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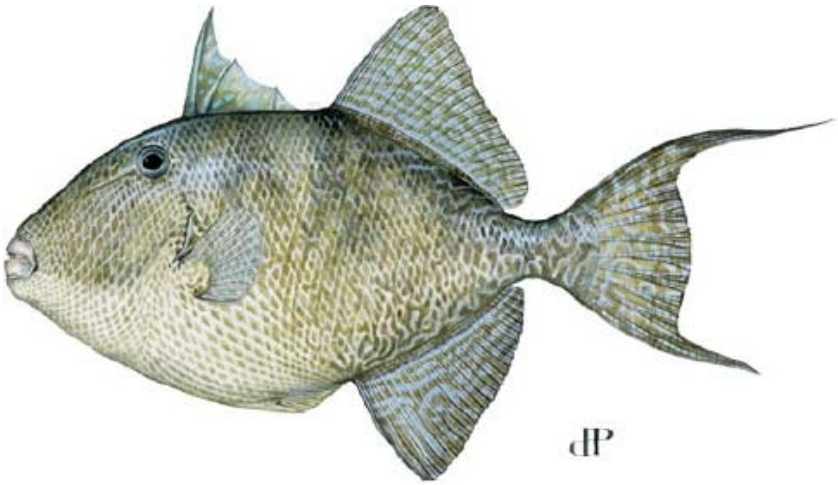

2012 Gulf of Mexico Gray Triggerfish Annual Catch Limits & Annual Catch Targets for the Commercial & Recreational Sectors; and In-Season Accountability Measures for the Recreational Sector

Environmental Assessment and Regulatory Impact Review for a Proposed Interim Rule to the Fishery Management Plan for the Reef Fish Resources

April 2012

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ALS	Accumulated Landings System
APA	Administrative Procedure Act
Council	Gulf of Mexico Fishery Management Council
CZMA	Coastal Zone Management Act
DQA	Data Quality Act
EA	Environmental assessment
EFH	Essential Fish Habitat
EIS	Environmental impact statement
EJ	Environmental Justice
ELMR	Estuarine Living Marine Resources
ESA	Endangered Species Act
F	Fishing mortality
FL	Fork length
FMP	Fishery management plan
FTE	Full time equivalent
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
GW	Gutted Weight
HAPC	Habitat Areas of Particular Concern
IFQ	Individual fishing quota
IRFA	Initial Regulatory Flexibility Analysis
LOF	List of Fisheries
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistics Survey
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum sustainable yield
NMFS	NOAA's National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOS	National Ocean Service
OMB	Office of Management and Budget
OY	Optimum yield
RFA	Regulatory Flexibility Act
RIR	Regulatory impact review
SAFMC	South Atlantic Fishery Management Council
SEDAR	Southeast Data, Assessment, Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SPR	Spawning potential ratio
SSBR	Spawning stock biomass per recruit
SSC	Scientific and Statistical Committee
SSASPM	State space age-structured production model
TL	Total length

1.0 INTRODUCTION

1.1 Background

Gray triggerfish (*Balistis capriscus*) is one of 31 reef fish species in the management unit for the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (Reef Fish FMP). The Reef Fish FMP provides management for reef fish species in the federal waters of the Gulf of Mexico (Gulf).

Gray triggerfish are caught throughout the Gulf. Between 1981 to 2010, gray triggerfish landings increased through the 1980s and peaked in 1990 at more than 3 million pounds whole weight (lbs ww) (Table 1.1.1 and Figure 1.1.1). Landings then declined to less than 1 million lbs ww by 1996, although there was a secondary peak of just over 1 million lbs ww in 2003 and 2004. Landings have subsequently declined to 351,227 lbs ww in 2010.

The recreational sector lands most of the fish (Figure 1.1.1) and during the 1981 to 2010 time frame, caught approximately 80% of the fish by weight. For the recreational and commercial sectors, most fish are landed in the eastern Gulf (Figure 1.1.2). This is particularly true for the recreational sector where landings in the eastern Gulf are often a magnitude higher than landings from the western Gulf (Table 1.1.1).

The Gulf gray triggerfish stock was determined to be undergoing overfishing and possibly overfished as a result of a 2006 stock assessment (SEDAR 9 2006b). Amendment 30A put in place a stock rebuilding plan beginning in 2008. Management measures established through Amendment 30A set commercial and recreational the annual catch targets (ACTs), annual catch limits (ACLs) and accountability measures. The sector specific ACTs and ACLs are shown in Table 1.1.2. For the commercial sector, the accountability measure is to close the sector within the year once it meets its ACT which is considered a quota. For the recreational sector, if the ACL is exceeded, the accountability measure is to shorten the fishing season length for the next year to the time needed to catch the ACT.

For the commercial sector, landings have not exceeded either the ACT or ACL (Table 1.1.2). This has not been the case for the recreational sector. In 2008, landings exceeded both the ACT and ACL. Because preliminary recreational landings data in early 2009 did not exceed the ACL, there did not to appear to be a need to apply recreational accountability measures. It was later in the year that 2008 landings were found to exceed the ACL. However, the recreational accountability measures were not applied. This was, in part, because management measures from Amendment 30A did not become effective until late 2008 and so had a limited effect. Projections indicated these measures were sufficient to constrain the harvest to less than the ACL and so a shortened season was not needed. In 2009, the recreational sector exceeded the ACT, but not the ACL. Landings were much less in 2010 and did not exceed the ACT and ACL. The limited landings in 2010 could be due to fishery closures that went in place as a result of the Deepwater Horizon MC252 oil spill. Information in the oil spill and the subsequent closures can be found on the Southeast Regional Office's Web site (http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm).

Table 1.1.1. Gulf of Mexico triggerfish recreational and commercial landings by year and region. The landings are in pounds whole weight, and the regions of east and west were separated by the Mississippi river.

	Recreational			Commercial			
Year	East	West	Total	East	West	Total	Total Harvest
1981	639,424	111,298	750,722	64,498	25,362	89,860	840,582
1982	1,516,213	91,063	1,607,276	62,959	33,714	96,673	1,703,949
1983	337,656	362,039	699,695	49,588	23,831	73,419	773,114
1984	123,458	151,598	275,056	37,396	32,749	70,145	345,201
1985	218,017	66,944	284,961	54,840	37,786	92,626	377,587
1986	1,062,794	59,638	1,122,432	72,858	22,782	95,640	1,218,072
1987	1,168,210	35,343	1,203,553	89,313	34,290	123,603	1,327,156
1988	1,480,144	66,330	1,546,474	137,978	57,084	195,062	1,741,536
1989	1,293,423	135,102	1,428,525	230,361	87,271	317,632	1,746,157
1990	2,379,931	303,849	2,683,780	359,686	99,351	459,037	3,142,817
1991	1,832,019	295,327	2,127,346	341,319	103,211	444,530	2,571,876
1992	1,253,218	135,800	1,389,018	358,178	112,826	471,004	1,860,022
1993	1,247,900	124,461	1,372,361	381,532	177,478	559,010	1,931,371
1994	978,590	186,997	1,165,587	251,578	153,141	404,719	1,570,306
1995	982,678	256,524	1,239,202	207,212	130,664	337,876	1,577,078
1996	508,904	86,038	594,942	142,185	125,332	267,517	862,459
1997	596,379	97,863	694,242	107,780	76,909	184,689	878,931
1998	477,814	54,019	531,833	106,158	70,571	176,729	708,562
1999	366,221	109,644	475,865	122,462	102,977	225,439	701,304
2000	308,505	159,927	468,432	62,936	95,073	158,009	626,441
2001	402,284	55,433	457,717	108,541	67,638	176,179	633,896
2002	657,528	35,099	692,627	148,068	85,661	233,729	926,356
2003	744,685	57,199	801,884	166,358	85,368	251,726	1,053,610
2004	838,340	107,843	946,183	143,200	77,138	220,338	1,166,521
2005	533,835	50,862	584,697	107,490	41,728	149,218	733,915
2006	354,722	97,214	451,936	61,028	30,848	91,876	543,812
2007	392,192	44,469	436,661	51,241	36,909	88,150	524,811
2008	310,764	108,451	419,215	50,975	25,441	76,416	495,631
2009	386,944	14,212	401,156	64,477	16,106	80,583	481,739
2010	294,294	2,066	296,360	46,908	7,959	54,867	351,227

Source: SEDAR 9 Update Assessment (SEDAR 9 2011c)

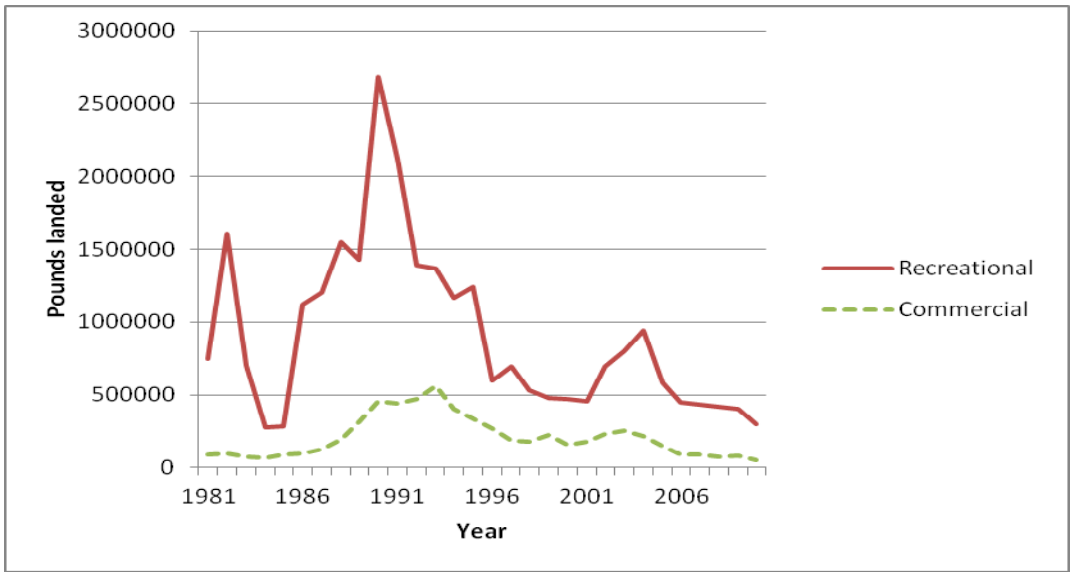

Figure 1.1.1. Commercial and recreational landings of gray triggerfish from 1981 to 2010.

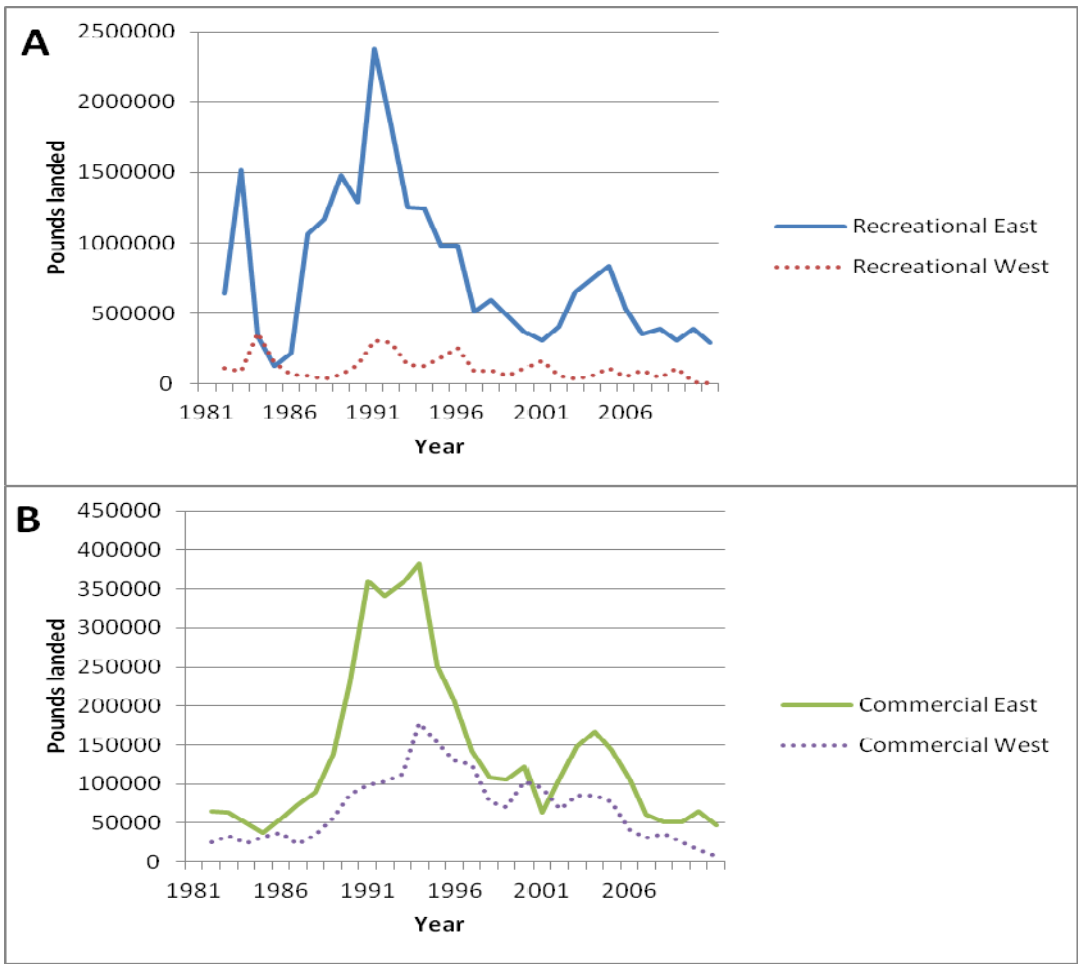

Figure 1.1.2. Regional landings of gray triggerfish in the Gulf of Mexico east and west of the Mississippi River for the A) recreational and B) commercial sectors.

Table 1.1.2. Gulf of Mexico harvest, annual catch target (ACT), and annual catch limit (ACL) for gray triggerfish during the first three years of a rebuilding plan. Units are in 1000s lbs whole weight.

