

SECOND DRAFT OPTIONS PAPER

FOR REEF FISH AMENDMENT 32

GAG – REBUILDING PLAN, ANNUAL CATCH LIMITS, MANAGEMENT MEASURES

RED GROUPER – ANNUAL CATCH LIMITS, MANAGEMENT MEASURES

GROUPER ACCOUNTABILITY MEASURES

DATA COLLECTION AND MONITORING PROGRAMS

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
F	Fishing mortality
GMFMC	Gulf of Mexico Fishery Management Council
GOMARS	Gulf of Mexico Angling Reporting System (industry proposal)
LAPP AP	Limited Access Privilege Program Advisory Panel
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSY	Maximum sustainable yield
NMFS	NOAA's National Marine Fisheries Service
OY	Optimum yield
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SOS	Save Our Sector (industry data collection and monitoring proposal)
SSB	Spawning stock biomass
SSC	Scientific and Statistical Committee

1 Introduction

1.1 Background

Gag and red grouper are the two most abundant grouper species in the Gulf of Mexico. In 2008, these two species accounted for 93% of the recreational grouper landings reported by Marine Recreational Fisheries Statistics Survey (MRFSS), and 80% of commercial grouper landings in the Gulf (Personal communication from the National Marine Fisheries Service (NMFS), Fisheries Statistics Division, Silver Spring, MD). The commercial fishery accounts for the majority of red grouper landings, while the recreational fishery accounts for the majority of gag landings. Both of these groupers are protogynous hermaphrodites, meaning that they start life as females and change sex to males later in life.

For the commercial grouper fisheries, an individual fishing quota (IFQ) system has been implemented since January 1, 2010. Under this system, percentages of the commercial grouper quotas are allocated to IFQ participants who can then fish or trade their shares.

Management of the recreational fishery consists of minimum size limits, aggregate and species-specific bag limits, a closed season (February 1-March 31), and seasonal area closure of the Edges (i.e., January 1-April 30). In addition, all reef fish fishing is prohibited year round in two restricted fishing areas in the northwestern Gulf (Madison-Swanson and Steamboat Lumps), as well as the Tortugas Ecological Reserves off of the Florida Keys.

In 1997, a gag stock assessment concluded that gag, while not overfished, may be undergoing overfishing (Schirripa and Legault 1997, GMFMC 1998a). In response to the assessment, new regulations were implemented in 2000 that: 1) increased the gag commercial minimum size limit to 24 inches total length and the gag recreational minimum size limit to 22 inches total length; 2) established a February 15 through March 14 commercial closed season on harvest of gag, black and red grouper; and 3) established two restricted fishing areas (Madison-Swanson and Steamboat Lumps) that had habitat suitable for gag and other aggregate spawning reef fish. In 2006 and 2007, SEDAR 10 (2006) and a subsequent 2007 reanalysis with corrected dead discard estimates (SEDAR 2007a; SEFSC 2007) concluded that the gag stock was undergoing overfishing and had been since the 1970s.

Red grouper were declared overfished and placed under a rebuilding plan in 2004. The stock had been found to be overfished and undergoing overfishing in both a 1999 stock assessment (Schirripa and Legault 1999) and a subsequent 2002 assessment (NMFS 2002a). However, the 2002 assessment indicated that the stock was recovering faster than previously estimated, most likely due to a strong recruitment year class in 1997. Management measures implemented in 2004 as part of the rebuilding plan included a reduced aggregate commercial shallow-water grouper quota, a red grouper quota within the aggregate quota, and a recreational bag limit of two red grouper within the five fish aggregate grouper bag limit. In 2005, stepped commercial grouper trip limits (10,000, 7,500, and 5,500 pounds) were adopted for the commercial fishery, and the recreational red grouper bag limit was further reduced to 1 fish. For 2006 through 2009, a fixed 6,000 pound commercial grouper trip limit was adopted. In 2007, the SEDAR 12 assessment, confirmed that the red grouper stock was overfished in the 1990s, but estimated that the red grouper spawning stock had rebuilt to biomass at maximum sustainable yield (SSB_{MSY})

starting in 1999, and that the 2005 stock status was close to its optimum yield spawning stock biomass level. Consequently, the red grouper rebuilding plan could be replaced with a management policy to maintain the stock at its optimum yield level.

In response to the SEDAR 10 and 12 findings for gag and red grouper, Amendment 30B implemented new regulations in 2009. These regulations reduced the gag recreational bag limit to 2 fish and the aggregate grouper bag limit to 4 fish, while increasing the red grouper bag limit to 2 fish. A commercial gag quota of 1.32 million pounds gutted weight was adopted representing a 41% decrease from the average landings during 2004-2006. At the same time, the commercial red grouper quota was increased from 4.98 to 5.75 million pounds representing a 15% increase to the commercial allocation level of long-term average optimum yield. The Edges seasonal area closure, January-April, was added to the existing Madison-Swanson and Steamboat Lumps seasonal closures to protect spawning aggregations of gag.

Amendment 30B also stated that, after completion of the next red grouper stock assessment or update, anticipated in 2009, the Council's intent was to set red grouper annual catch limits, at the equilibrium (i.e., long-term average) maximum sustainable yield or optimum yield level or the current year yield corresponding to the fishing mortality at maximum sustainable yield (F_{MSY}) or fishing mortality at optimum yield (F_{OY}), whichever is less¹.

In 2009, new observer data indicated that sea turtle interactions with the bottom longline component of the reef fish fishery in the eastern Gulf of Mexico were higher than previously estimated. Until long-term measures could be developed, the commercial bottom longline component of the reef fish fishery was closed in depths shallower than 50 fathoms in the eastern Gulf by emergency rule from May 18-October 28, 2009, and in all depths once the deep-water grouper quota was filled. After review and potential implementation of Amendment 31 the bottom longline component of the reef fish fishery will re-open with the following new requirements: an endorsement to fish east of Cape San Blas, time area closure during the months of June-August from 35 fathoms shoreward for bottom longline gear, and limiting gear to 1,000 hooks per vessel, with 750 rigged for fishing or fished.

1.2 Purpose and Need

Commercial landings of red grouper and gag are given in Tables 1.2.1 and 1.2.2, and recreational landings are given in Tables 1.2.3 and 1.2.4. The Magnuson-Stevens Fishery Conservation and Management Act requires NOAA's National Marine Fisheries Service and regional fishery management councils to prevent overfishing, and achieve, on a continuing basis, the optimum yield from federally managed fish stocks. These mandates are intended to ensure fishery resources are managed for the greatest overall benefit to the nation, particularly with respect to

¹ In Amendment 30B the Council chose to set the annual catch limit based on maximum sustainable yield and annual catch target based on optimum yield. The upper level of acceptable biological catch = maximum sustainable yield. However, under the National Standard 1 guidelines, the acceptable biological catch will normally be less than maximum sustainable yield, and annual catch limit cannot exceed acceptable biological catch. In the remainder of this document, 30B will be interpreted to have set annual catch limit = acceptable biological catch.

providing food production and recreational opportunities, and protecting marine ecosystems. To further this goal, the Magnuson-Stevens Act requires fishery managers to specify through rebuilding plans their strategy for rebuilding overfished stocks to a sustainable level within a certain time frame, provide accountability measures to minimize the risk of overharvest, to minimize bycatch and bycatch mortality to the extent practicable, and to ensure that management decision are based on the best available scientific information.

Table 1.2.1. Commercial red grouper landings in pounds gutted weight.

Year	Commercial Longline	Commercial Handline	Fish Trap*	Total
2005	3,326,160	1,454,300	630,560	5,411,020
2006	3,156,360	1,385,340	602,207	5,143,907
2007	2,072,720	1,586,390	23,763	3,682,873
2008	2,753,210	1,968,170	-	4,721,380

* Fish traps were banned in February 2007

(Source: 2009 red grouper update assessment – SEDAR 2009b).

Table 1.2.2. Commercial gag landings in pounds gutted weight.

Year	Commercial Longline	Commercial Handline	Other	Total Landings	Dead Discards
2000	571,801	1,589,245	86,429	2,247,476	11,876
2001	946,629	2,052,522	99,866	3,099,017	38,283
2002	1,021,695	1,880,834	61,702	2,964,231	37,688
2003	1,094,008	1,435,412	65,133	2,594,553	35,222
2004	1,097,933	1,726,429	72,619	2,896,980	41,827
2005	871,726	1,535,458	68,958	2,476,141	35,936
2006	516,528	798,282	55,175	1,369,985	18,555
2007	475,295	741,954	44,931	1,262,181	12,592
2008	340,626	865,382	42,473	1,248,481	13,835

The "other" category is predominantly trawl in the early years (60-70s), trap in the middle years (80s), and spear in the later years (90s-00s).

(Source: personal communication, Brian Linton, Southeast Fisheries Science Center).

Table 1.2.3. Recreational red grouper landings

in pounds gutted weight.

(Source: 2009 red grouper update assessment) – SEDAR 2009b.

Year	Recreational Red Grouper Landings (pounds)
2000	2,107,720
2001	1,327,800
2002	1,611,130
2003	1,275,830
2004	3,037,020
2005	1,464,990
2006	925,923
2007	959,754
2008	860,986

Table 1.2.4. Recreational gag landings

in pounds gutted weight.

(Source: personal communication, Brian Linton, SEFSC).

Year	Recreational Gag Landings (pounds)
2000	4,503,759
2001	3,710,284
2002	4,078,416
2003	3,434,862
2004	4,491,715
2005	3,513,119
2006	2,286,345
2007	2,231,784
2008	3,009,777

REBUILDING PLAN FOR GAG

On August 11, 2009, the NMFS Regional Administrator notified the Council of his determination that the gag stock was both overfished and undergoing overfishing, based on the results of the 2009 update stock assessment of the Gulf of Mexico gag stock (SEDAR 2009a). The stock has shown declines in indices of abundance since 2005. A large part of the decline was attributed to an episodic mortality event in 2005 (most likely associated with red tide) that resulted in an additional 18% of the gag stock being killed on top of the normal natural and fishing mortalities (personal communication, Brian Linton, SEFSC). The 2008 spawning stock biomass was estimated to be at just 47% of its minimum stock size threshold and the mean fishing mortality rate during 2005-2007 was estimated to be nearly 2.5 times higher than the maximum fishing mortality threshold. Under the Magnuson-Stevens Act National Standard Guidelines, once a Council is notified of the stock’s condition, a plan needs to be developed and implemented within two years of notification to end overfishing and rebuild the gag stock.

