Jobs	8	65	4	0	*

*Because target information is unavailable, associated business activity cannot be calculated.
Source: effort data from MRIP, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011).

3.4 Description of the Social Environment

A description of the social environment including analysis of communities engaged in reef fish fishing, was provided in Amendment 30A (GMFMC 2008) and is incorporated here by reference. This section provides a summary of that information.

Greater amberjack is fished throughout the Gulf although landings are greatest in Florida. The majority of greater amberjack is landed by the recreational sector (72.4% from 2002 – 2013 with a range of 59.6% to 80.1%) and 27.6% is landed by the commercial sector (range of 19.9% to 40.4% from 2002 - 2013, Table 1.2.1). For the purpose of setting quotas, the Council selected an interim allocation at 73% recreational: 27% commercial in Amendment 30A (GMFMC 2008). The low commercial value and one fish recreational bag limit likely restrict greater amberjack from being a directed fishery. Rather than directed fishing trips, greater amberjack is an important component to a multi-species fishery for both commercial and recreational fishermen. Because of this multi-species fishing practice, it is difficult to discuss greater amberjack fishing separate from its broader context within commercial and recreational fishing.

3.4.1 Fishing Communities

Recreational Fishing Communities

There is no information available concerning targeted trips within the recreational sector (private and for-hire vessels). However, due to the one fish bag limit and 30 inch fork length minimum size limit, few fishermen are likely to engage in directed trips for greater amberjack. Because of their large size, greater amberjack is often a trip's trophy catch, making it an important part to a multi-species fishing trip. Greater amberjack is also an important component in recreational tournaments.

Landings for the recreational sector are not available by species at the community level; therefore, it is difficult to identify communities as dependent on recreational fishing for greater amberjack. The 20 Gulf communities identified as the most engaged in recreational fishing (GMFMC 2008) are listed in Table 3.4.1.1. Because the analysis used discrete geo-political boundaries, Panama City and Panama City Beach had separate values for the associated variables. Calculated independently, each still ranked high enough to appear in the top 20 list suggesting a greater importance for recreational fishing.

Table 3.4.1.1. Top ranking communities based on recreational fishing engagement and reliance, in descending order.

Community	County	State
Destin	Okaloosa	FL
Orange Beach	Baldwin	AL
Panama City	Bay	FL
Port Aransas	Nueces	TX
Pensacola	Escambia	FL
Panama City Beach	Bay	FL
Naples	Collier	FL
St. Petersburg	Pinellas	FL
Freeport	Brazoria	TX
Biloxi	Harrison	MS
Galveston	Galveston	TX
Clearwater	Pinellas	FL
Fort Myers Beach	Lee	FL
Sarasota	Sarasota	FL
Tarpon Springs	Pinellas	FL
Dauphin Island	Mobile	AL
Apalachicola	Franklin	FL
Carrabelle	Franklin	FL
Port St. Joe	Gulf	FL
Marco Island	Collier	FL

Source: SERO permit office 2008, MRIP site survey 2010.

Commercial Fishing

Most commercially landed greater amberjack is caught using vertical line alongside other target species, as opposed to being the primary target species. This is partly due to its relatively low economic value (approximately $1/pound) and large minimum size limit (36 inch fork length). A small percentage of commercial vessels direct trips toward greater amberjack and may land thousands of pounds in a single trip. Other commercial vessels may direct effort toward greater amberjack during part of a multi-day trip.

Figure 3.4.1.1 shows the spatial distribution of commercial greater amberjack landings around the Gulf (2001-2010). The landings are based on the dealer's address which may not correspond to the actual landing site or vessel homeport. Numerous separate communities along the west central coast of Florida are identified as having sizeable landings, whereas dealer addresses are more concentrated in fewer communities around Houston and Galveston, Texas. This suggests a different social organization of commercial fishing infrastructure between Florida and Texas. While dealers with a Houston business address reported the largest proportion of landings during this time, three separate communities in Pinellas County, Florida appear among the top 10 communities (GMFMC 2008). Furthermore, Panama City and Destin, both in the Florida Panhandle, also appear among the top 10 communities. Although place is one way of defining a community, a community is not defined by discrete geo-political boundaries alone. Social

relationships, information exchanges, and economic interactions reflect shared interests that overlap place-based boundaries.