	Recreational			Commercial		
Year	Harvest	ACT	ACL	Harvest	ACT (Quota)	ACL
2008	419	306	394	76	80	105
2009	401	356	426	81	93	122
2010+	296	405	457	55	106	138

Source: SEDAR 9 Update Assessment (SEDAR 9 2011c) and Amendment 30A (GMFMC 2008)

1.2 Status of the Gray Triggerfish Stocks in the Gulf of Mexico

A benchmark stock assessment was conducted in 2006 for the Gulf's gray triggerfish stock (SEDAR 9 2006b). A benchmark assessment evaluates all known data sources, reviews all input data, considers practicable modeling approaches, and evaluates all past assessment decisions. The assessment used the two models of a Stock Production Model Incorporating Covariates and the State-Space Age-Structured Production Model (SSASPM). The assessment results indicated the stock was possibly overfished and experiencing overfishing.

In 2011, an update stock assessment was conducted for the Gulf's gray triggerfish stock (SEDAR 9 Update 2011c). An update assessment adds additional data to the original benchmark assessment to update population estimates. The same assessment model (SSASPM model) from the 2006 triggerfish assessment was applied and three scenarios were explored: (1) A rerun of the same model used in SEDAR 9 but with updated landings and catch-per-unit-effort series to 2010; (2) adding updated age-length information; and (3) also adding shrimp trawl bycatch and effort data.

Results from the update stock assessment showed the current fishing mortality rate (F_{2010}) was greater than the maximum fishing mortality threshold (MFMT) (Table 1.2.1, Figure 1.2.1). Therefore, the stock is undergoing overfishing. In addition, the current stock biomass, as measured in eggs, is less than the minimum stock size threshold (MSST). Therefore, the stock is considered overfished (Figure 1.2.2). In March 2012, NOAA's National Marine Fisheries Service (NMFS) sent a letter to the Council informing them of the status of the triggerfish stock[1].

The Council's Science and Statistical Committee (SSC) reviewed the 2011 Update Assessment and accepted the third model scenario listed above that used the updated age and length data and the shrimp trawl bycatch and effort data. The SSC was concerned that the stock might be reduced in size to very low levels because the recruitment showed wide fluctuations over time. If populations were low, then depensatory mortality[2] rather than compensatory mortality might be in effect. If recruitment had changed over time, then a recent average of recruitment may be more representative of recruitment in future years. As a result, the SSC requested an additional

[1] March 13, 2012, letter from Roy Crabtree, Regional Administrator, Southeast Regional Office to Robert Gill, Chairman, Gulf of Mexico Fishery Management Council.
[2] Depensatory mortality is when the mortality rate increases as stock size decreases. Compensatory mortality is when the mortality rate decreases as the population size decreases.

projection run that used the average recruitment for the past several years. The SSC decided to recommend the yield streams from this additional projection run, which used average recruitment, to add an additional buffer against the fact that the stock-recruitment relationship of this species is poorly understood. The SSC also recommended that the benchmarks be based on the original projection run. The SSC determined there was too much uncertainty in the model to consider a P-star approach[3], and as a result, recommended the acceptable biological catch (ABC) for Gulf gray triggerfish be set at 305,300 lbs ww for 2012 and 2013. This ABC is based on the projected yield of 2012 at 75% of the fishing mortality rate associated with harvesting the stock at 30% spawning potential ratio ($F_{SPR\ 30\%}$) for the projection that assumed average recruitment. The overfishing limit defined by the SSC was the yield at $F_{SPR30\%}$, equal to 401,600 lbs ww for 2012.

Table 1.2.1. Status determination criteria and stock status of gray triggerfish SEDAR 9 Update 2011c.

Parameter	Base Value
Population parameters and management benchmarks	
$F_{20\%SPR}$	0.53
$F_{30\%SPR}$ = MFMT Proxy	0.34
$F_{40\%SPR}$	0.22
F_{MSY} Proxy	0.34
SSB_{MSY} Proxy (eggs)	1.78×10^{12}
$SSB_{30\%SPR}$ (eggs)	1.78×10^{12}
$SSB_{20\%SPR}$ (eggs)	1.23×10^{12}
F_{OY} Proxy	0.25
MSY (lbs, including shrimp bycatch	984,410
Stock parameters	
F_{2010}	0.35
F_{2010}/MFMT Proxy	1.04
F_{2010}/F_{MSY} Proxy	1.04
F_{2010}/F_{OY} Proxy	1.40
SSB_{2010} (eggs)	6.90×10^{11}
$SSB_{2010}/SSB_{SPR20\%}$	0.56
$SSB_{2010}/SSB_{SPR30\%}$	0.39
SSB_{2010}/SSB_{MSY} Proxy	0.39

[3] P-star approach determines the level of catch (e.g. ABC) while keeping the probability of overfishing at a low level (Shertzer et al. 2008).

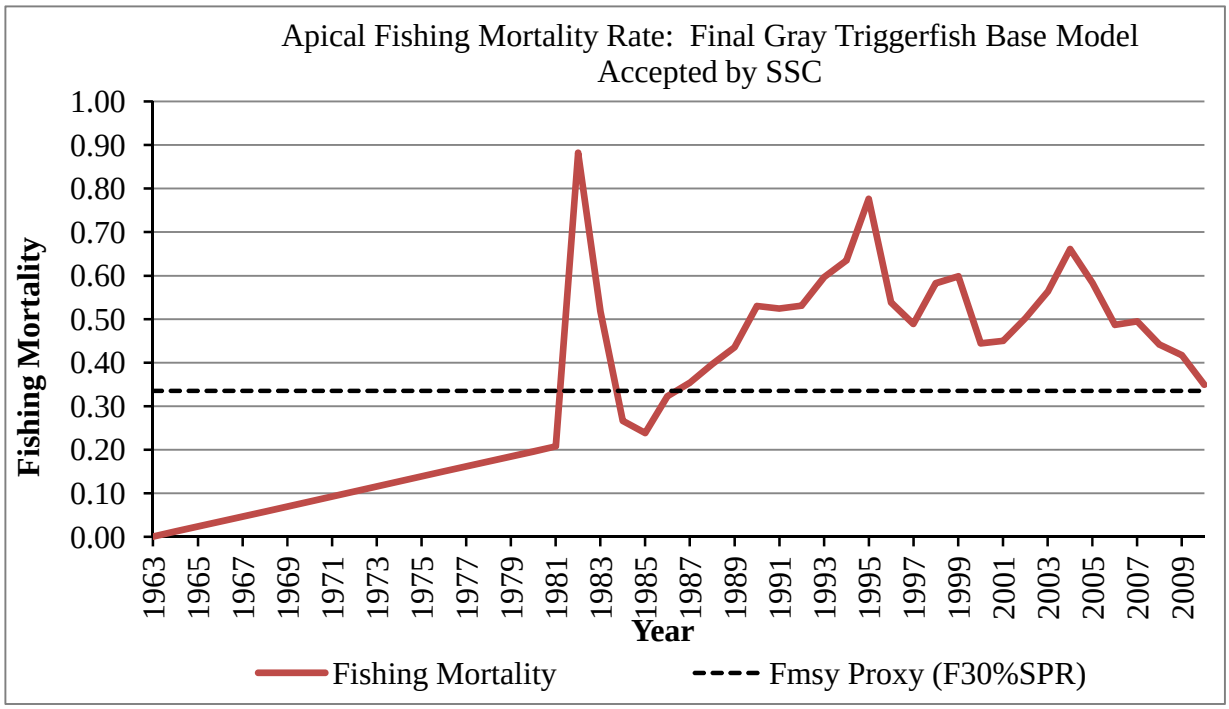

Figure 1.2.1. Gray triggerfish fishing mortality estimates and projections from 1963 through 2009.

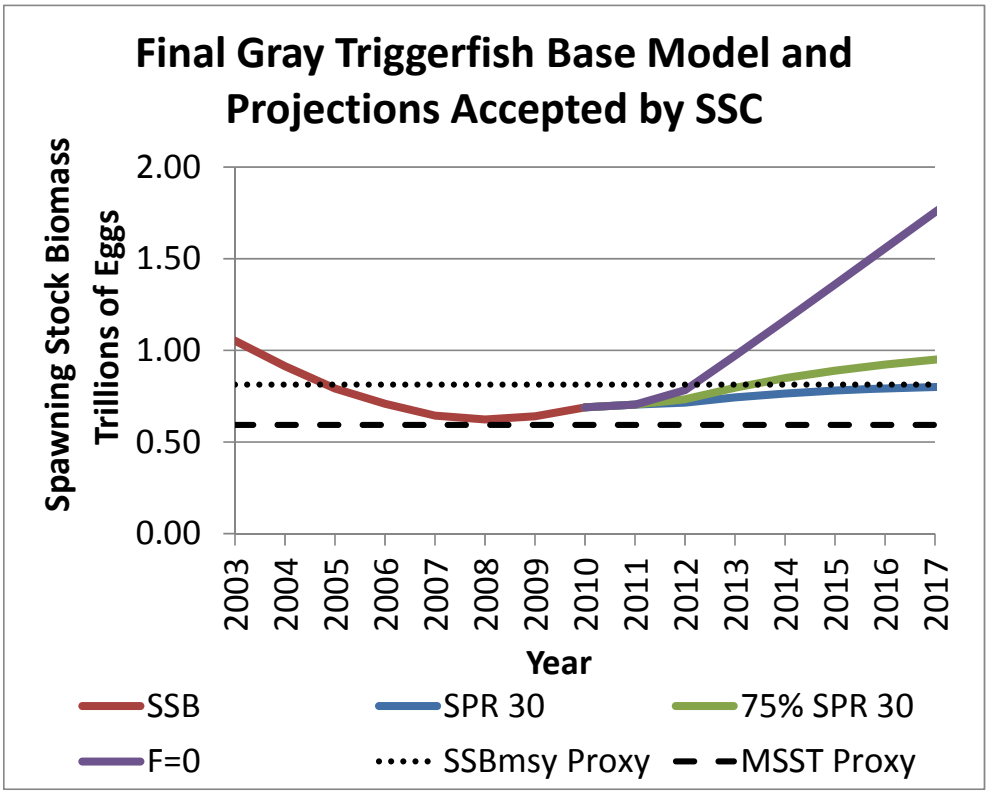

Figure 1.2.2. Gray triggerfish spawning stock biomass estimates and projections from 2003 through 2017.

1.3 Purpose and Need for Action

This purpose of this interim rule is to reduce overfishing of gray triggerfish until long-term management measures can be established in Amendment 37 to the Reef Fish FMP. The underlying need for this action is established by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), which requires NMFS and regional fishery management councils to prevent overfishing, and achieve, on a continuing basis, the optimum yield from federally managed fish stocks.

1.4 History of Management

Status in the fishery management unit: Management measures from the Reef Fish FMP [with its associated environmental impact statement (EIS)] were implemented in November 1984. The original list of species included in the management unit consisted of snappers, groupers, and sea basses. Gray triggerfish was in a second list of species included in the fishery, but not in the management unit. This designation was for species not considered to be targeted 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. This status was changed in **Amendment 16B** [with its associated environmental assessment (EA), regulatory impact review (RIR), and final regulatory flexibility analysis (FRFA)], which became effective in November 1999. This amendment removed the distinction between species in the management unit and species included for the purposes of data collection.

Stock status: Management measures from **Amendment 1** (with its associated EA, RIR, and FRFA) were implemented in 1990. The primary objective of this amendment was the stabilization of long-term population levels of all reef fish species by establishing a spawning age survival rate 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 the specification of the total allowable catch was created to allow for annual management changes. Measures in the **Generic Sustainable Fisheries Act Amendment** (with its associated EA, RIR, and FRFA), were partially approved and implemented in November 1999. This amendment set the MFMT for gray triggerfish at $F_{30\%\ SPR}$. Estimates of the maximum sustainable yield, MSST, and optimum yield were disapproved because they were based on spawning potential ratio proxies rather than biomass based estimates. **Amendment 30A** (supplemental EIS/RIR/FRFA) was developed in part to stop overfishing of gray triggerfish and rebuild the overfished stock. The amendment established status determination criteria disapproved in the **Generic Sustainable Fisheries Act Amendment**, and set annual catch limits (ACLs) and accountability measures that were implemented on August 2008. Management measures from the **Generic ACL Amendment** (EIS/RIR/FRFA) were implemented in January 2012. Although ACLs and accountability measures for gray triggerfish had been set in **Amendment 30A**, this amendment also established an ABC control rule, ACL/ACT control rule, and revised the framework procedures.

Allocation: The Council established as temporary allocation in **Amendment 30A** based on 2001-2004 landings. The allocation was set at 21% commercial and 79% recreational.

Bag limits: Management measures from **Amendment 12** (with its associated EA and RIR) were implemented in January 1997. The management measures included the creation of an aggregate bag limit of 20 reef fish for all reef fish species not having a bag limit. Gray triggerfish was included in this aggregate bag limit.

Minimum size limits: **Amendment 16B** established a 12-inch total length minimum size. The size limit was increased to 14-inches fork length in **Amendment 30A** to help end overfishing and allow the stock to recover. This management measure went into effect in August 2008.

Commercial quota: Management measures from **Amendment 30A** established a commercial quota as part of the the gray triggerfish rebuilding plan. This measure went into effect in August 2008.

Commercial permits: Commercial reef fish permits were established through **Amendment 1** in 1990. **Amendment 4** (with its associated EA and RIR) established a moratorium on the issuance of new reef fish permits for a maximum period of three years. Management measures were implemented in May 1992. This moratorium was extended in **Amendments 9** (with its associated EA and RIR, rule implemented in July 1994), **11** (with its associated EA and RIR, rule implemented in January 1996), and **17** (with its associated EA and RIR) rule implemented in August 2000). It was extended indefinitely in **Amendment 24** [with its EA, RIR, and initial regulatory flexibility analysis (IRFA), rule implemented in August 2005].

For-hire permits: For-hire reef fish permits were put in place through **Amendment 11** in January 1997. Management measures from **Amendment 20** (with its associated EA and RIR) were implemented in June 2003 to establish a three-year moratorium on the issuance of new charter and headboat vessel permits for Gulf reef fish to limit further expansion in the for-hire fisheries while the Council considered the need for more comprehensive effort management systems. This moratorium was replaced by a permanent limited entry system by actions in **Amendment 25** (with its supplemental EIS, RIR, and IRFA), rule implemented in June 2006).

2.0 MANAGEMENT ALTERNATIVES

2.1 Action 1: Modifications to Gray Triggerfish Annual Catch Limits and Optional Annual Catch Targets for 2012 Fishing Season

The current sector allocations are 21% commercial and 79% recreational as established in Amendment 30A.

Alternative 1: No Action – do not modify the gray triggerfish sector annual catch limits (ACL) and annual catch targets (ACT).