ANNUAL CATCH LIMITS AND ANNUAL CATCH TARGETS FOR RED GROUPE AND GAG

As stated above, the gag stock is overfished and is undergoing overfishing. In order to rebuild the gag stock, the annual catch limit and optionally an annual catch target need to be set at levels that will prevent overfishing from occurring while allowing the gag stock to rebuild to a biomass level capable of producing maximum sustainable yield in 10 years or less.

The 2009 update stock assessment of the red grouper stock in the Gulf of Mexico (SEDAR 2009b) indicated the stock continues to be neither overfished or undergoing overfishing. However, the stock has declined since 2005. As with gag, a large part of this decline was attributed to an episodic mortality event in 2005 (most likely associated with red tide), that

resulted in a little over 20% of the red grouper stock being killed on top of the normal natural and fishing mortalities (personal communication, Clay Porch, SEFSC). The annual catch target (i.e., 7.57 million pounds) currently in effect exceeds the optimum yield level for 2010 (i.e., 4.91 million pounds) and the acceptable biological catch level set by the Scientific and Statistical Committee for 2010 (5.96 million pounds).

GROUPER ACCOUNTABILITY MEASURES

The accountability measures implemented in Amendment 30B for red grouper and gag were established under the single quota system and do not fully reflect changes that occurred in the commercial fishery when the individual fishing quota system was implemented in 2010. In addition, the accountability measures only apply to a fixed set of years (2009-2011). They also do not include a provision in the National Standard 1 guidelines that, for stocks and stock complexes in rebuilding plans, the accountability measures should include overage adjustments that reduce the annual catch limits in the next fishing year by the full amount of the overages, unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overages.

MULTI-USE IFQ SHARES

In 2010 an individual fishing quota system was implemented for the commercial grouper and tilefish fisheries (Amendment 29). To allow for flexibility and account for varying gag to red grouper ratios across the Gulf of Mexico, at the beginning of each fishing year a percentage of the gag and red grouper shares are designated as multi-use shares, valid for harvesting either red or gag grouper. Amendment 29 established that 4 percent of red grouper shares and 8 percent of gag shares would be converted to multi-use. However, under the reduced red grouper and gag annual catch limits expected to be implemented in this amendment, it is possible that the use of multi-use shares could result in commercial harvest of red grouper or gag exceeding its sector allocation. To prevent this from happening, adjustments need to be made to the provision for multi-use shares in the grouper individual fishing quota system.

RECREATIONAL BAG LIMITS, SIZE LIMITS, AND CLOSED SEASONS FOR GAG AND RED GROUPER

The reduced gag catch limits under the initial years of the rebuilding plan will require substantial reductions in both commercial and recreational harvest. The commercial harvest can be reduced through an adjustment to the commercial quota, but the recreational sector has no quota. Recreational catch levels are managed primarily through a combination of bag limits, minimum size limits and closed seasons. A combination of management measures needs to be adopted that will achieve the needed reductions in recreational fishery with the least disruption to the fishery. Consideration also needs to be given to the impact of regulatory changes on discards and discard mortality.

BYCATCH ISSUES (INCLUDING COMMERCIAL AND RECREATIONAL BYCATCH)

Bycatch issues need to be addressed in both the commercial and recreational grouper fisheries. In 2011, there will be a large difference between the red grouper and gag commercial quotas,

4.04 to 4.32 million pounds (red grouper) vs. 0.34 to 0.46 million pounds (gag). If quotas are set at optimum yield levels for red grouper and gag, this will result in a ratio of between 9:1 and 12:1. Through July 2009, the commercial ratio of red grouper to gag landings was 4:1. If commercial fishermen continue to catch gag in 2011 at the same ratio as in 2009, then 5 to 6 out of every 9 pounds of gag caught will have to be discarded due to insufficient IFQ shares. This could potentially amount to up to an estimated 1.01 to 1.08 mp of gag catch, of which 58% to 66%, or 623 to 666 thousand pounds, could be discarded dead. This means that there would be more discarded gag by weight than allowed under the gag quota needed to end overfishing and rebuild the gag stock. Thus, gag bycatch must either be taken into account in managing the gag and red grouper quotas, or gag bycatch needs to be reduced.

The recreational fishery has a higher survival rate of released fish on average, but larger numbers of fish are discarded since much of the fishery occurs in shallower water where smaller fish are more common. Strategies such as a “keep first fish caught” approach could reduce regulatory discards, but could also have negative consequences on spawning potential. New ideas need to be developed for ways to reduce discard mortality in the recreational grouper fishery.

DATA COLLECTION AND MONITORING

Data collection and monitoring of the recreational fishery is in need of improvement in terms of both accuracy and timeliness in order to improve management of the recreational sector and application of accountability measures. Although individual anglers usually harvest a small number of fish per trip, collectively these fishing trips can harvest a significant portion of the allowable harvest (e.g., the recreational fishery landed 59% of gag from 2001 to 2005). However, it is difficult to monitor the recreational landings because of the sheer volume of anglers and the diversity of landing locations. As a result, the survey methods employed to monitor the recreational sector has been criticized and is currently undergoing modifications to improve the quality of the data. The Council is evaluating methods such as fish tags or a fish stamp, and several proposals have been directed towards the Council to improve the monitoring and management of the recreational fishery. These recommendations could improve the quality and timeliness of information needed to assess the different reef fish fisheries.

TIME AND AREA CLOSURES

Several seasonal area closures have been implemented over the past decade to protect a portion of the spawning aggregations of gag and other fish (Madison-Swanson, Steamboat Lumps, the Edges). It may be possible, though strategic use of seasonal area closures, to direct fishing away from concentrations of gag and toward red grouper or other targeted stocks, thereby reducing gag harvest while avoiding increased bycatch. To be successful, input from fishermen as to the appropriate areas and seasons to meet this objective is needed.

This amendment proposes to reduce the harvest of gag in order to end overfishing and allow the stock to recover to B_{MSY} and reduce the harvest of red grouper consistent with harvesting the stock at optimum yield. These landings reductions will reduce fishing mortality to F_{OY} levels or below. In addition, this amendment proposes to revise annual catch limits in line with the stock assessment updates and accountability measures within the National Standard 1 guidelines. Reductions in the gag and red grouper fisheries will be achieved through quota reductions in the

commercial fishery and through a combination of bag limits, minimum size limits, and closed seasons in the recreational fishery. Further, this amendment proposes to adopt measures to minimize gag bycatch such that landings for the shallow water grouper harvest are consistent to the extent practicable with both National Standard 1 (prevent overfishing and achieve optimum yield) and National Standard 9 (minimize bycatch and bycatch mortality). Finally, this amendment proposes to improve data collection for the recreational component of the reef fish fishery to improve this sector's accountability.

1.3 History of Management

The following summary describes management actions that affect the reef fish fishery in the Gulf. The summary focuses on management of grouper species and on data collection provisions in the fishery management plan.

The Reef Fish Fishery Management Plan and EIS was implemented in November 1984. The regulations, designed to rebuild declining reef fish stocks, included prohibitions on the use of fish traps, roller trawls, and powerhead-equipped spear guns within an inshore stressed area and directed NMFS to develop data reporting requirements in the reef fish fishery.

In July 1985, the Florida Marine Fisheries Commission (now FWCC) established a Florida state regulation to set a minimum size limit of 18 inches total length (TL) for red grouper, gag, yellowfin grouper, Nassau grouper, and jewfish (goliath grouper). In December 1986, the FWCC set a state recreational bag limit of five grouper per person per day, with an off-the-water possession limit of 10 per person, for any combination of groupers excluding rock hind and red hind.

Amendments

Amendment 1 (EA/RIR/IRFA), implemented in 1990, set objectives to stabilize long-term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age fish to achieve at least 20% spawning stock biomass per recruit (SSBR) by January 1, 2000. Among the grouper management measures implemented were:

- Set a 20-inch total length (TL) minimum size limit on red grouper, Nassau grouper, yellowfin grouper, black grouper, and gag;
- Set a 50-inch TL minimum size limit on goliath grouper (jewfish);
- Set a five-grouper recreational daily bag limit;
- Set an 11.0 mp commercial quota for grouper, with the commercial quota divided into a 9.2 mp shallow-water grouper (SWG) quota and a 1.8 mp deep-water grouper (DWG) quota. Shallow-water grouper were defined as black grouper, gag, red grouper, Nassau grouper, yellowfin grouper, yellowmouth grouper, rock hind, red hind, speckled hind, and scamp. Scamp would be applied to the DWG quota once the SWG quota was filled. Deep-water grouper were defined as misty grouper, snowy grouper, yellowedge grouper,

warsaw grouper, and scamp once the SWG quota was filled. Goliath grouper were not included in the quotas;

- Allowed a two-day possession limit for charter vessels and headboats on trips that extend beyond 24 hours, provided the vessel has two licensed operators aboard as required by the U.S. Coast Guard (USCG), and each passenger can provide a receipt to verify the length of the trip. All other fishermen fishing under a bag limit were limited to a single day possession limit;
- Established a framework procedure for specification of total allowable catch (TAC) to allow for annual management changes;
- Established a longline and buoy gear boundary at approximately the 50-fathom depth contour west of Cape San Blas, Florida, and the 20-fathom depth contour east of Cape San Blas, inshore of which the directed harvest of reef fish with longlines and buoy gear was prohibited, and the retention of reef fish captured incidentally in other longline operations (e.g., sharks) was limited to the recreational daily bag limit. Subsequent changes to the longline/buoy boundary could be made through the framework procedure for specification of TAC;
- Limited trawl vessels (other than vessels operating in the unsorted groundfish fishery) to the recreational size and daily bag limits of reef fish;
- Established fish trap permits, allowing up to a maximum of 100 fish traps per permit holder;
- Prohibited the use of entangling nets for directed harvest of reef fish. Retention of reef fish caught in entangling nets for other fisheries was limited to the recreational daily bag limit;
- Established the fishing year to be January 1 through December 31;
- Extended the stressed area to the entire Gulf coast; and
- Established a commercial reef fish vessel permit.