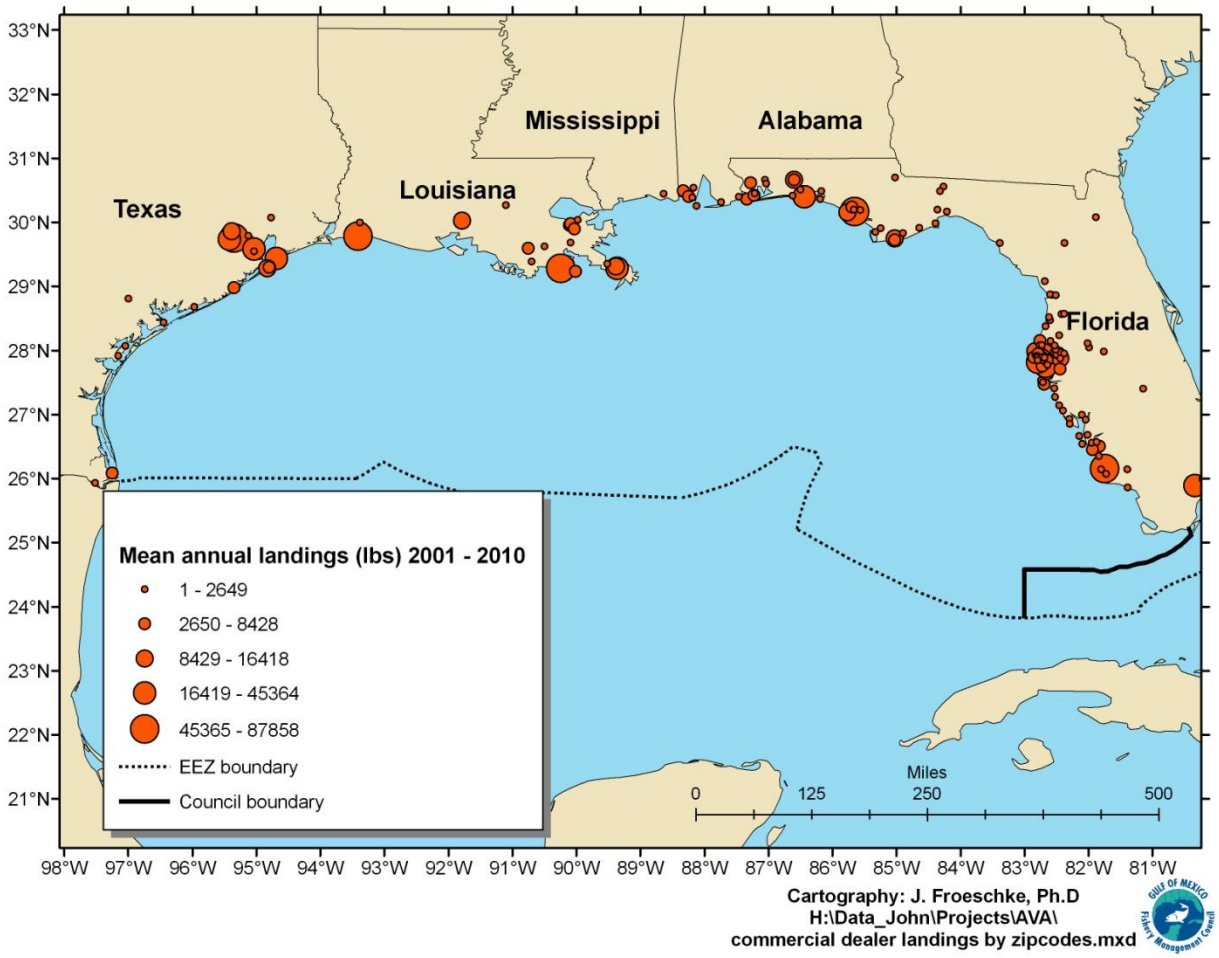

Figure 3.4.1.1. Distribution of commercial greater amberjack mean landings (2001 - 2010), based on dealer reports. Source: Accumulated landings system dealer reports.