ABC	commercial ACL	recreational ACL
659,000	138,000	457,000
	commercial ACT	**recreational ACT**
	106,000	405,000

Alternative 2: Based on an acceptable biological catch (ABC) = 305,300 lbs ww, set the commercial ACL = 64,100 lbs ww (21% of the ABC) and the recreational ACL = 241,200 lbs ww (79% of the ABC) consistent with the sector allocations established in Amendment 30A.

Option 2a: Establish sector ACLs.

Option 2a. ACLs		
ABC	**commercial ACL**	**recreational ACL**
305,300	64,100	241,200

Option 2b: Establish sector ACLs and ACTs. Set commercial and recreational ACTs based on Amendment 30A methods. The commercial ACT = 49,400 lbs ww (commercial ACL reduced by 23%) and the recreational ACT = 188,100 lbs ww (recreational ACL reduced by 22%).

Option 2b. ACLs and ACTs		
ABC	**commercial ACL**	**recreational ACL**
305,300	64,100	241,200
	commercial ACT	**recreational ACT**
	49,400	188,100

Preferred Alternative 3: Modify the ACLs and ACTs for gray triggerfish using the Council's ACL/ACT control rule. Using these methods, the commercial buffer is 5% and the recreational buffer is 10%.

Option 3a: Establish sector ACLs. Based on an ABC = 305,300 lbs ww, set the commercial ACL = 60,900 lbs ww (sector allocation reduced by 5%) and the recreational ACL = 217,100 lbs ww (sector allocation reduced by 10%).

Option 3a. ACLs		
ABC	**commercial ACL**	**recreational ACL**
305,300	60,900	217,100

Preferred Option 3b: Establish sector ACLs and ACTs. Based on commercial and recreational allocations of the ABC = 305,300 lbs ww, the commercial ACL = 64,100 lbs ww and the recreational ACL = 241,200. The commercial ACT = 60,900 lbs ww (commercial ACL reduced by 5%) and the recreational ACT = 217,100 lbs ww (recreational ACL reduced by 10%).

Preferred Option 3b. ACLs and ACTs		
ABC	**commercial ACL**	**recreational ACL**
305,300	64,100	241,200
	commercial ACT	**recreational ACT**
	60,900	217,100

Note: The selection of Options 2a and 3a limit the selection of Action 2 alternatives. See the discussion titled "Action 1 alternatives relative to Action 2 alternatives" in Section 2.2.

Discussion: Alternative 1, no action, would maintain the gray triggerfish sector ACLs and ACTs as defined in Amendment 30A (GMFMC 2008). Selection of this alternative as preferred would be inconsistent with the Magnuson-Stevens Act and current National Standard 1 (NS 1) guidance, because the current ABC (695,000 lbs ww) exceeds the SSC's 2012 recommendation of ABC (305,300 lbs ww). The SSC modified their ABC recommendation after the reviewing the gray triggerfish update assessment (SEDAR 9 Update 2011c). As established in Amendment 30A, the SSC's recommendation for ABC is equal to the yield stream at the fishing mortality associated with the optimum yield proxy (F_{OY}). **Alternative 1** would promote overfishing and slow the recovery of the stock.

Alternative 2 would use the revised ABC to set the sector ACLs based on the Amendment 30A sector allocations. This allocation was based on landings for each sector from 2000 to 2004. The resulting gray triggerfish allocation was 21% commercial and 79% recreational. Applying the allocation to the ABC results in sector ACLs of 64,100 lbs ww and 241,200 lbs ww, respectively.

Option 2a would only set an ACL and not establish an ACT. The NS 1 guidance does not require the use of ACTs, which are considered to be a type of accountability measure. Instead, NS 1 guidance recommends that "for fisheries without in-season management control to prevent the ACL from being exceeded, accountability measures should utilize ACTs that are set below

ACLs so that catches do not exceed the ACL.'' Thus, this option by itself would not be consistent with the guidance unless an in-season accountability measure in **Action 2** were selected as preferred.

Amendment 30A established both ACLs and ACTs[4]. Given the allocation, the 2008 ACLs were set at a level that achieved an approximate 49% reduction in landings from prior years. The ACTs were set at a level that achieved a 60% reduction in harvest for the first year of the rebuilding plan. The Council selected this level of reduction because it was the estimated harvest reduction achieved by increasing the recreational minimum size limit to 14-inches fork length. The Council selected this measure because it was the favored management option of the recreational sector (GMFMC 2008). For the commercial sector, the quota was based on a similar 60% harvest reduction resulting in a 2008 quota (ACT) of 80,000 lbs ww for 2008. The resultant ACTs established through Amendment 30A provided a buffer of 23-24% for the commercial sector and 22% for the recreational sector (Table 2.1.1). Not that for the recreational sector, the ACTs were determined by reducing the yields at the fishing mortality rate associated with optimum yield (F_{OY})[3] by 22%.

Table 2.1.1. The ABC and commercial and recreational ACLs, ACTs. Percent reduction is calculated for each sector by comparing the ACLs to the ACTs. Note: Units are in 1,000 lbs ww.

Year	ABC	Recreational			Commercial		
		Yield at F_{OY}	ACT	Percent reduction	ACL	ACT	Percent reduction
2008	499	394	306	22	105	80	24
2009	580	458	356	22	122	93	24
2010	659	521	405	22	138	106	23

Note: The values listed as recreational ACL are based on 79% of the ABC which was based on F_{OY} yields for the stock in the Amendment 30A rebuilding plan. The actual ACLs listed in Amendment 30A were based on the 2008 recreational F_{OY} yield (ACL = 394,000 lbs ww) for 2008, the 2-year average of 2008 and 2009 recreational F_{OY} yields for 2009 (ACL = 426,000 lbs ww), and a three-year average of 2008-2010 recreational F_{OY} yields for 2010 and subsequent years (ACL = 457,000 lbs ww).

Option 2b would establish sector ACTs and set the buffer between the ACL and ACT similar to that in Amendment 30A. The 2008-2010 ACTs for the commercial sector were reduced 23-24% from commercial allocation of the yield at F_{OY} and the recreational sector was reduced by 22% (Table 2.1.1). **Option 2b** is more conservative than **Option 2a** because the ACTs provide a buffer to the ACL reducing the likelihood the ACL would be exceeded. If the ACL were exceeded, accountability measures would need to be implemented. The sector buffers applied to the ACLs when setting the ACTs are the same as those used in Amendment 30A.

[4] Because this amendment was developed before the new National standard 1 guidelines (74 FR 3178) were published, the Council used the term target total allowable catch to describe what are now referred to as ACTs.

The Council established an ACL/ACT control rule in the Generic ACL Amendment. The Council developed this control rule so it could objectively and efficiently assign catch limits and targets that take into account management uncertainty (GMFMC 2011a). The rule uses different levels of information about catch levels, stock management practices, and data quality to assign levels of reduction for either ACLs or ACTs.

Preferred Alternative 3 would apply the ACL/ACT control rule to gray triggerfish (see Appendix A and B). The outcome was a commercial buffer of 5% and the recreational buffer of 10%. **Option 3a** would only establish sector ACLs. For each sector, the respective buffer is applied to the sector's allocation of the ABC. As a result, the sum of the respective ACLs (commercial ACL of 60,900 lbs ww + recreational ACL of 217,100 lbs ww = 278,000 lbs ww) is less than the ABC of 305,300 lbs ww. **Option 3a** is more conservative than **Option 2a** because the sum of the ACLs is less than ABC, not equal to the ABC.

Preferred Option 3b would set the sector ACLs based on the commercial and recreational allocation from Amendment 30A. This is the same method used to set the ACLs as **Alternative 2**. **Preferred Option 3b** is like **Option 2b**, because it would set commercial and recreational ACTs. The difference between this option and **Option 2b** is that in **Preferred Option 3b**, the buffer between the ACL and ACT is based on the ACL/ACT control. Rather than having a buffer of 23% for the commercial sector and 22% for the recreational sector, the buffers would be 5% and 10%, respectively. Thus, **Preferred Option 3b** is less conservative than **Option 2b**. If an ACT is used for in-seasons accountability measures, **Preferred Option 3b** is functionally equivalent to **Option 3a**.

2.2 Action 2: Recreational Management Measures for In-season Closure Authority

Alternative 1: No action. Do not change current accountability measures which do not include in-season measures.

If recreational landings, as estimated by the Southeast Fisheries Science Center, exceed the applicable ACL, the Assistant Administrator for Fisheries will file a notification with the Office of the Federal Register reducing the length of the following recreational fishing season by the amount necessary to ensure recreational landings do not exceed the recreational target total allowable catch (equivalent an ACT) for the following fishing year.

Preferred Alternative 2: Add an in-season closure authority for gray triggerfish based on the ACT.

If the recreational gray triggerfish ACT is reached or projected to be reached within a fishing year, the Assistant Administrator for Fisheries shall file a notification with the Office of the Federal Register to prohibit the recreational sector from harvesting gray triggerfish. If the ACT has been caught, the closure will occur immediately; otherwise the closure will occur on the date the ACT is projected to be caught. If, after reviewing landings data, it is determined the ACT was not caught, the Assistant Administrator for Fisheries may file a notification with the Office of the Federal Register to reopen the sector so it can catch the remaining ACT

Note: This alternative cannot be applied to **Action 1**, **Options 2a** and **3a** because they do not establish ACTs.

Alternative 3: Add an in-season closure authority for gray triggerfish based on the ACL.

If the recreational gray triggerfish ACL is reached or projected to be reached within a fishing year, the Assistant Administrator for Fisheries shall file a notification with the Office of the Federal Register to prohibit the recreational sector from harvesting gray triggerfish. If the ACL has been caught, the closure will occur immediately; otherwise the closure will occur when the ACL is projected to be caught. If, after reviewing landings data, it is determined the ACL was not caught, the Assistant Administrator for Fisheries may file a notification with the Office of the Federal Register to reopen the sector so it can catch the remaining ACL.

Discussion: Alternative 1, no action, would not establish an in-season mechanism to prohibit the harvest of gray triggerfish should either the ACT or ACL be exceeded during the 2012 fishing year. The current post-season accountability measures would apply. The recreational accountability measures would be implemented if the accountability measure trigger (ACL) is exceeded. The measures would allow the Assistant Administrator for Fisheries to reduce the length of the fishing season in the following fishing year to return recreational landings to the ACT. Because this measure would allow the harvest of gray triggerfish to continue after the ACL is caught, this measure could allow overfishing to occur if the limit is exceeded for 2012.

Because this action could not reduce overfishing in the short term, this alternative would not meet the purpose of this action.

Preferred Alternative 2 and **Alternative 3** would allow the Assistant Administrator for Fisheries to prohibit the recreational harvest of gray triggerfish if a certain level of landings is reached or projected to be reached within the fishing year. This in-season measure would prevent overfishing from occurring. The two alternatives differ in that **Preferred Alternative 2** uses the ACT as the trigger to close the sector while **Alternative 3** uses the ACL. Because the ACT is lower than the ACL, **Preferred Alternative 2** would afford a greater protection from overfishing and is more precautionary than **Alternative 3**. If the closure is based on landings projections, the date the closure begins would be the date either the ACT (**Preferred Alternative 2**) or the ACL (**Alternative 3**) is projected to be harvested. Should the projections underestimate the harvest, both **Preferred Alternative 2** and **Alternative 3** give the Assistant Administrator for Fisheries the option to reopen the fishery so the remainder of either the ACT or ACL can be harvested. The decision of whether to reopen the sector to gray triggerfish harvest would most likely be based on the magnitude of the underestimated landings and the number of fishing days the additional catch could support.

Action 1 alternatives relative to Action 2 alternatives: The choice of an **Action 2** in-season accountability measure is limited by which **Action 1** alternative and option is selected as preferred. **Action 2**, **Alternatives 1 and 3** define the trigger for accountability measures as the ACL. **Action 2**, **Preferred Alternative 2** uses the ACT as the trigger. Because **Action 1**, **Options 2a** and **3a** set an ACL only, these options would be inconsistent with an in-season accountability measure that uses the ACT as the trigger. Therefore, the selection of **Options 2a** and **3a** as preferred would be inconsistent with the selection of **Action 2**, **Preferred Alternative 2** as preferred (Table 2.1.1). **Action 1**, **Alternative 1** and **Options 2b** and **3b** would not restrict the selection of **Action 2** alternatives because they set both an ACT and an ACL (Table 2.2.1). These measures would be consistent with any **Action 2** alternative.

Table 2.2.1. The application of Action 2 alternatives to Action 1 alternatives. 'Yes' means an Action 1 alternative would be consistent with an Action 2 alternative because an ACL or ACT is present to act as an accountability measure trigger. 'No' means an Action 1 alternative would be inconsistent with an Action 2 alternative because there is no ACT to act as an accountability measure trigger. Alternative/option in bold was selected as preferred.

Accountability measure trigger	Action 2		
	Alternative 1	Alternative 2	Alternative 3
Action 1	ACL	ACT	ACL
Alternative 1 (set ACL and ACT)	Yes	Yes	Yes
Alternative 2 Option 2a (Set ACL only)	Yes	No	Yes
Option 2b (set ACL and ACT)	Yes	Yes	Yes
Alternative 3 Option 2a (Set ACL only)	Yes	No	Yes
Option 2b (set ACL and ACT)	Yes	Yes	Yes

ACLs and ACTs and their use in quota management: A quota caps the harvest of different stocks and sectors for the fishing year. After the harvest cap is reached, the harvest of the stock

is prohibited for the remainder of the year. If either ACLs or ACTs are used as triggers for in-season accountability measures to close the sector, then whichever is used as the trigger effectively acts as a quota. For the commercial sector, Amendment 30A used the commercial ACT as an in-season accountability measure. As such, it is effectively a quota and appears in the codified text as such. If **Action 1**, **Options 2a** or **3a** are selected as preferred, then the ACL would become the quota.

Currently, the recreational sector does not have a quota and there are no in-season accountability measures. If either **Preferred Alternative 2** (ACT trigger) or **Alternative 3** (ACL trigger) of **Action 2** is approved, then either the ACT or the ACL would act as a recreational quota. The quota would be equal to the trigger for the in-season accountability measures.

3.0 AFFECTED ENVIRONMENT

The actions considered in this environmental assessment (EA) would affect fishing in the Gulf of Mexico (Gulf) region, both in state and federal waters (Figure 3.1). Descriptions of the physical, biological, economic, social, and administrative environments were completed in the Reef Fish Amendment 30A (GMFMC 2008). The information from this environmental impact statement (EIS) is being incorporated herein by reference and the reader is directed to the 2008 EIS to obtain the information http://www.gulfcouncil.org/docs/amendments/Amend-30A-Final%20208.pdf. New information is summarized below.