Amendment 2 (EA/RIR/IRFA), implemented in 1990, prohibited the harvest of goliath grouper to provide complete protection for this species in federal waters in response to indications that the population abundance throughout its range was greatly depressed. The harvest prohibition was initially implemented by emergency rule.

Amendment 3 (EA/RIR/IRFA), implemented in July 1991, provided additional flexibility in the annual framework procedure for specifying TAC by allowing the target date for rebuilding an overfished stock to be changed. It revised the FMP's primary objective from a 20% SSB target to a 20% spawning potential ratio (SPR). The amendment also transferred speckled hind from the SWG quota category to the DWG quota category.

Amendment 4 (EA/RIR/IRFA), implemented in May 1992, established a moratorium on the issuance of new commercial reef fish permits for a maximum period of three years. Amendment 4 also changed the time of year TAC is specified from April to August and included additional species in the reef fish management unit.

Amendment 5 (SEIS/RIR/IRFA), implemented in February 1994, established a fish trap

endorsement for vessel permits of permittees who had logbook landings of reef fish from fish traps in 1991 or 1992 through November 19, 1992, and established a three-year moratorium during which those endorsements would be non-transferable. The amendment also required that traps must be returned to shore at the end of each fishing trip; that each trap must be individually buoyed, or if fished in a trawl (several traps connected by a submerged line) a floating buoy is required at each end of the trawl; and prohibited the possession of magnesium pop-up devices. The amendment also created a special management zone (SMZ) with gear restrictions off the Alabama coast, created a framework procedure for establishing future SMZs, required that all finfish except for oceanic migratory species be landed with head and fins attached, and closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations.

Amendment 6 (EA/RIR/IRFA), implemented in June 1993, extended the provisions of an emergency rule for red snapper endorsements for the remainder of 1993 and 1994, and allowed the red snapper trip limits for qualifying and non-qualifying permitted vessels to be changed under the framework procedure for specification of TAC.

Amendment 7 (EA/RIR/IRFA), implemented in February 1994, established reef fish dealer permitting and record keeping requirements, allowed transfer of fish trap permits and endorsements between immediate family members during the fish trap permit moratorium, and allowed transfer of other reef fish permits or endorsements in the event of the death or disability of the person who was the qualifier for the permit or endorsement. A proposed provision of this amendment that would have required permitted vessels to sell harvested reef fish only to permitted dealers was disapproved by the Secretary of Commerce and was not implemented.

Amendment 8 (EA/RIR/IRFA), proposed to be implemented in 1996, would have established an individual transferable quota system in the commercial red snapper fishery. A final rule was published in November 1995 to implement the system effective April 1, 1996, but the individual transferable quota system was not implemented. The Sustainable Fisheries Act of 1996 repealed the system and placed a moratorium on any new individual fishing quota program until after October 1, 2000.

Amendment 9 (EA/RIR/IRFA), implemented in July 1994, provided for collection of red snapper landings and eligibility data from commercial fishermen for the years 1990 through 1992 to qualify for shares under the individual transferable quota system in **Amendment 8**. This amendment also extended the reef fish permit moratorium and red snapper endorsement system through December 31, 1995, in order to continue the existing interim management regime until longer term measures could be implemented.

Rejected Amendment 10 was developed in 1994 but was not submitted to NMFS. **Amendment 5** had established a deadline to qualify for fish trap endorsements of November 19, 1992, but the final rule implementing the endorsements and three-year moratorium did not take effect until February 7, 1994. In the interim, NMFS continued to process applications for fish trap permits, and neither NMFS nor the Council provided public notification of the impending moratorium. On February 7, 1994, 421 vessels that had been issued fish trap tags on or before February 7 became ineligible to continue in the fish trap fishery, of which 54 of those vessels had fish trap landings between November 19, 1992 and February 7, 1994. Amendment 10 was drafted to

consider changing the endorsement eligibility requirement to allow those vessels with trap landings through February 7, 1994 to qualify. However, in July 1994 the Council voted to reject the amendment.

Amendment 11 (EA/RIR/IRFA), was partially approved by NMFS and implemented in January 1996. The six approved provisions were: (1) limit sale of Gulf reef fish by permitted vessels to permitted reef fish dealers; (2) require that permitted reef fish dealers purchase reef fish caught in Gulf federal waters only from permitted vessels; (3) allow transfer of reef fish permits and fish trap endorsements in the event of death or disability; (4) implement a new reef fish permit moratorium for no more than five years or until December 31, 2000, while the Council considers limited access for the reef fish fishery; (5) allow permit transfers to other persons with vessels by vessel owners (not operators) who qualified for their reef fish permit; and, (6) allow a one time transfer of existing fish trap endorsements to permitted reef fish vessels whose owners have landed reef fish from fish traps in federal waters, as reported on logbooks received by the Science and Research Director of NMFS from November 20, 1992 through February 6, 1994. NMFS disapproved a proposal to redefine OY from 20% SPR (the same level as overfishing) to an SPR corresponding to a fishing mortality rate of F0.1 until an alternative operational definition that optimizes ecological, economic, and social benefits to the Nation could be developed. In April 1997, the Council resubmitted the OY definition with a new proposal to redefine OY as 30% SPR. The resubmission document was disapproved by NMFS.

Amendment 12 (EA/RIR/IRFA), implemented in January 1997, reduced the bag limit for greater amberjack to 1 fish and established a 20-fish aggregate bag limit for reef fish species for which there is no other bag limit.

Amendment 13 (EA/RIR/IRFA), implemented in September 1996, further extended the red snapper endorsement system through the remainder of 1996 and, if necessary, through 1997, in order to give the Council time to develop a permanent limited access system that was in compliance with the new provisions of the Magnuson-Stevens Act.

Amendment 14 (EA/RIR/IRFA), implemented in March and April 1997, provided for a ten-year phase-out for the fish trap fishery; allowed transfer of fish trap endorsements for the first two years and thereafter only upon death or disability of the endorsement holder, to another vessel owned by the same entity, or to any of the 56 individuals who were fishing traps after November 19, 1992 and were excluded by the moratorium; and prohibited the use of fish traps west of Cape San Blas, Florida. The amendment also provided the Regional Administrator (RA) of NMFS with authority to reopen a fishery prematurely closed before the allocation was reached, and modified the provisions for transfer of commercial reef fish vessel permits. In addition, the amendment prohibited the harvest or possession of Nassau grouper in the Gulf Exclusive Economic Zone (EEZ), consistent with similar prohibitions in Florida state waters, the south Atlantic EEZ, and the Caribbean EEZ.

Amendment 15 (EA/RIR/IRFA), implemented in January 1998, prohibited harvest of reef fish from traps other than permitted reef fish traps, stone crab traps, or spiny lobster traps, and closed the commercial greater amberjack fishery Gulf-wide during the months of March, April, and May.

Amendment 16A (EA/RIR/IRFA), submitted to NMFS in June 1998, was partially approved and implemented on January 10, 2000. The approved measures provided: (1) the possession of reef fish exhibiting the condition of trap rash on board any vessel with a reef fish permit that is fishing spiny lobster or stone crab traps is prima facie evidence of illegal trap use and is prohibited except for vessels possessing a valid fish trap endorsement; (2) NMFS establish a system design, implementation schedule, and protocol to require implementation of a vessel monitoring system (VMS) for vessels engaged in the fish trap fishery, with the cost of the vessel equipment, installation, and maintenance to be paid or arranged by the owners as appropriate; and, (3) fish trap vessels submit trip initiation and trip termination reports. Prior to implementing this additional reporting requirement, there will be a one-month fish trap inspection/compliance/education period, at a time determined by the RA and published in the *Federal Register*. During this window of opportunity, fish trap fishermen will be required to have an appointment with NMFS law enforcement for the purpose of having their trap gear, permits, and vessels available for inspection. The disapproved measure was a proposal to prohibit fish traps south of 25.05 degrees north latitude beginning February 7, 2001. The status quo 10-year phase-out of fish traps in areas in the Gulf EEZ was therefore maintained.

Amendment 16B (EA/RIR/IRFA), implemented in November 1999 set a recreational daily bag limit of one speckled hind and one warsaw grouper per vessel, with the prohibition on the sale of these species when caught under the bag limit.

Generic Sustainable Fisheries Act Amendment (EA/RIR/IRFA), partially approved and implemented in November 1999, set the Maximum Fishing Mortality Threshold (MFMT) for most reef fish stocks at $F_{30\% SPR}$. Estimates of MSY, Minimum Stock Size Threshold (MSST), and OY were disapproved because they were based on SPR proxies rather than biomass based estimates.

Amendment 17 (EA/RIR/IRFA), was submitted to NMFS in September 1999, and was implemented on August 10, 2000. This amendment extended the commercial reef fish permit moratorium for another five years, from its previous expiration date of December 31, 2000 to December 31, 2005, unless replaced sooner by a comprehensive controlled access system. The purpose of the moratorium is to provide a stable environment in the fishery necessary for evaluation and development of a more comprehensive controlled access system for the entire commercial reef fish fishery.