Importance of Greater Amberjack to Communities

Table 3.4.1.1 identified the top Gulf communities engaged and reliant on recreational fishing generally (i.e., not specific to greater amberjack). Figure 3.4.1.1 identified where commercial landings of greater amberjack are most abundant. However, this does not necessarily reflect the importance of greater amberjack in relation to other landed species in those communities. No data are available for the proportion of recreational landings of greater amberjack by community, but these data are available for the commercial sector. Commercial landings include many species that may not be caught by the recreational sector such as shrimp and tilefish, while recreational landings would include other species such as red drum and spotted sea trout. Therefore, it cannot be assumed that the proportion of commercial greater amberjack landings among other species in a community would be similar to its proportion among recreational

landings within the same community. These data should also be considered in terms of the difference between the commercial and recreational sectors' allocation of the quota.

Comparing the communities of recreational importance and those with greater amounts of greater amberjack commercial landings, four communities overlap: Destin, Panama City, and Saint Petersburg, Florida, and Galveston, Texas. Collectively, these communities represented approximately 28% of the commercial greater amberjack landings in the Gulf in 2009. Within each of the communities, greater amberjack represented a very small proportion (less than 5%) of total commercial landings.

Gulf-wide, Destin, Florida ranks first for the number of reef fish for-hire permits in 2010, with 118 federal permits. Destin ranked fifth in 2009 for commercial greater amberjack landings with 12% of the total value and 10% of the total pounds. Among all commercially landed species in Destin in 2009, greater amberjack made up less than 5% of the total commercial landings. To compare, king and cero mackerels (37%), vermilion snapper (22%), and red snapper (9%) represented the top three commercial species by weight landed in Destin.

Panama City, Florida ranks third for the number of reef fish for-hire permits in 2010, with 67 federal permits. Both Panama City and Panama City Beach ranked within the top 10 recreational fishing communities based on the fishing involvement analysis provided above suggesting a higher level of involvement across geo-political boundaries. Panama City ranked third in terms of commercial greater amberjack landings in 2009 with 12% of the total value and 11% of the total pounds. Among all commercially landed species in Panama City, greater amberjack made up less than 5% of the total commercial landings in 2009. To compare, vermilion snapper (24%) and tunas (15%) represent the top two commercial species by weight landed in Panama City.

With 23 reef fish for-hire permits in 2010, Saint Petersburg, Florida did not rank among the top recreational communities in terms of the number of permits. However, it ranked within the top 20 communities in terms of recreational involvement (Table 3.4.1.1). Saint Petersburg ranked sixth in the Gulf in terms of commercial greater amberjack landindgs in 2009 with 4.3% of the total value and 4.3% of the total pounds. Among all commercially landed species, greater amberjack makes up less than 5% of all commercial landings. To compare, red grouper (25%), shrimp (9% by weight, 24% of value), mullet (19%), and dolphin (9%) represent the top four commercial species by weight landed in Saint Petersburg in 2009.

Galveston, Texas was ranked fifth in terms of number of reef fish for-hire permits for the year 2010 with 45 federal permits. Gulf-wide, Galveston ranked eighth in terms of commercial greater amberjack landings for 2009 with 3.4% of the total value and 3.5% of the total pounds. Nearby Houston, Texas ranked first in terms of commercial greater amberjack landings in 2009 based on dealer reports, with 18% of the Gulf-wide landings by weight. It is likely that a significant proportion of these landings occurred at a physical site in or near Galveston, the nearest coastal port to the inland city of Houston. Among all commercial species landed in Galveston in 2009, white and brown shrimp represented 88% of the landings by weight.