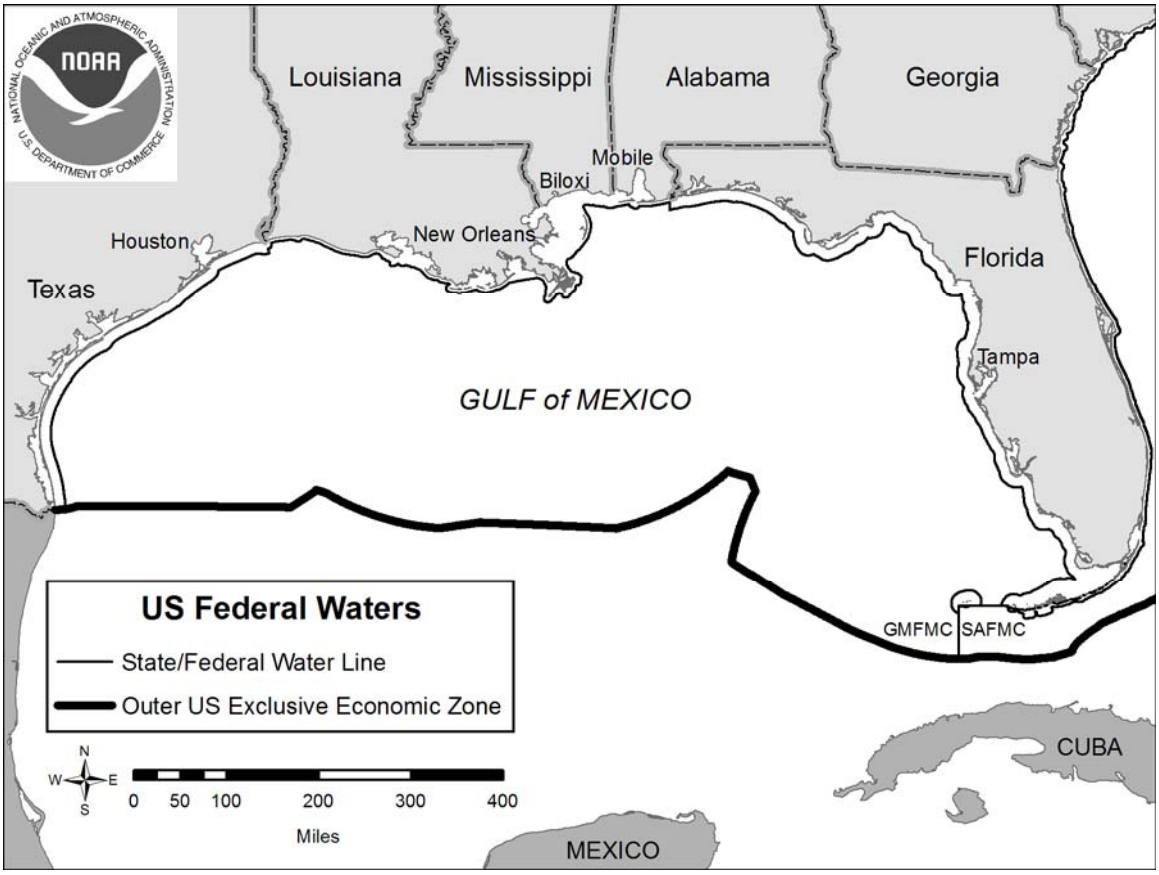

Figure 3.1. Gulf of Mexico federal and state waters.

3.1 Physical Environment

The physical environment for reef fish, including gray triggerfish, has been described in detail in the 2004 EIS for the Generic Essential Fish Habitat (EFH) Amendment (Generic EFH Amendment) (GMFMC 2004a). The ecologically critical areas in the Gulf, such as the Flower Gardens and the Tortugas Marine Sanctuaries are described in detail in Generic Amendment Number 3 (GMFMC 2005) and are incorporated herein by reference. The primary habitat for gray triggerfish is located in the eastern Gulf as described in Reef Fish Amendment 30A (GMFMC 2008). In addition, Amendment 30A describes environmental sites of special interest

relevant to gray triggerfish. There is one site listed in the National Register of Historic Places in the Gulf. This is the wreck of the *U.S.S. Hatteras*, located in federal waters off Texas.

3.2 Description of the Affected Biological Environment

3.2.1 Gray Triggerfish Life History and Biology

Gray Triggerfish Life History and Biology

There have been relatively few age and growth studies on gray triggerfish; however, they are estimated to live up to 11 years, with 16 being the maximum age recorded (Hood and Johnson 1997; Wilson et al. 1995; Ingram 2001; Panama City NMFS Database, accessed 2012). Gray triggerfish are estimated to grow rapidly within the first year of life (K = 0.39), then growth slows and is estimated at K = 0.152-0.183 year $^{-1}$ for both sexes combined (Hood and Johnson 1997; Ingram 2001; Wilson et al. 1995; SEDAR 9 2006c). The maximum length of gray triggerfish recorded was 27-28 inches FL (697-725 mm FL) by Hood and Johnson (1997) and samples processed from 2003-2010 at the Panama City Laboratory from both fishery-dependent and fishery-independent samples in the Gulf of Mexico. The maximum weight document from the Panama City NOAA's National Marine Fisheries Service (NMFS) Database, accessed in 2012 was 13.8 pounds (6.26 kg gutted weight). Male gray triggerfish reach significantly larger sizes than females (Hood and Johnson 1997; Ingram 2001; Simmons and Szedlmayer *in press* 2012).

Gray triggerfish spawn as early as May and as late as August, with peak spawning in June and July in the Gulf of Mexico and South Atlantic Bight (Wilson et al. 1995; Hood and Johnson 1997; Ingram 2001; Moore 2001; MacKichan and Szedlmayer 2007; Simmons and Szedlmayer *in press* 2012;). Both sexes were reproductively mature by age-2, 250 mm FL (~ 10 inches FL). At this size (~10 inches FL), some males were age-1 and all females were age-2 (Wilson et al. 1995; Ingram 2001). Gray triggerfish have a combination of atypical spawning behaviors compared to most marine fishes (i.e., pelagic broadcast spawners) managed by the Council. Male gray triggerfish have been observed establishing territories, building demersal nests, and forming harems during the spawning season (Simmons and Szedlmayer *in press* 2012). Simmons and Szedlmayer *in press* (2012) documented harems (one male and several females) 50% of the time at sites with active nests, and showed a 1:4.2 male to female sex ratio on the reef. At other sites without spawning (lack of active nests), the mean male to female sex ratios was 1:1.3. After fertilization of the eggs, female gray triggerfish were documented providing parental care of the eggs, while the male defended his territory and courted other female gray triggerfish on the reef (Simmons and Szedlmayer *in press* 2012).

After hatching from demersal nests gray triggerfish larvae go up into the plankton and large numbers of larval and juvenile gray triggerfish were found associated with *Sargassum* spp. mats in late summer and fall (Dooley 1972; Bortone et al. 1977; Wells and Rooker 2004). After 4 to 7 months in the pelagic zone, juvenile gray triggerfish recruit to benthic substrate (Simmons and Szedlmayer 2011). Adult gray triggerfish are closely associated with both natural and artificial reefs (Johnson and Saloman 1984; Frazer and Lindberg 1994; Vose and Nelson 1994; Kurz 1995; Ingram 2001; Lingo and Szedlmayer 2006). Diet studies on juvenile and adult gray

triggerfish after recruitment to benthic structure determined they consume a wide variety of invertebrates such as: barnacles, bivalves, polychaetes, crustaceans, echinoderms, and isopods (Vose and Nelson 1994; Kurz 1995).

Status of the Stock Gray Triggerfish

See Section 1.2 under the Introduction.

General Information on Reef Fish Species

The National Ocean Service of NOAA collaborated with NMFS and the Council to develop distributions of reef fish (and other species) in the Gulf (SEA 1998). National Ocean Service obtained fishery-independent data sets for the Gulf, including 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 thousand). National Ocean Service 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 3.2.1.1 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 the gray triggerfish that lay their eggs in depressions in the sandy bottom, and gray snapper whose 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 [<100 meters (< 54.7 fathoms)] 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, 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 FMP for Corals and Coral Reefs (GMFMC and SAFMC 1982).

Table 3.2.1.1. Summary of habitat utilization by life history stage for species in the Reef Fish FMP. 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 document.

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 Reef Fish FMP currently encompasses 31 species (Table 3.2.1.2). Eleven other species were removed from the FMP in 2012 by the Council in their Generic Annual Catch Limits/Accountability Measures Amendment for the Gulf of Mexico Fishery Management Council's Red Drum, Reef Fish, Shrimp, Coral and Coral Reefs Fishery Management Plans (Generic ACL Amendment) (GMFMC 2011a). Stock assessments and stock assessment reviews can be found on the Council (www.gulfcouncil.org) and SEDAR (www.sefsc.noaa.gov/sedar) websites and have been conducted for 13 species:

- red snapper (SEDAR 7 2005; SEDAR 7 Update 2009)
- vermilion snapper (Porch and Cass-Calay 2001; SEDAR 9 2006a; SEDAR 9 Update 2011b)
- 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)
- greater amberjack (Turner et al. 2000; SEDAR 9 2006c; SEDAR 9 Update 2010)
- hogfish (Ault et al. 2003; SEDAR 6 2004a)
- red grouper (NMFS 2002; SEDAR 12 2007; SEDAR 12 Update 2009)
- gag (Turner et al. 2001; SEDAR 10 2006; SEDAR 10 Update 2009)
- 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 fourth quarter report of the 2011 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:

- gag grouper
- greater amberjack
- gray triggerfish
- red snapper – most current stock assessment (SEDAR 7 Update 2009) = overfished, not overfishing

Not Overfished or Experiencing Overfishing:

- yellowtail snapper
- yellowedge grouper
- vermilion snapper
- black grouper
- red grouper
- mutton snapper– not reflected in the 2011 Status of the Stocks

Unknown:

- hogfish – may be experiencing growth overfishing
- goliath grouper – benchmarks do not reflect appropriate stock dynamics
- tilefish (golden) – insufficient data
- Stock assessments have not been conducted for the other species so their classification is unknown

3.2.2 Protected Species

There are 28 different species of marine mammals that may occur in the Gulf. 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 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 is included in final EIS to the Council's Generic EFH Amendment (GMFMC, 2004a) and the February 2005 and October 2009 ESA biological opinions and the on the reef fish fishery (NMFS 2005; NMFS 2009; NMFS 2011a). 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 Gulf reef fish fishery is classified in the MMPA 2012 List of Fisheries as a Category III fishery (76 FR 73912). 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 reef fish fishery. Incidental captures are relatively infrequent, but occur in all commercial and recreational hook-and-line and longline components of the reef fishery. 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.

Smalltooth sawfish are also affected by the Gulf reef fish fishery, but to a much lesser extent. Smalltooth sawfish primarily occur in the Gulf 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 annually, and none are expected to result in mortality (NMFS 2005). 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 Economic Environment

3.3.1 Commercial Sector

A description of the economic environment for the commercial sector of the reef fish fishery is contained in the Generic ACL Amendment (GMFMC 2011a) and is incorporated herein by reference. Select updated statistics relevant to the harvest of gray triggerfish are provided in the following sections.

3.3.1.1 Vessel Activity

Tables 3.3.1.1.1 and 3.3.1.1.2 contain summary vessel and trip counts, landings, and revenue information from vessels landing at least one pound of gray triggerfish from 2005 through 2010. Although available, data for 2010 were not included in computing the average annual performance estimates as to be used as an indication of normal sector performance. 2010 was not a typical year for commercial fishing due to the extensive closures and general decline in fishing that occurred as a result of the Deepwater Horizon MC252 oil spill. For information on the Deepwater Horizon MC252 oil spill and associated closures, see: http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm. Data for 2010 are, nevertheless, provided and readers are urged to use caution using the 2010 data. Final data for 2011 were not available at the time of this assessment.

The tables contain vessel and trip counts and landings totals from the NMFS Southeast Fishery Science Center (SEFSC) logbook (logbook) data. Dockside values were generated using landings information from logbook data and price information from the NMFS SEFSC Accumulated Landings System (ALS) data. It is noted that the gray triggerfish landings totals may differ from those derived from different sources because of potential differences in species identification or summation algorithms.

On average, during the period 2005-2009, 382 vessels per year landed gray triggerfish (Table 3.3.1.1.1). These vessels collectively averaged 2,181 trips per year with at least one pound of landed gray triggerfish and 3,958 trips without gray triggerfish (Table 3.3.1.1.1). The average annual total dockside revenue (2010 dollars) from gray triggerfish was approximately $107,000, approximately $13.87 million from other species co-harvested with gray triggerfish (on the same trip), and approximately $19.06 million from other species harvested on trips that did not harvest gray triggerfish (Table 3.3.1.1.2). Total average annual revenues were approximately $33.04 million, or approximately $87,000 per vessel (Table 3.3.1.1.2).

Table 3.3.1.1.1. Summary of vessel counts, trips, and landings (pounds gutted weight (lbs GW)) for vessels landing at least one pound of gray triggerfish, 2005-2010.

Year	Number of Vessels	Number of Trips that Caught Gray Triggerfish	Gray Triggerfish Landings (lbs GW)	'Other Species' Landings Jointly Caught with Gray Triggerfish (lbs GW)	Number of Trips that Only Landed Other Species	'Other Species' Landings on Trips without Gray Triggerfish (lbs GW)
2005	459	2,835	145,452	5,162,630	4,960	7,770,118
2006	416	2,707	94,852	4,941,214	4,741	7,595,981
2007	337	1,799	94,799	4,522,359	3,129	5,555,514
2008	344	1,789	87,779	4,764,285	3,289	6,778,858
2009	353	1,777	79,804	4,692,876	3,671	6,639,919
2005-09 Average	382	2,181	100,537	4,816,673	3,958	6,868,078
2010	276	1,427	49,578	3,507,983	2,115	4,148,134

Source: NMFS SEFSC Logbook data.

Table 3.3.1.1.2. Summary of vessel counts and revenue (2010 dollars) for vessels landing at least one pound of gray triggerfish, 2005-2010).