Amendment 18A (EA/RIR/IRFA), was implemented on September 8, 2006, except for VMS requirements which were implemented May 6, 2007. Amendment 18A addresses the following: (1) prohibits vessels from retaining reef fish caught under recreational bag/possession limits when commercial quantities of Gulf reef fish are aboard, (2) adjusts the maximum crew size on charter vessels that also have a commercial reef fish permit and a USCG certificate of inspection (COI) to allow the minimum crew size specified by the COI when the vessel is fishing commercially for more than 12 hours, (3) prohibits the use of reef fish for bait except for sand perch or dwarf sand perch, (4) requires devices and protocols for the safe release in incidentally caught endangered sea turtle species and smalltooth sawfish, (5) updates the TAC procedure to incorporate the Southeast Data Assessment and Review (SEDAR) assessment methodology, (6) changes the permit application process to an annual procedure and simplifies income qualification documentation requirements, and (7) requires electronic VMS aboard vessels with

federal reef fish permits, including vessels with both commercial and charter vessel permits.

Amendment 19 (FSEIS/RIR/IRFA), also known as the Generic Amendment Addressing the Establishment of the Tortugas Marine Reserves, or Generic Essential Fish Habitat (EFH) Amendment 2, was implemented on August 19, 2002. This amendment establishes two marine reserves off the Dry Tortugas where fishing for any species and anchoring by fishing vessels is prohibited.

Amendment 20 (EA/RIR/IRFA), implemented July 2003, established a three-year moratorium on the issuance of charter and headboat vessel permits in the recreational for-hire reef fish and coastal migratory pelagic fisheries in the Gulf EEZ.

Amendment 21 (EA/RIR/IRFA), implemented in July 2003, continued the Steamboat Lumps and Madison-Swanson reserves for an additional six years, until June 2010. In combination with the initial four-year period (June 2000-June 2004), this allowed a total of ten years in which to evaluate the effects of these reserves and to provide protection to a portion of the gag spawning aggregations.

Amendment 22 (SEIS/RIR/IRFA), implemented July 5, 2005, specified bycatch reporting methodologies for the reef fish fishery.

Amendment 23 (SEIS/RIR/IRFA), implemented July 8, 2005, established a rebuilding plan for vermilion snapper, including an 11 inch total length minimum size limit, a 10-fish vermilion snapper bag limit within the 20-reef fish aggregate bag limit, and an April 22 through May 31 closed season for the commercial fishery.

Amendment 24 (EA/RIR/IRFA), implemented on August 17, 2005, replaced the commercial reef fish permit moratorium that was set to expire on December 31, 2005 with a permanent limited access system.

Amendment 25 (SEIS/RIR/IRFA), implemented on June 15, 2006, replaced the reef fish for-hire permit moratorium that expired in June 2006 with a permanent limited access system.

Amendment 26 (SEIS/RIR/IRFA), implemented on January 1, 2007, established an individual fishing quota system for the commercial red snapper fishery.

Amendment 27 (SEIS/RIR/IRFA), implemented February 28, 2008, except for reef fish bycatch reduction measures that became effective on June 1, 2008. This amendment addressed overfishing and stock rebuilding for red snapper. It also required the use of non-stainless steel circle hooks when using natural baits to fish for Gulf reef fish effective June 1, 2008, and required the use of venting tools and dehooking devices when participating in the commercial or recreational reef fish fisheries effective June 1, 2008.

Amendment 28 is currently under development. It is intended to address grouper allocation issues.

Amendment 29 (EA/RIR/IRFA), implemented January 1, 2010, established an individual

fishing quota system for the commercial grouper and tilefish fisheries.

Amendment 30A (SEIS/RIR/IRFA), implemented August 2008, was developed to stop overfishing of gray triggerfish and greater amberjack. The amendment established ACLs and accountability measures (AMs) for greater amberjack and gray triggerfish. For greater amberjack, it modified the rebuilding plan, increased the recreational minimum size limit, set a zero bag limit for captain and crew of for-hire vessels, and set commercial and recreational quotas. For gray triggerfish, it increased the commercial and recreational minimum size limit and set a commercial quota.

Amendment 30B (FEIS/RIR/IRFA), implemented May 2009, proposes to end overfishing of gag, revise red grouper management measures as a result of changes in the stock condition, establish ACLs and AMs for gag and red grouper, manage SWG to achieve OY, and improve the effectiveness of federal management measures. The amendment (1) defines the gag MSST and OY; (2) set interim allocations of gag and red grouper between recreational and commercial fisheries; (3) makes adjustments to the gag and red grouper TACs to reflect the current status of these stocks; (4) establishes ACLs and AMs for the commercial and recreational red grouper fisheries, commercial and recreational gag fisheries, and commercial aggregate SWG fishery; (5) adjusts recreational grouper bag limits and seasons; (6) adjusts commercial grouper quotas; (7) reduces the red grouper commercial minimum size limit; (8) replaces the one month commercial grouper closed season with a four month seasonal area closure at the Edges, a 390 square nautical mile area in the dominant gag spawning grounds; (9) eliminates the end date for the Madison-Swanson and Steamboat Lumps marine reserves; and (10) requires that vessels with federal commercial or charter reef fish permits comply with the more restrictive of state or federal reef fish regulations when fishing in state waters.

Amendment 31 (DEIS/RIR/IRFA), submitted to NMFS and currently under review, establishes additional restrictions on the use of bottom longline gear in the eastern Gulf of Mexico in order to reduce bycatch of endangered sea turtles, particularly loggerhead sea turtles. The amendment (1) prohibits the use of bottom longline gear shoreward of a line approximating the 35-fathom contour from June through August; (2) reduces the number of longline vessels operating in the fishery through an endorsement provided only to vessel permits with a demonstrated history of landings, on average, of at least 40,000 pounds of reef fish annually with fish traps or longline gear during 1999-2007; and (3) restricts the total number of hooks that may be possessed onboard each reef fish bottom longline vessel to 1,000, only 750 of which may be rigged for fishing. The boundary line was initially moved to 50 fathoms by emergency rule effective May 18, 2009. That rule was replaced on October 16, 2009 by a rule under the Endangered Species Act moving the boundary to 35 fathoms and implementing the maximum hook provisions.

Regulatory Amendments, Emergency and Interim Rules

A July 1991 regulatory amendment, implemented November 12, 1991, provided a one-time increase in the 1991 quota for SWG from 9.2 mp to 9.9 mp to provide the commercial fishery an opportunity to harvest 0.7 mp that was not harvested in 1990 [56 FR 58188].

A November 1991 regulatory amendment, implemented June 22, 1992, raised the 1992

commercial quota for SWG to 9.8 mp after a red grouper stock assessment indicated that the red grouper SPR was substantially above the Council's minimum target of 20% [57 FR 21751].

An August 1999 regulatory amendment, implemented June 19, 2000, increased the commercial size limit for gag and black grouper from 20 to 24 inches TL, increased the recreational size limit for gag from 20 to 22 inches TL, prohibited commercial sale of gag, black, and red grouper each year from February 15 to March 15 (during the peak of gag spawning season), and established two marine reserves (Steamboat Lumps and Madison-Swanson) that are closed year-round to fishing for all species under the Council's jurisdiction [65 FR 31827].

An emergency rule, published February 15, 2005, established a series of trip limits for the commercial grouper fishery in order to extend the commercial fishing season. The trip limit was initially set at 10,000 pounds gutted-weight (GW). If on or before August 1 the fishery is estimated to have landed more than 50% of either the SWG or the red grouper quota, then a 7,500 pound GW trip limit takes effect; and if on or before October 1 the fishery is estimated to have landed more than 75% of either the SWG or the red grouper quota, then a 5,500 pound GW trip limit takes effect [70 FR 8037].

An interim rule, published July 25, 2005, proposed for the period August 9, 2005 through January 23, 2006, a temporary reduction in the recreational red grouper bag limit from two to one fish per person per day, in the aggregate grouper bag limit from five to three grouper per day, and a closure of the recreational fishery, from November - December 2005, for all grouper species [70 FR 42510]. These measures were proposed in response to an overharvest of the recreational allocation of red grouper under the Secretarial Amendment 1 red grouper rebuilding plan. The closed season was applied to all grouper in order to prevent effort shifting from red grouper to other grouper species and an increased bycatch mortality of incidentally caught red grouper. However, the rule was challenged by organizations representing recreational fishing interests. On October 31, 2005, a U.S. District Court judge ruled that an interim rule to end overfishing can only be applied to the species that is undergoing overfishing. Consequently, the reduction in the aggregate grouper bag limit and the application of the closed season to all grouper were overturned. The reduction in the red grouper bag limit to one per person and the November-December 2005 recreational closed season on red grouper only were allowed to proceed. The approved measures were subsequently extended through July 22, 2006 by a temporary rule extension published January 19, 2006 [71 FR 3018].

An October 2005 regulatory amendment, implemented January 1, 2006, established a 6,000 pound GW aggregate DWG and SWG trip limit for the commercial grouper fishery, replacing the 10,000/7,500/5,500 step-down trip limit that had been implemented by emergency rule for 2005 [70 FR 77057].

A March 2006 regulatory amendment (GMFMC 2005c), implemented July 15, 2006, established a recreational red grouper bag limit of one fish per person per day as part of the five grouper per person aggregate bag limit, and prohibited for-hire vessel captains and crews from retaining bag limits of any grouper while under charter [71 FR 34534]. An additional provision established a recreational closed season for red grouper, gag and black grouper from February 15 to March 15 each year (matching a previously established commercial closed season) beginning with the 2007 season.

An interim rule was implemented on January 1, 2009, at the request of the Council to reduce overfishing of gag pending implementation of permanent rules under Amendment 30B. Measures in the temporary rule: (1) established a two-fish gag recreational bag limit (recreational grouper aggregate bag limit remained at five fish); (2) adjusted the recreational closed season for gag to February 1 through March 31 (the recreational closed season for red and black groupers remained February 15 to March 15); (3) established a 1.32 mp commercial quota for gag; and (4) required operators of federally permitted Gulf commercial and for-hire reef fish vessels to comply with the more restrictive of federal or state reef fish regulations when fishing in state waters for red snapper, greater amberjack, gray triggerfish, and gag [71 FR 66878].

An emergency rule was implemented May 18, 2009 through October 28, 2009 prohibiting the use of bottom longline gear to harvest reef fish east of 85°30' W longitude in the portion of the EEZ shoreward of the coordinates established to approximate a line following the 50-fathom (91.4-m) contour as long as the 2009 deepwater grouper and tilefish quotas are unfilled. Once the quotas have been filled, the use of bottom longline gear to harvest reef fish in water of all depths east of 85°30' W longitude are prohibited [74 FR 20229].