For both sectors it is difficult to speak of community reliance on greater amberjack; rather, greater amberjack is an important component to the reef fish complex. For example, although

the communities above ranked among the top communities for commercial landings of greater amberjack throughout the Gulf, greater amberjack represents less than 5% of the total commercial landings within each community. While landings are proportionally low compared with other species in each community, greater amberjack consistently ranks within the top 15 species in commercial communities. This supports its status as an important component in the reef fish complex, rather than a primary target species. Landings at the commuity level are not available for the recreational sector, thus a comparable analysis is not possible. Rather than engaging in directed trips, greater amberjack is generally targeted during trips along with other species. It is an important trophy and meat fish, prized for both its size and fighting behavior, making for a thrilling fishing experience.

3.4.2 Environmental Justice Considerations

Executive Order 12898 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. The main focus of Executive Order 12898 is to consider "the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories…" This executive order is generally referred to as environmental justice (EJ).

Persons employed in greater amberjack fishing and associated businesses and communities along the Gulf coast would be expected to be affected by this proposed action. However, information on the race and income status for groups at the different participation levels (vessel owners, crew, dealers, processors, employees, employees of associated support industries, etc.) is not available. Because this proposed action could be expected to affect fishermen and associated industries in numerous communities along the Gulf coast, census data (available at the county level, only) have been assessed to examine whether any coastal counties have poverty or minority rates that exceed the EJ thresholds.

The threshold for comparison that was used was 1.2 times the state average such that, if the value for the county was greater than or equal to 1.2 times the state average, then the county was considered an area of potential EJ concern. Census data for the year 2010 was used. For Florida, the estimate of the minority (interpreted as non-white, including Hispanic) population was 39.5%, while 13.2% of the total population was estimated to be below the poverty line. These values translate in EJ thresholds of approximately 47.4% and 15.8%, respectively (Table 3.4.2). Based on the demographic information provided, no potential EJ concern is evident with regard to the percent of minorities for the counties of the west coast of Florida. With regard for poverty, Dixie (3.8%), Franklin (8%), Gulf (1.7%), Jefferson (4.6%), Levy (3.3%), and Taylor (7.1%) counties exceed the threshold by the percentage noted. No potential EJ concern is evident for the remaining counties which fall below the poverty and minority thresholds. The same method was applied to the remaining Gulf of Mexico states.

Table 3.4.2.1. Each state's average proportion of minorities and population living in poverty, and the corresponding threshold used to consider an area of potential EJ concern (Census Bureau 2010).

	Minorities		Poverty	
State	% Population	EJ Threshold	% Population	EJ Threshold
FL	39.5	47.4	13.2	15.8
AL	31.5	37.8	16.8	20.2
MS	41.2	49.4	21.4	25.7
LA	38.2	45.8	18.4	22.1
TX	52.3	62.7	16.8	20.1

In Alabama, Mobile was the only county to exceed the minority threshold (by 1.7%). Neither of Alabama's coastal counties exceeded the poverty threshold for potential EJ concern. No coastal county in Mississippi exceeded either threshold. In Louisiana, Orleans Parish exceeded the minority threshold by 25% and the poverty threshold by 1.3%. Texas has several counties that exceeded the thresholds. In descending order of magnitude for exceeding the minority threshold were Willacy (26.3%), Cameron (24.7%), Kleberg (12.3%), Kenedy (9%), Nueces (2.8%), and Harris (.8%). Exceeding the poverty threshold were Kenedy (32.3%), Willacy (26.8%), Cameron (15.6%), Kleberg (6%), and Matagorda (1.8%). Willacy, Kenedy, Cameron, and Kleberg counties exceed both the minority and poverty thresholds and are the communities identified as most likely to be vulnerable to EJ concerns.