Year	Number of Vessels	Dockside Revenue from Gray Triggerfish (2010 $)	Dockside Revenue from 'Other Species' Jointly Caught with Gray Triggerfish (2010 $)	Dockside Revenue from 'Other Species' Caught on Trips without Gray Triggerfish (2010 $)	Total Dockside Revenue (2010 $)	Average Total Docksid e Revenue per Vessel (2010 $)
2005	459	$170,750	$14,563,106	$20,684,085	$35,417,941	$77,163
2006	416	$96,822	$14,676,352	$20,473,184	$35,246,358	$84,727
2007	337	$91,881	$13,705,028	$16,866,638	$30,663,547	$90,990
2008	344	$87,253	$13,908,560	$19,534,423	$33,530,236	$97,472
2009	353	$88,377	$12,495,739	$17,733,150	$30,317,266	$85,885
2005-09 Average	382	$107,017	$13,869,757	$19,058,296	$33,035,070	$87,247
2010	276	$98,836	$10,238,187	$12,282,365	$22,578,483	$81,806

Source: NMFS SEFSC Logbook and ALS data.

3.3.1.2 Business Activity

Estimates of the business activity (economic impacts) in the U.S. associated with the Gulf commercial gray triggerfish harvests were derived using the model developed for and applied in NMFS (2011b) and are provided in Table 3.3.1.2.1. Business activity for the commercial sector is characterized in the form of full-time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting. The estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors).

Table 3.3.1.2.1. Average annual business activity associated with the harvests of vessels that harvest gray triggerfish, 2005-2009.

Species	Average Dockside Revenue[1] (millions)	Total Jobs	Harvester Jobs	Output (Sales) Impacts (millions)	Income Impacts (millions)
Gray Triggerfish	$0.11	20	3	$1.41	$0.60
All Species[2]	$33.04	6,226	812	$440.52	$187.75

[1]2010 dollars.
[2]Includes dockside revenues and economic activity associated with the average annual harvests of all species harvested by vessels that harvested gray triggerfish.

As shown in Table 3.3.1.2.1, because the commercial sector does not harvest much gray triggerfish, little business activity is associated with the sale of this species. Vessels that harvest gray triggerfish also harvest other species. All revenues from all species on all trips contribute towards making these vessels economically viable and contribute to the economic activity associated with these vessels. The average annual total ex-vessel revenues from all species (including gray triggerfish) harvested during 2005-2009 by vessels that harvested gray triggerfish was approximately $33.04 million (2010 dollars). The economic activity associated with these revenues is estimated to support 6,226 FTE jobs (812 in the harvesting sector) and generate approximately $440.52 million in output (sales) impacts and approximately $187.75 million in income impacts.

3.3.1.3 Dealers

Federally permitted commercial vessels landing reef fish, including gray triggerfish, can only sell their catch to a dealer with a federal dealer permit. On February 13, 2012, 209 entities had a federal reef fish dealer permit. No income or minimum sales requirement exists to obtain a federal dealer permit. As a result, the total number of dealers can vary during a year and from year to year.

3.3.1.4 Imports

Information on U.S. imports of all marine species, either fresh or frozen, are available at: http://www.st.nmfs.noaa.gov/st1/trade/cumulative_data/TradeDataProduct.html. Information on the imports of gray triggerfish, or reef fish in general, is not available. However, imports of snapper and grouper species is available and may be informative to the relative magnitude of imports versus domestic harvest of reef fish in general as well as for gray triggerfish. In 2010, imports of all snapper and grouper species (fresh and frozen) were approximately 44.75 million pounds valued at approximately $112.98 million (2010 dollars). These amounts are contrasted with the domestic harvest of all snapper and grouper in the U.S. in 2010 of approximately 13.35 million pounds valued at approximately $37.38 million (data available at: http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html). The levels of domestic production and imports are not perfectly comparable for several reasons, including considerations of different product form, such as fresh versus frozen, and possible product mislabeling. The difference in the magnitude of imports relative to amount of domestic harvest, however, is indicative of the dominance of imports in the domestic market.

3.3.2 Recreational Sector

A description of the economic environment for the recreational sector of the reef fish fishery is contained in the Generic ACL Amendment (GMFMC 2011a) and is incorporated herein by reference. Select updated statistics relevant to fishing for gray triggerfish are provided in the following sections.

3.3.2.1 Angler Effort

Recreational effort derived from the Marine Recreational Fisheries Statistics Survey (MRFSS) database can be characterized in terms of the number of trips as follows:

1. Target effort - The estimated 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 second primary target for the trip. The species did not have to be caught.
2. Catch effort - The estimated number of individual angler trips, regardless of duration and target intent, on which the individual species or a species in the species group was caught. The fish did not have to be kept.
3. Total recreational effort - The estimated total number of individual angler trips taken, regardless of target intent or catch success for any species or species group.

Other measures of effort are possible, such as the number of harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), among other measures. Estimates of target and catch effort for gray triggerfish in the Gulf for the period 2005-2010 are provided in Table 3.3.2.1.1. As previously discussed with respect to the commercial sector, although available, data for 2010 were not included in computation of the average annual performance estimates for the recreational sector because 2010 was not a typical year for recreational fishing due to the extensive closures and general decline in fishing that occurred as a result of the Deepwater Horizon MC252 oil spill. For information on the

Deepwater MC252 oil spill and associated closures, see: http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm. Data for 2010 are, nevertheless, provided and readers are urged to use caution using the 2010 data. Final data for 2011 were not available at the time of this assessment.

As shown in Table 3.3.2.1.1, very few trips target gray triggerfish (on average, less than one tenth of one percent of total trips taken for all species), while approximately 15 times as many trips catch gray triggerfish per year. Gray triggerfish could obviously, therefore, be classified as a bycatch species harvested while targeting other species or on a general fishing trip on which no particular species is sought.

Table 3.3.2.1.1. Recreational target effort (individual angler trips), 2005-2010. [1]

Species	2005	2006	2007	2008	2009	2005-2009 Average	2010
Target Trips	12,314	4,804	16,675	18,089	9,243	12,203	24,306
Catch Trips	238,279	215,694	239,645	170,318	141,616	191,818	135,913
Total Trips, All Species	21,906,426	23,862,890	24,267,431	24,108,842	22,296,834	23,633,999	20,766,690

[1]These results do not include Texas or headboat effort.
Source: NMFS SERO using MRFSS data.

Target intent is not collected in the NMFS Headboat Survey, so estimation of target effort in the headboat sector is not possible with current available data. Table 3.3.2.1.2 contains estimates of the number of headboat angler days (normalized 12-hour days) for the Gulf states for 2005-2010. Mississippi is not included in the table because headboat data was not collected in Mississippi prior to 2010. In 2010, 498 headboat trips were recorded in Mississippi. As previously discussed for the estimates of target and catch trips, caution is advised in the use of 2010 statistics.

Table 3.3.2.1.2. Headboat angler days.

	Florida/Alabama	**Louisiana**	**Texas**	**Total**
2005	130,233	*	59,857	190,090
2006	124,049	5,005	70,789	199,843
2007	136,880	2,522	63,764	203,166
2008	130,176	2,945	41,188	174,309
2009	142,438	3,268	50,737	196,443
2005-09 Average	132,755	3,435	57,267	192,770
2010	111,018	217	47,154	158,389

*Unavailable. Headboat data not collected in Louisiana in 2005.
Source: NMFS Headboat Survey.

3.3.2.2 Permits

The for-hire sector is comprised of charter vessels and headboats (party boats). Although charter vessels tend to be smaller, on average, than headboats, the key distinction between the two types of operations is how the fee is determined. On a charter trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

A federal for-hire vessel permit has been required for reef fish since 1996 and the sector currently operates under a limited access system. On February 13, 2012, there were 1,376 valid (non-expired) or renewable Gulf reef fish for-hire permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Although the permit does not distinguish between headboats and charterboats, based on the number of vessels in on the NMFS Headboat Survey active survey list on January 24, 2012, an estimated 69 headboats operate in the Gulf.

Information on Gulf headboat and charter vessel operating characteristics, including average fees and net operating revenues, is included in GMFMC (2007) and is incorporated herein by reference. More recent information is not available.

No specific permitting requirements exist for recreational anglers to fish for or harvest gray triggerfish. 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 with available data to identify how many individual anglers fish for gray triggerfish and may be affected by this amendment.

3.3.2.3 Business Activity

Estimates of the business activity (economic impacts) associated with recreational angling for gray triggerfish were derived by using average impact coefficients for recreational angling for all species, as derived from an add-on survey to the MRFSS. This add-on survey collected economic expenditure information, and is described and utilized in NMFS (2011b). Estimates of these coefficients for target or catch behavior for individual species are not available. Estimates of the average expenditures by recreational anglers are also provided in NMFS (2011b) and are incorporated herein by reference.

Business activity for the recreational sector is characterized in the form of FTE jobs, output (sales) impacts (gross business sales), and value-added impacts (difference between the value of goods and the cost of materials or supplies). Job and output (sales) impacts are equivalent metrics across both the commercial and recreational sectors. Income impacts (commercial sector) and value-added impacts (recreational sector) are not equivalent, though similarity in the magnitude of multipliers generated and used for the two metrics may result in roughly equivalent values. Similar to income impacts, value-added impacts should not be added to output (sales) impacts because this would result in double counting.

Estimates of the average target effort (2005-2009) and associated business activity (2010 dollars) are provided in Table 3.3.2.3.1. The estimates of the business activity provided in these tables only apply at the state level. National-level estimates are not available. Addition of the state-level estimates to produce either a regional or national total will underestimate the actual total amount of business activity because summing the state estimates will not capture business activity that leaks outside the individual states. A state estimate only reflects activities that occur within that state and not related activity that occurs in another state. For example, if a good is produced in Alabama but sold in Florida, the measure of business activity in Florida associated with the sale of the product in Florida does not include the production process that occurred in Alabama. Assessment of business activity at the national (or regional) level would capture activity in both states and include all activity except that which leaks into other nations.

Table 3.3.2.3.1. Summary of gray triggerfish target trips (2005-2009 average) and associated business activity (2010 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	4,141	2,884	448	0	*
Output Impact	$244,010	$132,612	$37,001	$0	*
Value Added Impact	$133,590	$78,856	$18,198	$0	*
Jobs	3	1	0	0	*
	Charter Mode				
Target Trips	2,405	2,347	0	0	*
Output Impact	$1,268,177	$746,397	$0	$0	*
Value Added Impact	$698,089	$442,537	$0	$0	*
Jobs	17	8	0	0	*
	All Modes				
Target Trips	6,546	5,231	448	0	*
Output Impact	$1,512,187	$879,009	$37,001	$0	*
Value Added Impact	$831,679	$521,393	$18,198	$0	*
Jobs	20	9	0	0	*

*Because target information for Texas is unavailable, associated business activity cannot be calculated.

Source: effort data from the MRFSS, economic impact results calculated by NMFS SERO using the model developed for NMFS (2011b).

Estimates of the business activity (economic impacts) associated with headboat effort are not available. The headboat sector in the Southeast is not covered by the MRFSS, so estimation of the appropriate business activity coefficients for the headboat sector was not conducted in the development of NMFS (2011b). Although appropriate business activity coefficients are available for the charterboat sector, potential differences in certain factors in the two sectors, such as the for-hire fee, rate of tourist versus local participation rates, and expenditure patterns, may result in significant differences in the business activity associated with the head boat sector relative to the charterboat sector.

3.4 Description of the Social Environment

A description of the social environment is included in the Generic ACL Amendment (GMFMC 2011a) and Reef Fish Amendment 30A (GMFMC 2008). These documents are incorporated herein by reference. The description focuses on available geographic and demographic data to identify communities with a strong relationship to species in the reef fish complex (GMFMC 2011a) and gray triggerfish more specifically (GMFMC 2008). A strong relationship is defined as having significant landings and revenue for managed species. Thus, impacts from regulatory change are more likely to occur in places with greater landings of these species. For gray triggerfish, Panama City and Destin, Florida have the greatest commercial landings of all Gulf communities, followed by Golden Meadow, Louisiana with substantially less landings. For the recreational sector, there are many communities spread throughout the Gulf, from Florida to Texas that serve as a launching point for trips that target reef fish species including gray triggerfish, but the majority of the landings are in Alabama and West Florida.

It is important to note that gray triggerfish is part of a multi-species fishing strategy rather than a directed fishery. Therefore, it is difficult to isolate the impacts on communities from the actions in this amendment. Furthermore, some commercial fishermen fish throughout the Gulf and unload in various locations, making it difficult to identify communities that would be most affected by these regulations. Fish processors who buy gray triggerfish take in multiple reef fish species so they are not totally dependent on gray triggerfish landings. Depending on what percentage gray triggerfish constitutes of their total landings, the processors may or may not be heavily impacted by any reduction in landings of gray triggerfish.

3.5 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).

The implementation of the proposed actions of this amendment would not discriminate against any group based on their race, ethnicity, or national origin because the proposed actions would

be applied to all participants in the fishery. Thus, the actions of this amendment are not expected to result in adverse or disproportionate environmental or public health impacts to EJ populations. Nevertheless, it is not possible to determine the social impacts from decreasing the annual catch limit and/or annual catch target and implementing in-season accountability measures on populations with EJ concerns (e.g., minorities and the poor), because data are not available concerning the use or reliance on the gray triggerfish stock by EJ populations. Gray triggerfish is caught offshore, requiring a fishing vessel for its harvest. Thus, populations in poverty are not likely to be impacted by the proposed measures. The use of or reliance on gray triggerfish by ethnic or racial minorities, or by Native American tribes is unknown, although there is no known subsistence fishing for gray triggerfish.

3.6 Administrative Environment

3.6.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 *et seq.*), originally enacted in 1976 as the Fishery Conservation and Management Act. Responsibility for federal fishery management decision-making is divided with the Secretary of Commerce and eight regional fishery management councils that represent the expertise and interests of constituent states. State representation at the council level ensures 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. The administrative environment is described in GMFMC 2008 EIS and incorporated herein by reference.

3.6.2 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. In the Gulf of Mexico, the state governments of Texas, Louisiana, Mississippi, Alabama, and Florida manage their respective state fisheries. Each of the five Gulf 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).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Action 1: Modifications to Gray Triggerfish Annual Catch Limits and Optional Annual Catch Targets for 2012 Fishing Season

4.1.1 Direct and Indirect Effects on Physical Environment

GMFMC (2004a) and Sections 3.1 and 3.2 describe the physical environment and habitat use by gray triggerfish and are hereby incorporated by reference. Because the reef fish fishery targets bottom dwelling species, most effects of reef fish fishing are interactions with fishing gear and the bottom. In the commercial sector, vertical-line gear is used to harvest most gray triggerfish and nearly all recreational gray triggerfish (GMFMC 2008). Bottom longline gear has accounted for less than 5% of trips that land at least 1 pound of gray triggerfish. Some landings did come from traps; however, this gear type became illegal for harvest of reef fish after February 7, 2007. Specific descriptions of how fishing gear and fishing interacts with the physical environment are described in GMFMC (2004a, 2008) and are incorporated by reference. The effects of these gears on the physical environment are considered limited compared to other gear types used in other fisheries such as trawls.