A rule under the Endangered Species Act was implemented October 16, 2009 that prohibits bottom longlining for Gulf reef fish east of 85°30' W longitude (near Cape San Blas, Florida) shoreward of the 35-fathom depth contour, and it restricts the number of hooks on board to 1,000 hooks per vessel with no more than 750 hooks being fished or rigged for fishing at any given time. The rule replaced the 50 fathom boundary emergency rule in order to relieve social and economic hardship on longline fishermen who were prevented from fishing for shallow-water grouper by the emergency rule, and to keep fishing restrictions consistent with the Amendment 31 actions in place while proposed Amendment 31 is reviewed. The rule was implemented after a Biological Opinion was completed by NMFS on the continued authorization of the Gulf reef fish fishery, as managed under the Reef Fish FMP. That opinion, which considered the proposed actions in Amendment 31, concluded that the continued authorization of the Gulf reef fish fishery was likely to adversely affect sea turtles and sawfish, but was not likely to jeopardize the continued existence of any listed species. An Incidental Take Statement was issued specifying the amount and extent of anticipated take on a three-year basis, along with reasonable and prudent measures and associated terms and conditions deemed necessary and appropriate to minimize the impact of these takes [74 FR 53889].

Secretarial Amendments

Secretarial Amendment 1, implemented July 15, 2004, established a rebuilding plan, a 5.31 mp GW commercial quota, and a 1.25 mp GW recreational target catch level for red grouper. The amendment also reduced the commercial quota for SWG from 9.35 to 8.8 mp GW and reduced the commercial quota for DWG from 1.35 to 1.02 mp GW. The recreational bag limit for red grouper was reduced to two fish per person per day. In this amendment bottom longlines were considered for movement out to 50 fathoms which had also been considered under Reef Fish Amendment 18 [54 FR 214].

Secretarial Amendment 2, implemented in July, 2003 for greater amberjack, specified MSY as the yield associated with $F_{30\% SPR}$ (proxy for F_{MSY}) when the stock is at equilibrium, OY as the

yield associated with an $F_{40\% SPR}$ when the stock is at equilibrium, MFMT equal to $F_{30\% SPR}$, and MSST equal to $(1-M)*BMSY$ or 75% of BMSY. It also set a rebuilding plan limiting the harvest to 2.9 mp for 2003-2005, 5.2 mp for 2006-2008, 7.0 mp for 2009-2011, and 7.9 mp for 2012. This was expected to rebuild the stock in seven years. Regulations implemented in 1997 and 1998 (Amendments 12 and 15) were deemed sufficient to comply with the rebuilding plan so no new regulations were implemented [68 FR 39898].

Control Date Notices

Control date notices are used to inform fishermen that a license limitation system or other method of limiting access to a particular fishery or fishing method is under consideration. If a program to limit access is established, anyone not participating in the fishery or using the fishing method by the published control date may be ineligible for initial access to participate in the fishery or to use that fishing method. However, a person who does not receive an initial eligibility may be able to enter the fishery or fishing method after the limited access system is established by transfer of the eligibility from a current participant, provided the limited access system allows such transfer. Publication of a control date does not obligate the Council to use that date as an initial eligibility criteria. A different date could be used, and additional qualification criteria could be established. The announcement of a control date is primarily intended to discourage entry into the fishery or use of a particular gear based on economic speculation during the Council's deliberation on the issues. The following summarizes control dates that have been established for the Reef Fish FMP. A reference to the full *Federal Register* notice is included with each summary.

November 1, 1989 - Anyone entering the commercial reef fish fishery in the Gulf and South Atlantic after November 1, 1989, may not be assured of future access to the reef fish resource if a management regime is developed and implemented that limits the number of participants in the fishery [54 FR 46755].

November 18, 1998 - The Council is considering whether there is a need to impose additional management measures limiting entry into the recreational-for-hire (i.e., charter vessel and headboat) fisheries for reef fish and coastal migratory pelagic fish in the EEZ of the Gulf and, if there is a need, what management measures should be imposed. Possible measures include the establishment of a limited entry program to control participation or effort in the recreational-for-hire fisheries for reef fish and coastal migratory pelagic [63 FR 64031] (In Amendment 20 to the Reef Fish FMP, a qualifying date of March 29, 2001, was adopted).

July 12, 2000 - The Council is considering whether there is a need to limit participation by gear type in the commercial reef fish fisheries in the EEZ of the Gulf and, if there is a need, what management measures should be imposed to accomplish this. Possible measures include modifications to the existing limited entry program to control fishery participation, or effort, based on gear type, such as a requirement for a gear endorsement on the commercial reef fish vessel permit for the appropriate gear. Gear types which may be included are longlines, buoy gear, handlines, rod-and-reel, bandit gear, spear fishing gear, and powerheads used with spears [65 FR 42978].

October 15, 2004 – the Council is considering the establishment of an IFQ program to control

participation or effort in the commercial grouper fisheries of the Gulf. If an IFQ program is established, the Council is considering October 15, 2004, as a possible control date regarding the eligibility of catch histories in the commercial grouper fishery [69 FR 67106].

December 31, 2008 – the Council voted to establish a control date for all Gulf commercial reef fish vessel permits. The control date will allow the Council to evaluate fishery participation and address any level of overcapacity. The establishment of this control date does not commit the Council or NOAA Fisheries Service to any particular management regime or criteria for entry into this fishery. Fishermen would not be guaranteed future participation in the fishery regardless of their entry date or intensity of participation in the fishery before or after the control date under consideration. Comments were requested by close of business April 17, 2009 [74 FR 11517].

2 MANAGEMENT ALTERNATIVES

2.1 Action 1. Rebuilding Plan for Gag

Alternative 1: No action. Do not specify a rebuilding plan for gag.

Alternative 2: Establish a rebuilding plan that will rebuild the gag stock to a level consistent with producing maximum sustainable yield in 10 years or less.

Alternative 3: Establish a rebuilding plan that will rebuild the gag stock to a level consistent with producing maximum sustainable yield in 7 years or less.

Alternative 4: Establish a rebuilding plan that will rebuild the gag stock to a level consistent with producing maximum sustainable yield in 5 years (T_{\min}).

Discussion:

Section 304 of the Magnuson-Stevens Act states that for a fishery that is overfished, the rebuilding plan shall—

- (A) specify a time period for rebuilding the fishery that shall—
 - (i) be as short as possible, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock of fish within the marine ecosystem; and
 - (ii) not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise;
- (B) allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery; and
- (C) for fisheries managed under an international agreement, reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

The shortest possible time in which the gag stock can rebuild (T_{\min}) is 5 years in the absence of all fishing mortality including bycatch mortality, whereas the maximum time (T_{\max}) is 10 years. The proposed annual catch limits are based on yields that will rebuild the stock in 10 years. The proposed annual catch targets are yields under the Council's current definition of optimum yield, which are projected to produce a faster rebuilding, 7 years².

Amendment 30B established an interim allocation of the gag stock, based on commercial and recreational landings during the years 1986 through 2005, of 39% commercial, 61% recreational. This allocation complies with specification (B) with respect to the commercial and recreational allocations. However, this document includes a consideration of further sub-dividing the recreational allocation into a for-hire (charter boat and headboat) allocation and a private recreational allocation.

² Personal communication from Brian Linton, Southeast Fisheries Science Center, Miami.

Specification (C) does not apply to gag since they are not fished under an international agreement.

Alternative 1, no action, does not specify a rebuilding plan for gag. This is not allowed under the Magnuson-Stevens Act, and is included only for purposes of including a no action alternative. As shown in Figure 1, model trends produced by the “red tide” assessment model suggest that gag were overfished in the 1980’s and at that time were at only half the biomass capable of supporting maximum sustainable yield. In the 1990s, gag began a slow recovery, possibly due to the regulations implemented beginning in 1990. By 2000, the stock was fully recovered, and remained recovered until 2005, when it once again declined into an overfished state. Assessment scientists have suggested that an episodic mortality event such as the massive 2005 red tide contributed to the decline. However, the fishing mortality rate has been consistently above the rate associated with maximum yield per recruit (used as a proxy for maximum sustainable yield). The fishing mortality rate estimated in the most recent year, 2008, should be viewed with caution, because it is considered less reliable until 2009 estimates are incorporated. Yet even without the 2008 estimate, the fishing mortality rate shows an increasing trend over time. This rate of fishing mortality is not consistent with rebuilding or maintaining the stock at its maximum sustainable yield level.

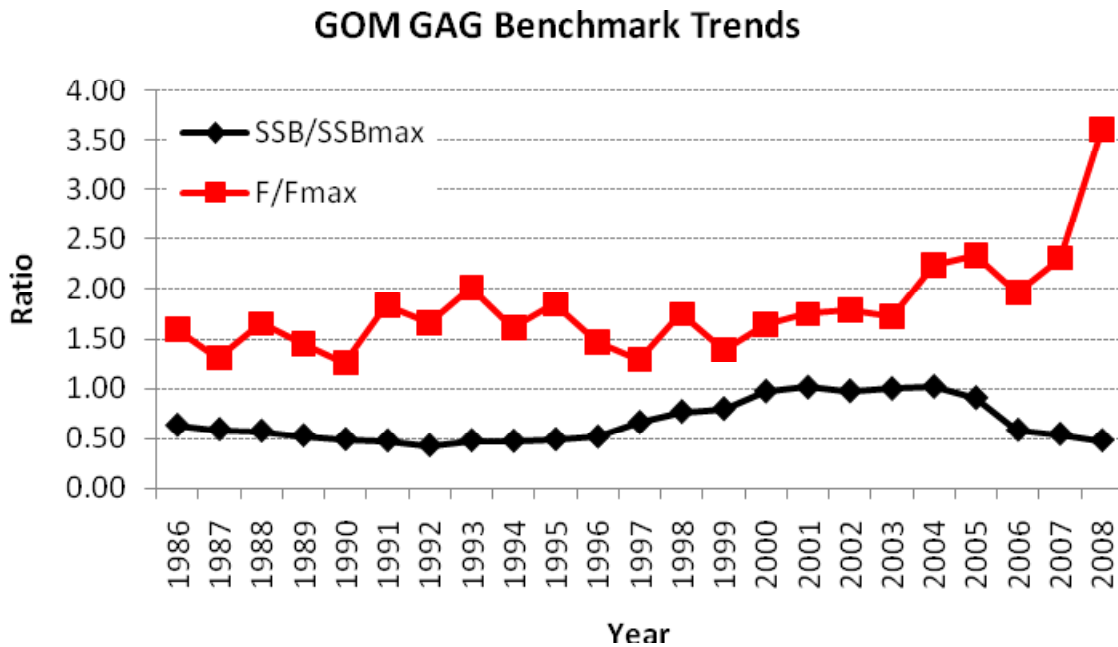


Figure 1. (Figure 9.2 from 2009 gag update assessment). Red tide model trends in F and SSB relative to corresponding benchmarks.