Comparing the recreational communities identified as substantially engaged in fishing with the counties identified as having potential EJ concerns, several communities overlap. In Florida, Apalachicola and Carrabelle are both located in Franklin County, which exceeds the poverty threshold by 8%. Port St. Joe in Gulf County exceeds the poverty threshold by 1.7%. In Alabama, Dauphin Island in Mobile County exceeds the minority threshold by 1.7%. And in Texas, Port Aransas in Nueces County exceeds the minority threshold by 2.8%. Among commercial communities with the most greater amberjack landings Gulf-wide, Bayou La Batre in Mobile County, Alabama exceeded the minority threshold by 1.7%. Houston in Harris County, Texas exceeded the minority threshold by .8%. However, none of these communities ranked among both the identified commercial and recreational communities.

People in these communities may be affected by fishing regulations in two ways: participation and employment. Although these communities may have the greatest potential for EJ concerns, no data are available on the race and income status for those involved in the local fishing industry (employment), or for their dependence on greater amberjack specifically (participation). The fishery is primarily recreational and requires boat access. There are no known claims for customary usage or subsistence consumption of Gulf greater amberjack by any population including tribes or indigenous groups. Thus, it is not likely that the participation of EJ populations will be affected. Based on the analysis above, the greatest risk would likely arise in Franklin County (exceeds the poverty threshold by 8%), should loss of employment occur. However, it would be difficult to identify a causal relationship between actions in this

amendment and any loss of jobs in the county, as numerous other factors would likely be involved. Nevertheless, because greater amberjack does not represent a substantial proportion of landings in the respective communities, no EJ concerns are expected to arise in these communities as a result of the actions in this amendment. Although no EJ issues have been identified, the absence of potential EJ concerns cannot be assumed.

3.5 Description of the Administrative Environment

3.5.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ. The EEZ is defined as an area extending 200 nautical miles from the seaward boundary of each of the coastal states. The Magnuson-Stevens Act also claims authority over U.S. anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Section 10. In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

The 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 of Mexico 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 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 public is also involved in the fishery management process through participation on advisory panels and through publically open Council meetings, with some exceptions for discussing internal administrative matters. The regulatory process is also in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of the NOAA's Office of Law Enforcement, the U.S. Coast Guard, and various state authorities. To better coordinate

enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's Law Enforcement Committee have developed a two year "Gulf Cooperative Law Enforcement Strategic Plan – 2011 - 2012."

3.5.2 State Fishery Management

The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf of Mexico states exercises legislative and regulatory authority over their states' natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states' natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each state's primary regulatory agency for marine resources is provided in Amendment 22 (GMFMC 2004b).

CHAPTER 4. LIST OF PREPARERS

Name	Expertise	Responsibility	Agency
John Froeschke	Fishery Biologist	Co-Team Lead – Amendment development, introduction, social analyses	GMFMC
Rich Malinowski	Biologist	Co-Team Lead – Amendment development, effects analysis, and cumulative effects	SERO
David Records	Economist	Economic environment and Regulatory Flexibility Act analysis	SERO
Ava Lasseter	Anthropologist	Social analyses and Reviewer	GMFMC
Mara Levy	Attorney	Legal compliance and Reviewer	NOAA GC
Scott Sandorf	Technical Writer Editor	Regulatory writer	SERO
Noah Silverman	Natural Resource Management Specialist	NEPA compliance	SERO
Nick Farmer	Biologist	Data analysis	SERO
Michael Larkin	Biologist	Data analysis	SERO
Stephen Holliman	Economist	Reviewer	SERO
Assane Diagne	Economist	Economic effects analysis and Regulatory Impact Review	GMFMC
Carrie Simmons	Fishery biologist	Reviewer	GMFMC
Nancy Cummings	Biologist	Reviewer	SEFSC

CHAPTER 5. LIST OF AGENCIES, ORGANIZATIONS AND PERSONS CONSULTED

The following have or will be consulted.

National Marine Fisheries Service
- Southeast Fisheries Science Center
- Southeast Regional Office
    - Protected Resources
    - Habitat Conservation
    - Sustainable Fisheries

NOAA General Counsel
U.S. Coast Guard

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