The relative benefits of the different alternatives to the physical environment in **Action 1** are dependent on how much they reduce fishing effort. That means the greater the reductions in effort, the greater the benefit to the physical environment. For the following analysis, landed pounds are used as a proxy for effort where more pounds landed indicate greater fishing effort. However, not being able to catch gray triggerfish would unlikely stop someone from going fishing because gray triggerfish are generally not targeted. This is because they would target more popular species like red snapper, gag, or red grouper. Therefore, restricting gray triggerfish landings would likely have a limited effect on overall reef fish effort.

The effects of **Action 1** alternatives on the physical environment are dependent on the selection of recreational in-season accountability alternatives in **Action 2**. The **Action 2** alternatives limit the amount of that fish can be landed before the in-season recreational accountability measure closes the sector. More fish can be landed if the annual catch limit (ACL) (**Action 2, Alternatives 1** and **3**) is used rather than the annual catch target (ACT) (**Action 2, Preferred Alternative 2**). **Action 2** does not apply to the commercial sector; that sector will close when it reaches its ACT or ACL, depending on which **Action 1** alternative is selected.

To contrast the **Action 1** alternatives relative to the constraints on landings by **Action 2**, maximum potential landings were used as a proxy for fishing effort under different combinations of the different action alternatives. Landings were used as a proxy for fishing effort because generally as fishing effort goes up, so do the landings. Table 4.1.1.1 ranks the amount of fish that can be landed under the different combinations of **Action 1** and **Action 2** alternatives from 1 to 8. This rank is equivalent to how beneficial an alternative is to the physical environment. Therefore, **Action 1**, **Option 2b** is the most beneficial to the physical environment when combined with **Action 2**, **Preferred Alternative 2** (237,500 lbs ww; rank #1). **Action 1**, **Alternative 1** is the most adverse alternative regardless of which **Action 2** alternative is selected. This alternative would allow the highest landings (511,000 and 563,000 lbs ww; ranks #7 and 8). **Action 1**, **Preferred Option 3a** combined with **Action 2**, **Preferred Alternative 2** is tied for the

second lowest landings limit within the different scenarios (278,000 lbs ww; rank #2.5) indicating this combination is one of the more beneficial alternative combinations to the physical environment.

Table 4.1.1.1. Alternatives/Options comparison Matrix. Maximum gray trigger fish allowable harvest levels (1000s of lbs ww) for the recreational, commercial, and combined sectors for different combinations of Action 1 and Action 2 alternatives. Combined sector allowable harvest levels are ranked from lowest landings (1) to highest landings (8). The Action 1 and Action 2 preferred alternatives and the landings of the combination of the preferred alternatives are in bold.

Action 2	Action 1	Recreational	Commercial	Combined	Rank
Alternative 2 (in-season AM) Based on ACT	Alternative 1	405	106	511	7
	Alternative 2, Option 2b	188.1	49.4	237.5	1
	Alternative 3, Option 3b	**217.1**	**60.9**	**278**	**2.5**
Alternative 1 (post-season AM) and Alternative 3 (in-season AM) Based on ACL	Alternative 1	457	106	563	8
	Alternative 2, Option 2a	241.2	64.1	305.3	6
	Alternative 2, Option 2b	241.2	49.4	290.6	4
	Alternative 3, Option 3a	217.1	60.9	278	2.5
	Alternative 3, Option 3b	241.2	60.9	302.1	5

4.1.2 Direct and Indirect Effects on Biological/Ecological Environment

The gray triggerfish life history and habitat requirements are summarized in Section 3.2 and GMFMC (2004a, 2008) and incorporated here by reference. Fishery management actions that affect the biological/ecological environment mostly relate to the impacts of fishing on a species' population size, life history, and the role of the species within its habitat. Effects include changes in growth rates, size distribution, sex ratio, and size and age of sexual maturity. Removal of fish from the population through fishing reduces the overall population size and can change the relationships among species in marine ecosystems. The effects of fishing for gray triggerfish stock are summarized in GMFMC (2008) and are incorporated here by reference.

For many reef fish species, reductions in the allowable harvest often result in season closures. Season closures can still have a negative effect on the stock because fishing for other species continues and incidentally caught gray triggerfish would need to be discarded, potentially as dead discards. However, unlike many other reef fish species, dead discard removals from the gray triggerfish stock are limited due to the hardiness of this species. Because of this, dead discards were not used in estimating the stock condition (SEDAR 9 2006b, SEDAR 9 Update 2011c).

Similar to the comparisons of the effects of the alternatives on the physical environment (Section 4.1.1), allowable harvests were used as a proxy to compare the biological/ecological effects of the alternatives. Allowable harvests are negatively related to the health of the stock because

greater allowable harvests are more likely to lead to overfishing and slow the recovery of the stock. Table 4.1.1.1 ranks the amount of fish that can be landed from 1 to 8 by using different combinations of **Action 1** and **Action 2** alternatives. This rank is equivalent to how beneficial an alternative is to the biological/ecological environment with a ranking of 1 being most beneficial.

Action 1, **Alternative 1** (status quo) is the least conservative of the gray triggerfish ACLs and ACTs, and therefore, most adverse to the biological/ecological environment. Depending on which alternative is selected in Action 2, the total allowable harvest in **Alternative 1** would range from 511,000-563,000 lbs ww; rank #7-8 (Table 4.1.1.1). This is greater than the acceptable biological catch (ABC) recommended by the SSC and would delay any stock recovery. **Action 1**, **Option 2b** is the most beneficial to the biological/physical environment when combined with **Action 2**, **Preferred Alternative 2** (237,500 lbs ww; rank #1). **Action 1**, **Preferred Option 3b** combined with **Action 2**, **Preferred Alternative 2** is tied for the second lowest allowable harvest within the different scenarios (278,000 lbs ww; rank #2.5) indicating this combination is one of the more beneficial sets of alternatives to the biological environment.

4.1.3 Direct and Indirect Effects on Economic Environment

4.1.3.1 Effects on the Commercial Sector

The potential economic effects of the alternatives on the commercial sector considered in this action were evaluated by measuring the expected changes in annual ex-vessel revenues from commercial gray triggerfish harvests. Total ex-vessel values were calculated by multiplying the expected change in commercial quotas by an average ex-vessel price. The estimated average Gulf-wide ex-vessel price used was $1.05 (2010 dollars) per pound of gray triggerfish (gutted weight), as derived from the National Marine Fisheries Statistics website data[5] and adjusted using a conversion factor of 1.04 to convert whole weights into gutted weights (SEDAR 9 2006b). Table 4.1.3.1 contains estimates of the expected changes (relative to **Alternative 1**) in commercial ACLs and ex-vessel revenues for each management alternative considered.

[5] http://www.st.nmfs.noaa.gov/st1/commercial/index.html (accessed February 21, 2012)

Table 4.1.3.1.1: Changes (relative to Alternative 1) in gray triggerfish commercial quota and ex-vessel value. Quota is in pounds gutted weight (gw).

	Year	Quota lbs (gw)	Ex Vessel Revenue ($2010)
Alternative 2 Option 2a	2012	-40,288	-$42,237
	2013	-40,288	-$42,237
Alternative 2 Option 2b	2012	-54,423	-$57,056
	2013	-54,423	-$57,056
Alternative 3 Option 3a	2012	-43,365	-$45,463
	2013	-43,365	-$45,463
Preferred Alternative 3 Option 3b	2012	-43,365	-$45,463
	2013	-43,365	-$45,463

Source: Stephen Holiman, NMFS-SERO (2012)

Alternative 1 would maintain the current commercial gray triggerfish ACL and ACT. Therefore, **Alternative 1** would not be expected to result in any change in total ex-vessel revenue received from gray triggerfish harvests.

Alternative 2, **Option 2a** would not set a commercial ACT and would decrease the commercial gray triggerfish ACL (equal to the commercial quota) by 40,288 pounds (gutted weight) annually for 2012 and 2013, relative to Alternative 1. The expected potential economic effects, measured by annual losses in ex-vessel revenues[6], are estimated to be $42,237 for both 2012 and 2013. Compared to **Alternative 1**, **Option 2b** would be expected to decrease the commercial gray triggerfish ACT (equivalent to the quota) by 54,423 pounds (gutted weight) annually for 2012 and 2013. The associated economic effects are an estimated reduction in ex-vessel revenue of $57,056 per year.

Alternative 3, **Option 3a** would not set a commercial ACT and would decrease the commercial gray triggerfish ACL (equal to the commercial quota) by 43,365 pounds (gutted weight) annually for 2012 and 2013. The expected change in ex-vessel revenue from **Option 3a** is an annual reduction in ex-vessel revenue of $45,463 each year. **Preferred Option 3b** would decrease the commercial ACT (equivalent to the quota) by 43,365 pounds (gutted weight) annually for 2012 and 2013. Because the resultant allowable harvests are equal, the expected economic effects of **Preferred Option 3b** are equal to those of **Option 3a**. However, **Preferred Option 3b,** which would establish a buffer between the ACL and commercial quota, would be expected to reduce the likelihood of triggering accountability measures and, thus, the likelihood of the adverse economic effects that would be associated with the implementation of these corrective measures.

[6] All ex-vessel values are reported in 2010 dollars

The estimated changes in ex-vessel revenues are sufficient to provide an ordinal ranking of the economic effects expected to result from the management alternatives considered. However, these changes are likely to approximate maximum adverse economic effects because fishermen prosecute gray triggerfish as a small part of a multi-species reef fish fishery and gray triggerfish are mainly a bycatch species. It is plausible to assume that, to offset a decrease in the commercial gray triggerfish quota, fishermen would increase their harvest of other reef fish, thus mitigating potential adverse economic effects.

4.1.3.2 Effects on the Recreational Sector

The economic effects expected to result from decreases in the recreational ACLs and/or ACTs considered in this action are measured by changes in consumer surplus to anglers and in producer surplus to for-hire operators. A detailed discussion of the use of consumer and producer surpluses in the measurement of economic effects expected to result from changes in fishery management measures is provided in Reef Fish Amendment 32 (GMFMC, 2011b) and incorporated herein by reference.

Table 4.1.3.2.1 contains estimates of the expected changes (relative to **Alternative 1**) in consumer and producer surpluses for each management alternative considered. The estimated changes in consumer surplus and producer surplus were computed based on an average consumer surplus of $11.46 per fish harvested and an average producer surplus of $145.63 per target charter angler trip (David Carter, SEFSC-NMFS personal communication, Febuary16, 2012). Projections of the expected change in producer surplus for headboats were not estimated because estimates of gray triggerfish target effort for headboat anglers were not available and it is assumed that headboat anglers do not specifically target gray triggerfish.

Alternative 1 would maintain the current recreational gray triggerfish ACL and ACT. Therefore, **Alternative 1** would not be expected to result in changes in consumer or producer surplus. However, **Alternative 1** is expected to result in long-term adverse economic effects due to the restrictive corrective measures that would be required to end overfishing in the future.

Table 4.1.3.2.1: Changes in recreational quota, consumer and producer surpluses relative to Alternative 1. Dollar values are in $2010.

	Year	Quota lbs (ww)	Consumer Surplus	Producer Surplus	Total
Alternative 2 Option 2a	2012	-163,800	-$924,075	-$247,105	-$1,087,875
	2013	-163,800	-$924,075	-$247,105	-$1,087,875
Alternative 2 Option 2b	2012	-216,900	-$1,223,637	-$327,210	-$1,440,537
	2013	-216,900	-$1,223,637	-$327,210	-$1,440,537
Alternative 3 Option 2a	2012	-187,900	-$1,060,034	-$283,462	-$1,247,934
	2013	-187,900	-$1,060,034	-$283,462	-$1,247,934
Preferred Alternative 3 Option 2b	2012	-187,900	-$1,060,034	-$283,462	-$1,247,934
	2013	-187,900	-$1,060,034	-$283,462	-$1,247,934

Source: Stephen Holiman, NMFS-SERO (2012)

Alternative 2, **Option 2a** would not set a recreational ACT but would decrease the recreational gray triggerfish ACL (equivalent to the recreational quota) by 163,800 pounds (whole weight) annually for 2012 and 2013. The expected potential economic effects, measured by annual losses in consumer and producer surpluses, are estimated to be approximately $0.924 million and $0.247 million, respectively, in 2012 and 2103 relative to **Alternative 1**. **Option 2b** would decrease the recreational gray triggerfish ACT (equivalent to the quota) by 216,900 pounds (whole weight) annually for 2012 and 2013. The annual reductions in consumer and producer surpluses expected to result from **Option 2b** are estimated to be approximately $1.224 million and 0.327 million, respectively, in 2012 and 2013 relative to **Alternative 1**.

Alternative 3, **Option 3a** would not set a recreational ACT but would decrease the recreational gray triggerfish ACL (equal to the recreational quota) by 187,000 pounds (whole weight) annually for 2012 and 2013. **Option 3a** would be expected to result in an annual reduction in consumer and producer surplus of approximately $1.060 million and $0.284 million, respectively, in 2012 and 2013 relative to **Alternative 1**. **Preferred Option 3b** would decrease the recreational ACT (equivalent to the quota) by 187,000 pounds (whole weight) annually for 2012 and 2013. **Preferred Option 3b** would be expected to result in an annual reduction in consumer and producer surplus of approximately $1.060 million and $0.284 million, respectively, in 2012 and 2013 relative to **Alternative 1**. **Preferred Option 3b** and **Option 3a** are expected to result in equal losses in consumer and producer surplus. However, **Option 3b,** which would establish a buffer between the ACL and the ACT, would be expected to reduce the likelihood of triggering accountability measures and, thus, the likelihood of the adverse economic effects that would be associated with the implementation of these corrective measures.

The estimated reductions in consumer and producer surpluses are sufficient for an ordinal ranking of the economic effects expected to result from the management measures considered. However, these reductions are likely to approximate maximum adverse economic effects on the recreational sector because anglers prosecute gray triggerfish as a small part of a multi-species reef fish fishery and gray triggerfish are mainly a bycatch species. It is plausible to assume that, to offset a decrease in the recreational gray triggerfish quota, anglers would increase their harvest of other reef fish, thus mitigating potential adverse economic effects.