Alternative 2 establishes a rebuilding plan in 10 years or less in accordance with the maximum time frame allowed under the requirements of the Magnuson-Stevens Act. The assessment estimated that the gag stock would rebuild to its maximum sustainable yield level in 5 years if all sources of fishing mortality (including discard mortality) could be eliminated. Since the stock can recover in less than 10 years, the Magnuson-Stevens Act requires that the rebuilding plan be for no more than 10 years. Specifying the rebuilding time to be 10 years or less allows leeway to

take the needs of fishing communities into account when setting catch levels and management measures.

Alternative 3 establishes a target of 7 years or less to rebuild the gag stock. This is the estimated time to rebuild if the stock is managed at a fishing rate corresponding to optimum yield (F_{OY}) rather than the rate corresponding to a 10-year rebuilding plan ($F_{rebuilding}$). While the yields under a 7-year rebuilding plan would eventually catch up to those for a 10-year plan, the initial catch targets in the early years would be smaller. However, given the low initial catch levels required under either rebuilding plan (first year yields of 0.82 million pounds gutted weight under a 10-year plan vs. 0.67 million pounds gutted weight under a 7-year plan), the faster rebuilding and could make this a less economically disruptive approach by allowing the yields associated with a fully rebuilt stock to be resumed more quickly.

Alternative 4 establishes a target of 5 years to rebuild the gag stock. This is the minimum time in which the stock can be rebuilt (T_{min}) if all sources of fishing mortality (including discard mortality) could be eliminated. It would require a complete closure of the gag fishery for at least 5 years. If this alternative is adopted, strong measures to reduce bycatch of gag in other fisheries should be considered in conjunction. Since a total elimination of discard mortality is unlikely to be achieved, this alternative would likely result in the stock being slightly under the rebuilding target at the end of five years.

2.2 Action 2. Annual Catch Limits and Annual Catch Targets

2.2.1 Setting of Acceptable Biological Catch

Section 302 of the Magnuson-Stevens Act states that “each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch (ABC)”. The Act further states that the Council shall “develop annual catch limits for each of its managed fisheries that may not exceed the fishing level recommendations of its scientific and statistical committee”. Update assessments of gag (SEDAR 2009a) and red grouper (SEDAR 2009b) were prepared by the NMFS Southeast Fisheries Science Center and a SEDAR Update Assessment Workgroup during the spring of 2009. These assessments were reviewed by the Standing and Special Reef Fish Scientific and Statistical Committee in June 2009, at which time preliminary recommendations of ABC were made.

Setting of Red Grouper ABC

The assessment was conducted using an age-structured assessment model called ASAP (Legault and Restrepo 1998), and projections were estimated using PRO-2BOX (Porch 2002). After reviewing several model runs with varied parameter inputs, the Scientific and Statistical Committee accepted the model run titled “Red Tide Model with Constant Catchability”. This model run allowed the natural mortality rate for 2005, a year when there was an extensive red tide event along the West Florida Shelf, to adjust above the base natural mortality rate. The best-fit result indicated that an additional mortality for red grouper corresponding to a little over 20% of the stock occurred in 2005.³ The 2010 overfishing limit (OFL) or the yield associated with F_{MSY} for this model was 6.43 million pounds Table 2.2.1, F_{MSY} column. Optimum yield (OY) in was calculated as the yield at 75% of F_{MSY} , the Council’s default definition, and are shown in Table 2.2.1 in the column labeled 75% F_{MSY} (OY). Upper and lower 80% confidence limits were calculated by conducting 500 bootstrap runs; however, only the parameters of the stock recruitment relationship were allowed to vary in these runs resulting in very narrow confidence limits.

³ E-mail from Clay Porch (NMFS Southeast Fisheries Science Center) to Steven Atran (Gulf Council staff) dated June 24, 2009. There is confusion among some members of the public that the assessment claimed that 30% of the grouper were killed due to red tide. Dr. Porch’s e-mail states that “the estimate of the instantaneous episodic natural mortality rate was 0.3, and that this translates roughly to something like 30% of the stock being killed (I emphasized at the time that it wasn’t exactly 30%). Later during the meeting John (Walter) calculated the actual percentage for red grouper and it was a little over 20% (which I relayed to the AP, and I think the SSC, later on Tuesday)”.

Table 2.2.1. Red tide model predicted red grouper yield (millions of pounds gutted weight) for the four projections (2009-2020) with 80% confidence intervals. Source: Table 10.7 in SEDAR 2009b.

Year	F _{current}			F _{MSY} (OFL)			90% F _{MSY}			75% F _{MSY} (OY)		
	Low 80% CL	Median 80%	Upp 80% CL	Low 80% CL	Median 80%	Upp 80% CL	Low 80% CL	Median 80%	Upp 80% CL	Low 80% CL	Median 80%	Upp 80% CL
2009	7.570	7.570	7.570	7.570	7.570	7.570	7.570	7.570	7.570	7.570	7.570	7.570
2010	5.542	5.542	5.542	6.425	6.425	6.425	5.827	5.827	5.827	4.913	4.913	4.913
2011	5.842	5.843	5.844	6.626	6.627	6.628	6.100	6.100	6.101	5.259	5.260	5.260
2012	6.047	6.058	6.075	6.725	6.738	6.758	6.274	6.286	6.304	5.519	5.529	5.544
2013	6.211	6.351	6.576	6.787	6.947	7.205	6.408	6.554	6.790	5.740	5.865	6.066
2014	6.146	6.595	7.297	6.610	7.118	7.909	6.307	6.777	7.509	5.746	6.150	6.781
2015	6.192	6.770	7.772	6.579	7.226	8.349	6.330	6.931	7.972	5.837	6.366	7.283
2016	6.243	7.029	8.114	6.565	7.439	8.618	6.366	7.176	8.295	5.922	6.652	7.654
2017	6.231	7.228	8.451	6.497	7.571	8.887	6.328	7.359	8.622	5.963	6.883	8.010
2018	6.287	7.392	8.667	6.523	7.701	9.141	6.378	7.510	8.837	6.036	7.061	8.240
2019	6.398	7.495	9.048	6.580	7.786	9.453	6.472	7.599	9.212	6.172	7.203	8.671
2020	6.450	7.631	9.142	6.627	7.864	9.485	6.526	7.727	9.262	6.238	7.356	8.797

In order to provide an ABC that was based on OFL as reduced by scientific uncertainty, the SSC referred to a decision table in the update assessment (Table 2.2.2) that attempted to provide a distribution of probabilities that overfishing would occur for various levels of annual catch. An explanation of how this table was construction is on page 36 of the update assessment, and reads:

“Based upon the projections a decision table which presents the probability of overfishing ($F > F_{MSY}$) for a suite of fixed harvest quotas spanning the central model estimate of MSY (6.96 mp) was constructed (Table 10.13). Tables were created from 500 bootstrap projections from the proportion of the 500 bootstraps for which $F > F_{MSY}$ in for the years 2009-2019. Note that for 2009, the landings were estimated to be 7.57 mp, which is the reason that many scenarios indicate overfishing in that year only. The probability of overfishing was calculated for the central model, +/- 2% change in catchability (q) and 1.1 and 0.9*natural mortality and for the red tide model.”

The decision table evaluated potential ABCs in 0.5 mp increments, and had an extremely course resolution. For 2010, all ABCs at 6.46 mp or higher had a 100% probability of overfishing, and all ABCs at 5.96 mp and lower had a 0% probability of overfishing, at least when carried to two decimal places. The SSC considered setting ABC at the midpoint between **5.96 mp** and 6.46 mp, or 6.195 mp, but that motion died without a second. Most Scientific and Statistical Committee members felt it was more defensible to select a value from the table than to try and interpolate between values. The highest ABC value for 2010 in Table 10.13 (Table 2.2.2 below) that did not have a 100% probability of overfishing was **5.96 mp**, and so that became the ABC recommendation. Since it was less than the OFL, the Scientific and Statistical Committee knew that it had a less than 50% probability of overfishing, even if they did not know the exact value.

The Scientific and Statistical Committee noted that the yield projections for 2010 and beyond assumed that the entire total acceptable catch would be taken in 2009. The Committee felt that this was an unreasonable assumption. They only recommended an ABC for red grouper for 2010, and requested that the projections be re-analyzed once the final 2009 landings are available (in Spring 2010).

Table 2.2.2. Probability of overfishing for Gulf of Mexico red grouper based on fixed landing projection scenarios. 500 bootstraps were run for each projection scenario. Recruitments were randomly resampled for each run. Probability based on the percentage of runs in which $F > F_{msy}$. Source: Table 10.13 in SEDAR 2009b.