4.1.3.3 Economic Activity Associated with Estimated Economic Effects

This section provides estimates of the economic activity associated with the potential changes in commercial ex-vessel revenues and recreational angler trips that may occur as a result of the proposed management measures. This economic activity is characterized in the form of full time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), output (sales) impacts (gross business sales), and value added impacts (difference between the value of goods and the cost of materials or supplies). Income and value-added impacts are not equivalent, though similarity in the magnitude of multipliers may result in roughly equivalent values. These estimates are provided to inform the decision process of the potential consequences of the proposed management actions. Methods used and assumptions made to estimate changes in economic activity reported in this section are detailed in the February 2010 red snapper regulatory amendment and are incorporated herein by reference (GMFMC, 2010). Table 4.1.3.3.1 provides estimates of the potential change in economic activity associated with the estimated changes in commercial ex-vessel revenues relative to **Alternative 1**.

Based on an estimated annual decrease in ex-vessel revenues of $45,463 (2010 dollars) relative to **Alternative 1**, **Preferred Option 3b** would be expected to result in annual decreases in jobs, income impacts and output impacts (sales) estimated at 8 FTE jobs, approximately $255,000 and approximately $599,000, respectively. **Option 3a** would be expected to result in similar changes in economic activity because it would decrease the commercial quota by the same amount. **Option 2b**, which is expected to result in ex-vessel revenue losses estimated at $57,056 per year, is expected to result in greater decreases in economic activity. Under **Option 2b**, annual reductions in jobs, income impacts and output impacts (sales) are estimated at 11 FTE jobs, approximately $320,200 and approximately $751,200, respectively. Annual decreases in jobs, income impacts and output impacts (sales) expected to result from the implementation of **Option 2a** are estimated at 8 FTE jobs, approximately $237,000 and $556,100, respectively.

Table 4.1.3.3.1 Potential annual reductions in economic activity associated with the estimated annual decreases in the commercial sector ex-vessel revenues. All values are in 2010 dollars.

Industry Sector	Alternative 2 Option 2a	Alternative 2 Option 2b	Preferred Alternative 3 Option 3b
Ex-vessel revenues	$42,237	$57,056	$45,463
Harvesters			
Employment impacts (FTE jobs)	1.0	1.4	1.1
Income Impacts	$34,831	$47,051	$37,491
Output Impacts	$90,528	$122,290	$97,443
Primary dealers/processors			
Employment impacts (FTE jobs)	0.6	0.8	0.7
Income Impacts	$29,287	$39,562	$31,524
Output Impacts	$91,131	$123,105	$98,092
Secondary wholesalers/distributors			
Employment impacts (FTE jobs)	0.5	0.7	0.6
Income Impacts	$28,661	$38,717	$30,850
Output Impacts	$67,201	$90,779	$72,334
Grocers			
Employment impacts (FTE jobs)	0.3	0.4	0.3
Income Impacts	$11,926	$16,111	$12,837
Output Impacts	$25,945	$35,048	$27,927
Restaurants			
Employment impacts (FTE jobs)	5	7	6
Income Impacts	$132,305	$178,725	$142,411
Output Impacts	$281,308	$380,006	$302,794
Total			
Employment impacts (FTE jobs)	8	11	8
Income Impacts	237,010	320,166	255,113
Output Impacts	556,114	751,228	598,589

Table 4.1.3.3.2 provides estimates of the potential change in economic activity associated with the estimated annual reductions in recreational trips for **Preferred Option 3b** and **Options 2a** and **2b** relative to **Alternative 1**. **Preferred Option 3b** would be expected to result in annual decreases in jobs, output impacts and value added impacts estimated at 11 FTE jobs, approximately $1.07 million in output impacts, and approximately $0.61 million in value added impacts. **Option 3a** would be expected to result in similar changes in economic activity because it would decrease the recreational quota by the same amount.

Annual decreases in jobs, output impacts and value added impacts expected to result from the implementation of **Option 2a** are estimated at 10 FTE jobs, approximately $0.94 million and $0.53 million, respectively. Annual decreases in jobs, output impacts and value added impacts expected to result from the implementation of **Option 2b** are estimated at 14 FTE jobs, approximately $1.24 million and $0.70 million, respectively.

Table 4.1.3.3.2 Potential annual reductions in economic activity associated with the estimated annual decreases in recreational trips. All dollar values are in 2010 dollars.

	Alternative 2 Option 2a	Alternative 2 Option 2b	Preferred Alternative 3 Option 2b
Private/Rental Sector			
Trips	5,240	6,938	6,011
Output Impact	$318,179	$421,284	$364,995
Value Added Impact	$174,852	$231,512	$200,579
Jobs	3	4	3
Charter Sector			
Trips	1,697	2,247	1,946
Output Impact	$616,937	$816,887	$707,460
Value Added Impact	$356,436	$471,957	$408,735
Jobs	7	10	8
Total			
Output Impact	$935,116	$1,238,171	$1,072,455
Value Added Impact	$531,288	$703,469	$609,314
Jobs	10	14	11

4.1.4 Direct and Indirect Effects on Social Environment

This action will impact the human environment relative to how much the amount of fish allowed to be caught is lowered from the current amount of fish allowed to be caught (**Alternative 1**, no action). No impacts are expected from **Alternative 1** as no change would be made to the amount of fish either sector is allowed to catch. **Alternatives 2** and **3** propose reductions to the amount of fish allowed to be caught from the status quo using different approaches to configuring the ACL and ACT. The method used to determine the amount of fish available does not incur social impacts. Rather, short-term negative impacts would arise from, and be in proportion to: 1) the decrease in the ACL and ACT as fishing behavior and resource usage is restricted from current levels of fishing activity, and 2) the triggering of accountability measures which would reduce subsequent seasons' ACLs. For the commercial sector, which has a quota, triggering an in-season closure would result in impacts as well. On the other hand, long-term benefits are expected from ending overfishing and rebuilding the stock, when the ACL is increased in the future.

A quota is the amount of catch allowed before a fishing season is closed within the fishing year. At present, the commercial sector has a quota; the recreational sector does not. For both sectors, exceeding the ACL triggers post-season accountability measures where the ACL is reduced for the following season. Although the recreational sector currently has an ACT, there is no mechanism for an in-season closure if the ACT is reached; the ACT is non-functioning relative

to the accountability measures. Thus, for alternatives setting an ACT, only the commercial sector is subject to an in-season closure when the ACT is met.

Alternatives 2a and **3a** set an ACL only and **Alternatives 2b** and **3b** set both an ACL and ACT. For the commercial sector, setting an ACT (**Options b**) allows for an in-season closure when the ACT is projected to be met. If the in-season closure keeps the sector from exceeding the ACL, positive impacts result for the following season by not reducing the ACL. For the recreational sector, the setting of an ACT alone (**Options b**) does not have any regulatory power, although this is addressed in **Action 2**.

Alternative 3a represents the greatest reduction from the status quo **Alternative 1** and is expected to incur the greatest impacts to both sectors among the proposed alternatives. **Alternatives 2a**, **2b** and **Preferred Alternative 3b** each propose the same sector ACLs. For the recreational sector, then, these alternatives would incur equivalent impacts as each decrease the ACL to 53% of status quo. Because the commercial sector uses the ACT as a quota to trigger an in-season closure, these alternatives would incur differentiated impacts to the commercial sector. The ACT of **Alternative 2b** proposes a greater buffer than the ACT of **Preferred Alternative 3b**, thus restricting fishing more, which will likely incur greater impacts. However, the commercial sector has not exceeded the ACT since its implementation in 2008 suggesting that a stricter ACT (**Alternative 2b**) may not be necessary. On the other hand, the proposed quota of all the alternatives is less than current commercial landings, requiring fishing behavior to be curtailed. The ACT is thus expected to help prevent the commercial sector from exceeding its new ACL and thus avoid post-season accountability measures.

4.1.5 Direct and Indirect Effects on Administrative Environment

None of the alternatives in **Action 1** should result in any substantial direct or indirect effects to the administrative environment, because the type of regulations needed to manage the reef fish fishery would remain unchanged regardless of the choice of harvest levels. NMFS' Office for Law Enforcement, in cooperation with state agencies, would continue to monitor regulatory compliance with existing regulations and NMFS would continue to monitor both recreational and commercial landings to determine if landings are meeting or exceeding specified ACTs and ACLs. The enforcement and administrative environments were recently enhanced with the individual fishing quota (IFQ) program and vessel monitoring (VMS) programs in the commercial sector. As a part of this program, the commercial sector is required to report when and where they landing their fish if IFQ species are aboard. This makes it easier for enforcement agents to meet vessels when they come to the dock. The VMS requirements have reduced the burden of monitoring compliance with commercial fishing regulations, particularly for closed areas.

4.2 Action 2: Recreational Management Measures for In-season Closure Authority

4.2.1 Direct and Indirect Effects on Physical Environment

Action 2 would have no direct and little indirect effects on the physical environment. The effects of fishing on the physical environment are described in Section 4.1.1. Under **Action 2**, **Preferred Alternative 2** and **Alternative 3** would further constrain fishing effort compared to

Alternative 1, and so would reduce any adverse effects to the physical environment. Because the harvest is constrained more through **Preferred Alternative 2** than **Alternative 3**, this alternative would limit effort the most and thus provide the greatest protection to the physical environment. Regardless of which alternative is selected, the effects on the physical environment would likely be minimal. Gray triggerfish, although targeted by fishermen, are not the sole species sought on a trip, so prohibiting fishing for gray triggerfish after either the ACT or ACL is caught would not likely reduce overall reef fish fishing effort.

4.2.2 Direct and Indirect Effects on Biological/Ecological Environment

Alternative 1 would only provide protection from overfishing through the recreational post-season accountability measures. These post-season accountability measures adjust the season length in the subsequent year if the accountability measure trigger (ACL) is exceeded in 2012. Although this provides positive benefits to the biological/environmental environment by creating a process for taking corrective action to restore catches to their appropriate limits, it does allow ACLs within 2012 to be exceeded before taking action. This could have short-term negative effects by not reducing overfishing and postponing efforts to rebuild the stock.

Compared to the no action alternative, **Preferred Alternative 2** and **Alternative 3** would allow the closure of the recreational sector to the harvest of gray triggerfish should the ACT or ACL be caught in 2012. These measures are designed to prevent in-season overages from occurring and reduce overfishing. For this reason, these measures provide a greater benefit to the gray triggerfish biological/ecological environment than **Alternative 1**. **Preferred Alternative 2**, because it constrains the harvest of gray triggerfish more than **Alternative 3**, provides a greatest benefit to this stock.

4.2.3 Direct and Indirect Effects on Economic Environment

Alternative 1 would continue to remedy potential harvest overages after the fact by implementing post-season AMs. **Alternative 1** would be expected to result in lower short-term adverse economic effects compared to **Preferred Alternative 2** and **Alternative 3**. The negative economic effects are expected to be smaller in the short term due to the delay in the implementation of corrective measures. Fishery participants could continue to harvest the resource above prescribed levels throughout the predetermined season before any corrective measure is implemented. However, in the longer term, **Alternative 1** would be expected to result in greater adverse economic effects because more stringent corrective actions would be expected to be required to remedy overages.

Preferred Alternative 2 would attempt to prevent overages by implementing in-season AMs based on an annual recreational ACT. Implementing in-season AMs would be expected to reduce the opportunity for and magnitude of a harvest overage. Reducing the opportunity for and magnitude of a harvest overage would be expected to result in greater adverse economic effects in the short term compared to **Alternative 1**. However, preventing harvest above prescribed levels would be expected to result in longer term economic benefits stemming from the added protection to the stock.

Alternative 3 would also establish in-season AMs to attempt to prevent potential overages. However, as opposed to **Preferred Alternative 2** which would trigger AMs based on the ACT, **Alternative 3** would implement AMs after the recreational ACL is reached. Although triggering AMs based on the ACL instead of an ACT could possibly result in more fishing opportunities to recreational anglers in the short run, the implementation of AMs based on recreational ACLs rather than ACTs (in conjunction with a pre-determined recreational season) would be expected to result in a greater likelihood of exceeding the ACL. Therefore, compared to **Preferred Alternative 2**, **Alternative 3** would be expected to result in smaller short-run adverse economic effects but would be more likely to result in more restrictive regulations in the long-run. The buffer between the ACL and ACT provided in **Preferred Alternative 2** is, thus, expected to result in increased economic benefits in the long run due to the added protection afforded to gray triggerfish.

4.2.4 Direct and Indirect Effects on Social Environment

Usually, impacts are not expected from selecting the status quo **Alternative 1**, as the current management measures remain in place. However, the recreational sector currently has only post-season accountability measures, where the ACL is reduced following a season in which it was exceeded. Under the status quo then, the recreational sector is impacted in proximate fishing seasons if fishing effort is not sufficiently constrained in a prior fishing season, by having their ACL decreased.

In-season accountability measures would impact the recreational sector in the immediate, short-term by closing fishing for gray triggerfish, but the closure would mitigate negative impacts resulting from a decrease in the following year's ACL, should the in-season closure prevent the recreational sector from exceeding the ACL. There is a trade-off, then, where ending the fishing season in the present allows for more fish to be caught later. **Alternatives 2** and **3** propose an in-season closure of gray triggerfish when the ACT is met or projected to be met (**Preferred Alternative 2**) or when the ACL is met or projected to be met (**Alternative 3**).

Because the ACT is set lower than the ACL, **Alternative 3** would allow more fishing to take place before closing the harvest of gray triggerfish, thereby resulting in less impact in the present season than **Preferred Alternative 2**. However, if the harvest of gray triggerfish is closed when the ACL is met (**Alternative 3**), and the ACL is subsequently determined to have been exceeded, the following year's ACL will be decreased, resulting in similar impacts as the status quo **Alternative 1**. Due to the difficulties of monitoring recreational landings and the lag time in estimating landings, closing the harvest of gray triggerfish when the ACT is met or projected to be met (**Preferred Alternative 2**) affords greater protection to the recreational sector from exceeding its ACL. This protection is expected to prevent a reduction to fishing in the following season, thereby resulting in benefits to the recreational sector.

4.2.5 Direct and Indirect Effects on Administrative Environment

Alternative 1 (no action) would have no immediate direct or indirect effect on the administrative environment. Measures to monitor landings and determine if an ACL has been exceeded are currently in place. **Alternative 2** and **Alternative 3** would add to the administrative burden for 2012 because gray triggerfish recreational landings would need to be monitored in-season. This

would put a substantial burden on NMFS Enforcement, Southeast Regional Office, and Southeast Fishery Science Center staff to collate and verify landings information, file a notification of a closure, and enforce closures or quota reductions. Currently, a *Federal Register* notice and Fishery Bulletins are published by the Southeast Regional Office to inform anglers of quota closures, thereby increasing the burden to that office. However, the administrative environment may be negatively affected if harvests are not sufficiently constrained within a year because additional post-season actions may need to be taken to ensure ACLs are not exceeded in subsequent years.

4.3 Cumulative effects

The cumulative effects from setting the gray triggerfish ACTs, ACLs, and in-season accountability measures have been analyzed in Amendment 30A, and cumulative effects to the reef fish fishery have been analyzed in previous amendments (GMFMC 2008, 2011a, 2011b), and are incorporated here by reference. The effects of setting the gray triggerfish ACTs, ACLs, and in-season accountability measures in this temporary rule are most closely aligned with the effects from setting gray triggerfish ACTs, ACLs, and accountability measures in Amendment 30A (GMFMC 2008). This analysis found the effects on the biophysical and socioeconomic environments to be positive because they would ultimately restore/maintain the stock at a level that allows the maximum benefits in yield and commercial and recreational fishing opportunities to be achieved. However, short-term negative impacts on the fisheries' socioeconomic environment have occurred and are likely to continue due to the need to limit directed harvest and reduce bycatch mortality. These negative impacts can be minimized by selecting measures that would provide the least disruption to the fishery while maintaining harvest levels consistent with the rebuilding plan. For the recreational sector, this would mean using combinations of bag limits, size limits and closed seasons to minimize disruptions, and for the commercial sector by using a combination of size limits, quotas, and closed seasons. These factors will likely be considered in Amendment 37, which will evaluate long-term management measures to allow the gray triggerfish stock to recover.

There is a large and growing body of literature on past, present, and future impacts of global climate change induced by human activities. Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. The Environmental Protection Agency's climate change webpage provides basic background information on these and other measured or anticipated effects. Global climate changes could have significant effects on Gulf fisheries; however, the extent of these effects is not known at this time. Possible impacts are outlined in Amendment 31 (GMFMC 2009), the Generic ACL amendment (GMFMC 2011a), and Amendment 32 (GMFMC 2011b). In addition, oil from the Deepwater Horizon MC252 incident that occurred in April 2010 may affect gray triggerfish populations. However, the effects of this oil on gray triggerfish and other reef fish populations are incomplete and unavailable (see 40 CFR § 1502.22) at this time because studies of the effects of the oil spill are still ongoing. If the oil impacts important habitat for these species or interrupt critical life history stages, the effects could reduce these species' population sizes.

Monitoring

The effects of the proposed action are, and will continue to be, monitored through collection of landings data by NMFS, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. Landings data for the recreational sector in the Gulf is collected through Marine Recreational Fisheries Statistics Survey (MRFSS), NMFS' Head Boat Survey, and the Texas Marine Recreational Fishing Survey. MRFSS has been replaced by Marine Recreational Information Program, a program designed to improve the monitoring of recreational fishing. Commercial data are collected through trip ticket programs, port samplers, and logbook programs. Currently, an update Southeast Data, Assessment, and Review assessment of Gulf gray triggerfish is scheduled for 2013. In response to the Deepwater Horizon MC252 incident, increased frequency of surveys of the recreational sector's catch and effort, along with additional fishery independent information regarding the status of the stock are being conducted. This will allow future determinations regarding the impacts of the Deepwater Horizon MC252 incident on various fishery stocks, including gray triggerfish. Currently it not possible to make such determinations.

5.0 REGULATORY IMPACT REVIEW

5.1 Introduction

NOAA's National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) It provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order (E.O.) 12866 and provides information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act. This RIR analyzes the expected effects that this action would be expected to have on the Gulf of Mexico reef fish fishery. Additional details on the expected economic effects of the various alternatives in this action are included in Section 4.

5.2 Problems and Objectives

The purpose and need, issues, problems, and objectives of this interim rule are presented in Section 1.3.

5.3 Description of the Fishery

A description of the Gulf reef fish fishery, with particular reference to gray triggerfish, is contained in Section 3.3.

5.4 Effects of Management Measures

5.4.1 Action 1: Modifications to Gray Triggerfish Annual Catch Limits and Optional Annual Catch Target

A detailed analysis of the expected economic impacts of alternatives considered for this action is contained in Section 4.1.3. For the commercial sector, **Alternative 1** would not be expected to result in any change in total ex-vessel revenue received from gray triggerfish harvests. All remaining alternatives would decrease the commercial gray triggerfish ACL or ACT, resulting in losses in ex-vessel revenues. Estimated losses in ex-vessel revenues received from gray triggerfish harvests would range from a minimum of $42,237 per year (**Option 2a**) to a maximum of $57,056 per year (**Option 2b**). **Preferred Option 3b** would be expected to result in an annual decrease in ex-vessel revenues estimated at $45,463.

For the recreational sector, **Alternative 1** would maintain the current recreational gray triggerfish ACL and ACT and would not be expected to result in changes in consumer or producer surplus. Remaining alternatives, which would decrease the recreational ACL and/or ACT, are all expected to result in annual decreases in consumer and producer surpluses.

Consumer surplus reductions are expected to range from a minimum of $0.92 million per year **(Option 2a)** to a maximum of $1.22 million per year **(Option 2b)**. Expected annual losses in producer surplus are estimated to range between $0.28 million **(Option 2a)** and 0.33 million **(Option 2b)**. Consumer and producer surpluses losses expected to result from the implementation of **Preferred Option 3b** are estimated at $1.06 million and $0.28 million, respectively.

5.4.2 Action 2: Recreational Management Measures for In-season Closure Authority

A detailed analysis of the expected economic impacts of alternatives considered for this action is contained in Section 4.2.3. **Alternative 1** would continue to implement post-season AMs to remedy potential harvest overages. **Alternative 1** would be expected to result in fewer short-term adverse economic effects compared to **Preferred Alternative 2** and **Alternative 3**. The negative economic effects are expected to be fewer in the short term due to the delay in the implementation of corrective measures. In the longer term, **Alternative 1** would be expected to result in greater adverse economic effects because more stringent corrective actions would be expected to be required to remedy overages.

Preferred Alternative 2, which would implement in-season AMs based on an annual recreational ACT, would be expected to reduce the opportunity for and magnitude of a harvest overage. **Preferred Alternative 2** would be expected to result in greater adverse economic effects in the short term compared to **Alternative 1**. However, preventing harvest above prescribed levels would be expected to result in longer term economic benefits stemming from the added protection to the stock. Compared to **Preferred Alternative 2**, **Alternative 3,** which would implement AMs once the ACL is reached**,** would be expected to result in fewer short-run adverse economic effects, but would be more likely to result in more restrictive regulations in the long-run. The buffer between the ACL and ACT provided in **Preferred Alternative 2** is therefore expected to result in increased economic benefits in the long run due to the added protection afforded to gray triggerfish.

5.5 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any Federal action involves the expenditure of public and private resources which can be expressed as costs associated with the regulations. Costs associated with this amendment include:

Council costs of document preparation, meetings, public hearings, and information dissemination……...…….. $40,000

NOAA Fisheries administrative costs of document preparation, meetings and review $30,000

TOTAL $70,000

The Council and federal costs of document preparation are based on staff time, travel, printing, and any other relevant items where funds were expended directly for this specific action. There are no permit requirements proposed in this interim rule or anticipated additional enforcement

costs involved in monitoring any closures. In addition, under a fixed budget, any additional enforcement activity due to the adoption of this interim rule would likely mean a redirection of resources to enforce the new measures rather than an expenditure of new funds.

5.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is expected to result in: (1) An annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, this regulatory action would not meet the first criterion. Therefore, this regulatory action is determined to not be economically significant for the purposes of E.O. 12866.

6.0 REGULATORY FLEXIBILITY ACT ANALYSIS

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the fishery management plan (FMP) or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

If prior notice and opportunity for public comment is required for a rule, the RFA requires agencies to prepare an RFA analysis (RFAA). The RFAA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. This analysis is conducted to primarily determine whether the rule would have a "significant economic impact on a substantial number of small entities." The RFAA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the action; 3) a description and, where feasible, an estimate of the number of small entities to which the action will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the action, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the action; and 6) a description of the expected economic impacts of the action on small entities.

Because prior notice and opportunity for public comment are not required for this rule, the requirements of the RFA are not applicable. Therefore, an RFAA is not required and none has been prepared.

7.0 OTHER APPLICABLE LAW

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

Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NOAA's National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect. Pursuant to the APA, NMFS could find that delaying the effective date of the rule 30 days after it publishes as impracticable and contrary to the public interest. Therefore, there could be good cause to waive the 30-day delay in effectiveness of the rule.

Coastal Zone Management Act

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

NMFS, as part of the Secretarial review process, will determine if the actions in this rule are consistent to the maximum extent practicable with the enforceable policies of the approved coastal management programs of Alabama, Florida, Louisiana, Mississippi, and Texas. A determination by NMFS is submitted to the responsible state agencies for concurrence under Section 307 of the CZMA administering approved Coastal Zone Management programs for these states.

Data Quality Act

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

Specifically, the DQA directs the Office of Management and Budget (OMB) to issue government wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: (1) Ensure information quality and develop a pre-dissemination review process; (2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and (3) report periodically to OMB on the number and nature of complaints received.

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

Endangered Species Act

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

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted," and a conservation plan is developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments

for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries, and studies of pinniped-fishery interactions.

Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The reef fish fishery was classified in the 2012 LOF as a Category III fishery indicating potential adverse effects on marine mammal stocks is minimal (see Section 3.2.2).

Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure the public is not overburdened with information requests, the federal government's information collection procedures are efficient, and federal agencies adhere to appropriate rules governing the confidentiality of such information. The Paperwork Reduction Act requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public. None of the alternatives in these actions are expected to create additional paperwork burdens.

Essential Fish Habitat

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

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NMFS = National Marine Fisheries Service, SF = Sustainable Fisheries Division

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GC = General Counsel, SERO=Southeast Regional Office, NEPA=National Environmental Policy Act, HC = Habitat Conservation, SEFSC=Southeast Fisheries Science Center Commission and PR = Protected Resources Division.

9.0 LIST OF AGENCIES CONSULTED

Federal Agencies

Gulf of Mexico Fishery Management Council
- Scientific and Statistical Committee

National Marine Fisheries Service
- Southeast Fisheries Science Center
- Southeast Regional Office

NOAA's Program Planning and Integration
U.S. Coast Guard

State Agencies

- Texas Department of Wildlife and Fisheries
- Louisiana Department of Wildlife and Fisheries
- Mississippi Department of Marine Resources
- Alabama Department of Conservation and Natural Resources
- Florida Fish and Wildlife Conservation Commission

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Appendix A. Commercial Gray Triggerfish ACL/ACT Buffer Spreadsheet

ACL/ACT Buffer Spreadsheet

version 4.1 - April 2011

Commercial Gray Triggerfish

sum of points	1		
max points	5.0		
Min. Buffer	**0**	**min. buffer**	User adjustable
Max Unw.Buff	19	max unwt. Buff	
Max Wtd Buff	**25**	**max wtd. buffe**	User adjustable

Buffer between ACLand ACT (or ABC and ACL) Unweighted 4

Weighted **5**

Component	Element score	Element	Selection	Element result
Stock assemblag	0	This ACL/ACT is for a single stock.	x	0
	1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
Ability to Constrain Catch	0	Catch limit has been exceeded 0 or 1 times in last 4 years	x	0
	1	Catch limit has been exceeded 2 or more times in last 4 years		
		For the year with max. overage, add 0.5 pts. For every 10 percentage points (rounded up) above ACL		
		Not applicable (there is no catch limit)		
		Apply this component to recreational fisheries, not commercial or IFQ fisheries		
	0	Method of absolute counting		not applicable
Precision of	1	MRIP proportional standard error (PSE) <= 20		
Landings Data	2	MRIP proportional standard error (PSE) > 20		
Recreational		Not applicable (will not be included in buffer calculation)	x	
		Apply this component to commercial fisheries or any fishery under an IFQ program		
Precision of	0	Landings from IFQ program		1
	1	Landings based on dealer reporting	x	
Landings Data	2	Landings based on other		
Commercial		Not applicable (will not be included in buffer calculation)		
Timeliness	0	In-season accountability measures used or fishery is under an IFQ	X	0
	1	In-season accountability measures not used		

Sum 1

Weighting factor

	Element weight	Element	Selection	Weighting
Overfished statu	0	1. Stock biomass is at or above B_{OY} (or proxy).		0.3
	0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).		
	0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).		
	0.3	4. Stock is overfished, below MSST.	x	
	0.3	5. Status criterion is unknown.		

Appendix B. Recreational Gray Triggerfish ACL/ACT Buffer Spreadsheet

ACL/ACT Buffer Spreadsheet

version 4.1 - April 2011

Recreational Gray Triggerfish

sum of points	2		
max points	5.0		
Min. Buffer	**0**	**min. buffer**	User adjustable
Max Unw.Buff	19	max unwt. Buff	
Max Wtd Buff	**25**	**max wtd. buffe**	User adjustable

Buffer between ACLand ACT (or ABC and ACL) Unweighted 8

Weighted **10**

Component	Element score	Element	Selection	Element result
Stock assemblag	0	This ACL/ACT is for a single stock.	x	0
	1	This ACL/ACT is for a stock assemblage, or an indicator species for a stock assemblage		
Ability to Constrain Catch	0	Catch limit has been exceeded 0 or 1 times in last 4 years	x	0
	1	Catch limit has been exceeded 2 or more times in last 4 years		
		For the year with max. overage, add 0.5 pts. For every 10 percentage points (rounded up) above ACL		
		Not applicable (there is no catch limit)		
		Apply this component to recreational fisheries, not commercial or IFQ fisheries		
	0	Method of absolute counting		1
Precision of	1	MRIP proportional standard error (PSE) <= 20	x	
Landings Data	2	MRIP proportional standard error (PSE) > 20		
Recreational		Not applicable (will not be included in buffer calculation)		
		Apply this component to commercial fisheries or any fishery under an IFQ program		
Precision of	0	Landings from IFQ program		not applicable
	1	Landings based on dealer reporting		
Landings Data	2	Landings based on other		
Commercial		Not applicable (will not be included in buffer calculation)	x	
Timeliness	0	In-season accountability measures used or fishery is under an IFQ		1
	1	In-season accountability measures not used	x	

Sum 2

Weighting factor

	Element weight	Element	Selection	Weighting
Overfished statu	0	1. Stock biomass is at or above B_{OY} (or proxy).		0.3
	0.1	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).		
	0.2	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).		
	0.3	4. Stock is overfished, below MSST.	x	
	0.3	5. Status criterion is unknown.		