Red Tide Model											
year	4.46	4.96	5.46	5.96	6.46	6.96	7.46	7.96	0.85	8.96	9.46
	mp	mp	mp	mp	mp	mp	mp	mp	mp	mp	mp
2009	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2010	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2011	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
2012	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
2013	0.00	0.00	0.00	0.00	0.00	0.86	1.00	1.00	1.00	1.00	1.00
2014	0.00	0.00	0.00	0.00	0.01	0.54	0.93	0.99	1.00	1.00	1.00
2015	0.00	0.00	0.00	0.00	0.02	0.44	0.83	0.97	1.00	1.00	1.00
2016	0.00	0.00	0.00	0.00	0.04	0.36	0.74	0.93	0.98	1.00	1.00
2017	0.00	0.00	0.00	0.00	0.04	0.32	0.68	0.90	0.98	1.00	1.00
2018	0.00	0.00	0.00	0.00	0.05	0.27	0.61	0.87	0.97	1.00	1.00
2019	0.00	0.00	0.00	0.00	0.04	0.23	0.59	0.83	0.96	0.99	1.00

Setting of Gag ABC

Since gag are overfished, they require a rebuilding plan. As with red grouper, the Scientific and Statistical Committee reviewed several model runs and accepted the model run titled, “Red Tide with Increasing Catchability”. The Scientific and Statistical Committee chose a model with increasing catchability for gag because they felt that the tendency of gag to form aggregations made them more susceptible to improvements in gear technology over time. As with red grouper, this model run allowed the natural mortality rate for 2005, a year when there was an extensive red tide event along the West Florida Shelf, to adjust above the base natural mortality rate. The best-fit result indicated that an additional mortality for gag corresponding to 18% of the stock occurred in 2005.⁴ The OFL is the yield associated with F_{MAX} (proxy for F_{MSY}), and is 0.88 mp in 2010 in Table 2.2.3.

⁴ E-mail from Brian Linton (NMFS Southeast Fisheries Science Center) to Steven Atran (Gulf Council staff) dated July 7, 2009.

Table 2.2.3. Projected yields for Gulf of Mexico gag from central, red tide, and red tide increasing catchability models under six fixed fishing mortality rate management scenarios. Units for yield are million pounds gutted weight. (shaded values are original OFL yield stream and original ABC 10-year rebuilding yield stream respectively.) Source: Table 10.1 in SEDAR 2009a.

Red Tide w/ Increasing Catchability												
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
F_{current}	5.30	3.38	1.94	2.25	2.60	2.86	3.04	3.14	3.20	3.23	3.24	3.25
F_{MAX} (OFL)	5.30	3.38	0.88	1.27	1.80	2.31	2.77	3.11	3.36	3.55	3.68	3.78
90% F_{MAX}	5.30	3.38	0.50	0.78	1.17	1.59	1.99	2.33	2.58	2.78	2.93	3.05
75% F_{MAX} (OY)	5.30	3.38	0.67	1.01	1.48	1.97	2.41	2.76	3.03	3.23	3.38	3.49
$F_{\text{rebuild-SSB}_{\text{OY}}}$	5.30	3.38	0.59	0.90	1.33	1.79	2.22	2.56	2.83	3.03	3.18	3.30
$F_{\text{rebuild-SSB}_{\text{MAX}}}$	5.30	3.38	0.82	1.20	1.71	2.23	2.68	3.03	3.29	3.48	3.61	3.72

For an ABC, the Scientific and Statistical Committee did not have a gag decision table such as Table 2.2.2 for red grouper. However, in viewing the yield streams for gag in Table 2.2.3, the Scientific and Statistical Committee noted that the $F_{\text{rebuilding}}$ yields are always less than F_{MSY} . Since the yield when fishing at F_{MSY} has a 50% probability of overfishing, the probability of overfishing at $F_{\text{rebuilding}}$ must be less than 50%. The yield stream in Table 2.2.3 labeled 75% F_{MAX} (OY) is the optimum yield stream under the Council's definition of optimum yield, although the National Standard 1 guidelines define optimum yield, for an overfished stock, as a yield consistent with rebuilding the stock.

As with red grouper, the Scientific and Statistical Committee noted that the yield projections for 2010 and beyond assumed that the entire total acceptable catch would be taken in 2009. The Committee felt that this was an unreasonable assumption. They initially only recommended an ABC for gag for **2010 of 0.82 mp** based on the yield projection for $F_{\text{rebuild-SSB}_{\text{MAX}}}$ in Table 2.2.3, and requested that the projections be re-analyzed once the final 2009 landings are available (in Spring 2010). However, recognizing that the Council is required to develop a gag rebuilding plan, the Committee recommended acceptable biological catches for 2010-2014 be based on the current analyses be used if the reanalysis cannot be done in time (**2011=1.20 mp, 2012=1.71 mp, 2013=2.23 mp, 2014=2.68 mp**).

Yield Projections Update

THIS NEW INFORMATION HAS NOT YET BEEN REVIEWED BY THE SCIENTIFIC AND STATISTICAL COMMITTEE.

On March 23, 2010, the Council received revised red grouper and gag projections from NMFS using preliminary 2009 landings data. The new projections also provided an estimate of what the catches will be in 2010, and changed the starting date of the gag rebuilding plan from 2010 to 2011.

The preliminary 2009 total landings for gag grouper is 2.20 mp (Table 2.2.4), which is 1.18 mp less than the 2009 total allowable catch of 3.38 mp. The projected yield streams for gag grouper are reported in Table 2.2.6. The best estimate of 2009 total landings for red grouper is 4.69 mp (Table 2.2.5), which is 2.88 mp less than the 2009 total allowable catch of 7.57 mp. The projected yield streams for red grouper are reported in Table 2.2.7.

For gag grouper, the projected yields for 2011 to 2014 under $F_{rebuild}$ are lower than originally projected by the 2009 gag grouper update assessment (0.32-0.46 mp lower under scenario 1 and 0.03-0.11 mp lower under scenario 3). This is because fishing at $F_{rebuild}$ is initiated one year later (2011) in the revised projections.

For red grouper, the projected yields for 2011 to 2014 under F_{OY} were higher than in the original projections from the 2009 red grouper update assessment report (0.01-0.05 mp higher under scenario 2 and 0.28-0.42 mp higher under scenario 4). This is because the original projections assumed the 2009 catches would equal the total allowable catch, but the realized catches used in the revised projections were substantially less.

Table 2.2.4. Preliminary estimates of Gulf of Mexico gag grouper landings for 2009. Landings are reported in pounds, gutted weight.

Year	Recreational			Commercial		
	Headboat	MRFSS	TPWD	Handline	Longline	Other
2009	64,245	1,410,663	2,466	539,984	143,477	39,183

Table 2.2.5. Preliminary estimates of Gulf of Mexico red grouper landings for 2009. Landings are reported in pounds, gutted weight.

Year	Recreational			Commercial		
	Headboat	MRFSS	TPWD	Handline	Longline	Other
2009	45,582	932,741	NA	2,500,671	1,152,287	54,339

Table 2.2.6. Projected yield streams for Gulf of Mexico gag. Yields are reported in millions of pounds, gutted weight. Scenarios 1 and 2 assume that the entire TAC will be taken in 2010. Scenarios 3 and 4 assume that the 2010 landings will be the same as 2009.

Projection Scenario	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Scenario 1 - $F_{rebuild}$	5.30	2.20	3.62	0.88	1.30	1.77	2.26	2.69	3.02	3.27	3.45	3.58
Scenario 2 - F_{OY}	5.30	2.20	3.62	0.76	1.14	1.59	2.05	2.48	2.81	3.06	3.25	3.40
Scenario 3 - $F_{rebuild}$	5.30	2.20	2.20	1.17	1.64	2.12	2.57	2.93	3.20	3.40	3.55	3.66
Scenario 4 - F_{OY}	5.30	2.20	2.20	1.01	1.44	1.90	2.34	2.70	2.98	3.19	3.35	3.48

Table 2.2.7. Projected yield streams for Gulf of Mexico red grouper. Yields are reported in millions of pounds, gutted weight. Scenarios 1 and 2 assume that the entire TAC will be taken in 2010. Scenarios 3 and 4 assume that the 2010 landings will be the same as 2009.

Projection Scenario	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Scenario 1 - F_{MSY}	5.62	4.69	7.57	6.94	7.01	7.16	7.23	7.30	7.36	7.42	7.46	7.50
Scenario 2 - F_{OY}	5.62	4.69	7.57	5.31	5.56	5.88	6.11	6.32	6.50	6.66	6.79	6.90
Scenario 3 - F_{MSY}	5.62	4.69	4.69	7.42	7.43	7.53	7.54	7.54	7.56	7.58	7.59	7.61
Scenario 4 - F_{OY}	5.62	4.69	4.69	5.68	5.90	6.19	6.38	6.54	6.69	6.81	6.92	7.02

2.2.2 Alternatives for Gag and Red Grouper ACL and ACT

Amendment 30B established the aggregate commercial shallow-water grouper quota for each year as the sum of the gag and red grouper quotas, plus the other shallow-water grouper allowance of 0.41 million pounds. This formula is not changed in this amendment, and therefore will continue to be used to calculate the shallow-water grouper quota. The shallow-water grouper annual catch limit will also continue to be calculated as in Amendment 30B, i.e., the sum of the red grouper and gag commercial sector annual catch limits plus 0.41 million pounds.

The following alternatives are based on Scenarios 3 & 4 in Tables 2.2.6 and 2.2.7 – 2010 landings assumed to equal 2009 landings. See the supplement at the end of the options paper for alternatives based on Scenarios 1 & 2 – 2020 landings = 2010 TAC (3.62 mp for gag, 7.).

Alternative 1: No action. As specified in Amendment 30b, the gag ACT will increase to 3.82 mp in 2011 and the ACL to 4.50 mp. Red grouper ACL remains 7.72 mp and ACT remains at 7.57 mp. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30b. For purposes of accountability measure triggers, the recreational sector ACL and ACT will be based on moving averages as devised in Amendment 30b. The resulting ACLs and ACTs are shown in Table Alternative 1.

Table Alternative 1

Recreational Fishery						
Year	Gag		Red Grouper		Test criteria	
	ACT	ACL	ACT	ACL		
2011	2.20	2.67	1.82	1.85	Average of 2009+2010+2011 landings	
2012	2.29	2.72	1.82	1.85	Average of 2010+2011+2012 landings	
2013	2.33	2.75	1.82	1.85	Average of 2011+2012+2013 landings	
2014	2.33	2.75	1.82	1.85	Average of 2012+2013+2014 landings	
2015	2.33	2.75	1.82	1.85	Average of 2013+2014+2015 landings	
Commercial Fishery						
Year	Gag		Red Grouper		Shallow-water	
	ACT	ACL	ACT	ACL	ACT	ACL
2011	1.49	1.76	5.75	5.87	7.65	8.03
2012	1.49	1.76	5.75	5.87	7.65	8.04
2013	1.49	1.76	5.75	5.87	7.65	8.04
2014	1.49	1.76	5.75	5.87	7.65	8.04
2015	1.49	1.76	5.75	5.87	7.65	8.04

See footnote for explanation of table⁵.

⁵ - ACL = ABC times the sector allocation. ACT = OY times the sector allocation, where OY = the yield at 75% of F_{MSY} (F_{MAX} is used as a proxy for F_{MSY}), except for Alternative 4. Sector allocations are based on recreational:commercial allocations of 61:39 for gag, and 24:76 for red grouper.

- Recreational sector ACT and ACL are based on moving averages of the single-year ACT and ACL as indicated under “Test

Alternative 2: The gag and red grouper ACL = ABC for each year 2011 – 2014, and ACT is set equal to the yield corresponding to optimum yield for each year 2011 – 2014. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30. The recreational sector ACL and ACT will be based on moving averages as devised in Amendment 30B⁶. The resulting ACLs and ACTs are shown in Table Alternative 2.

Table Alternative 2 – Low estimated 2010 catches

Recreational Fishery						
Year	Gag		Red Grouper		Test criteria	
	ACT	ACL	ACT	ACL		
2011	0.62	0.71	1.36	<1.78	2011 Landings	
2012	0.75	0.86	1.39	<1.78	Average of 2011+2012 landings	
2013	0.88	1.00	1.42	<1.79	Average of 2011+2012+2013 landings	
2014	1.15	1.29	1.48	<1.80	Average of 2012+2013+2014 landings	
2015	1.41	1.55	1.53	<1.81	Average of 2013+2014+2015 landings	
Commercial Fishery						
Year	Gag		Red Grouper		Shallow-water	
	ACT	ACL	ACT	ACL	ACT	ACL
2011	0.39	0.46	4.32	<5.64	5.12	<6.51
2012	0.56	0.64	4.48	<5.65	5.46	<6.70
2013	0.74	0.83	4.70	<5.72	5.86	<6.96
2014	0.91	1.00	4.85	<5.73	6.17	<7.14
2015	1.05	1.14	4.97	<5.73	6.43	<7.28

See footnote for explanation of table

The ACLs for red grouper are based on annual MSY, which is the same as OFL. However, ACL=ABC=OFL is generally not allowed under the National Standard 1 guidelines. Until the Scientific and Statistical Committee recommends a revised ABC based on the updated yield streams, all that can be said about red grouper ACL is that it will be less than OFL. The same concern does not affect gag, since both $F_{rebuild}$ and F_{OY} are below F_{OFL} .

criteria”, and are compared to the equivalent moving average of actual landings. As a result, the commercial and recreational sector ACLs and ACTs do not sum up to the overall annual ACL or ACT, but this method provides the same total recreational landings over the multi-year period, while smoothing out the effect of 1-year spikes in landings and reduces the likelihood of triggering accountability measures.

- Shallow-water grouper ACT and ACL is based on the sum of the annual gag and red grouper ACTs and ACLs plus 0.41 mp of other shallow-water grouper.
- The commercial quota is the ACT.

⁶ Use a three year moving average of the ACL and ACT, and compare to a three year moving average of actual landings for purposes of determining whether accountability measures are triggered. For the first two years of the moving average system, one and two year moving averages will be used.

Alternative 3: The gag and red grouper ACL = ABC for each year 2011 – 2014, and ACT is not used. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30. The recreational sector ACL and ACT will be based on moving averages as devised in Amendment 30B. The resulting ACLs and ACTs are shown in Table Alternative 3.

Table Alternative 3 – Low estimated 2010 catches

Recreational Fishery				
Year	Gag	Red Grouper		
	ACL	ACL	Test criteria	
2011	0.71	less than 1.78	2011 Landings	
2012	0.86	less than 1.78	Average of 2011+2012 landings	
2013	1.00	less than 1.79	Average of 2011+2012+2013 landings	
2014	1.29	less than 1.80	Average of 2012+2013+2014 landings	
2015	1.55	less than 1.81	Average of 2013+2014+2015 landings	
Commercial Fishery				
Year	Gag	Red Grouper	Shallow-water	
	ACL	ACL		ACL
2011	0.46	less than 5.64		<6.51
2012	0.64	less than 5.65		<6.70
2013	0.83	less than 5.72		<6.96
2014	1.00	less than 5.73		<7.14
2015	1.14	less than 5.73		<7.28

See footnote for explanation of table

The ACLs for red grouper are based on annual MSY, which is the same as OFL. However, ACL=ABC=OFL is generally not allowed under the National Standard 1 guidelines. Until the Scientific and Statistical Committee recommends a revised ABC based on the updated yield streams, all that can be said about red grouper ACL is that it will be less than OFL.

The same concern does not affect gag, since both $F_{rebuild}$ and F_{OY} are below F_{OFL} .

Alternative 4: The gag and red grouper ACL = ABC for each year 2011 – 2014, and ACT is based on an ACT control rule. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30. The resulting ACLs and ACTs are shown in Table Alternative 4.

Table Alternative 4 – Low estimated 2010 catches

Recreational Fishery						
Year	Gag		Red Grouper		Test criteria	
	ACT	ACL	ACT	ACL		
2011	0.57	0.71	1.60	<1.78	2011 Landings	
2012	0.69	0.86	1.60	<1.78	Average of 2011+2012 landings	
2013	0.80	1.00	1.61	<1.79	Average of 2011+2012+2013 landings	
2014	1.03	1.29	1.62	<1.80	Average of 2012+2013+2014 landings	
2015	1.24	1.55	1.63	<1.81	Average of 2013+2014+2015 landings	
Commercial Fishery						
Year	Gag		Red Grouper		Shallow-water	
	ACT	ACL	ACT	ACL	ACT	ACL
2011	0.37	0.46	5.08	<5.64	5.85	<6.51
2012	0.51	0.64	5.08	<5.65	6.00	<6.70
2013	0.66	0.83	5.15	<5.72	6.22	<6.96
2014	0.80	1.00	5.16	<5.73	6.37	<7.14
2015	0.91	1.14	5.16	<5.73	6.48	<7.28

See footnote for explanation of table.

The ACLs for red grouper are based on annual MSY, which is the same as OFL. However, ACL=ABC=OFL is generally not allowed under the National Standard 1 guidelines. Until the Scientific and Statistical Committee recommends a revised ABC based on the updated yield streams, all that can be said about red grouper ACL is that it will be less than OFL.

The same concern does not affect gag, since both $F_{rebuild}$ and F_{OY} are below F_{OFL} .

Example of Applying an ACL/ACT Control Rule

An ACL/ACT control rule is currently being developed for the Generic ACL/AM Amendment. The control rule is not yet ready for general use, but an early draft of the control rule is presented here in association with **Alternative 4** to show conceptually how such a control rule might be applied. In the control rule, points are assigned for each dimension and the points are added up. This sum is then the percent difference between ACL and ACT (or between ABC and ACL).

Draft ACL/ACT Control Rule from Generic ACL/AM options paper

Dimension	Tiers	Pts.
Stock Status	1. Stock biomass is at or above B_{OY} (or proxy).	0
	2. Stock biomass is below B_{OY} (or proxy) but at or above B_{MSY} (or proxy).	5
	3. Stock biomass is below B_{MSY} (or proxy) but at or above minimum stock size threshold (MSST).	10
	4. Stock is overfished, below MSST.	15
	5. Either status criterion is unknown.	15
Management success of last 5 years	1. Number of years catch has been above catch target multiplied by 5 2. Number of years catch has been below catch target multiplied by -5	
Stock Assemblages	1. If this ACL/ACT is for a stock assemblage, or if this species is an indicator species for a stock assemblage, add 1 point for each stock in the assemblage (excluding the indicator stock).	
Bycatch	1. Low. Discard mortality for this stock or stock assemblage is less than 10% of the retained catch.	0
	2. Moderate. Discard mortality is between 11% and 50% of the retained catch.	5
	3. High. Discard mortality is greater than 50% of the retained catch.	10

Below is a worksheet to show how the above draft control rule might be applied to red grouper and gag. All values are from the 2009 update assessments for red grouper and gag.

	Red Grouper	Pts	Gag	Pts
Stock status	SSB _{OY} = n/a SSB _{MSY} = 712.7 mp *SSB₂₀₀₈ = 615.5 mp MSST = 612.9 mp	10	SSB _{OY} = n/a SSB _{MAX} = 24.02 mp MSST = 20.41 mp *SSB₂₀₀₈ = 9.58 mp	15
Mgt. Success of last 5 years	Management success (comm+rec combined): Year Target Catch Over/Under 2004 6.56 mp 8.78 mp over 2005 6.56 mp 6.88 mp over 2006 6.56 mp 6.07 mp under 2007 6.56 mp 4.64 mp under 2008 6.56 mp 5.58 mp under	+10 -15	Management success (comm+rec combined): Year Target Catch Over/Under 2004 5.00 mp 7.39 mp over 2005 5.00 mp 5.99 mp over 2006 5.00 mp 3.66 mp under 2007 5.00 mp 3.49 mp under 2008 5.00 mp 4.26 mp under	+10 -15
Stock assemblages	Not an indicator stock	0	Not an indicator stock	0
Bycatch	For 2004-2008 comm+rec comb: Year Catch Dead disc. % ret. catch 2004 8.78 mp 1.23 mp 14% 2005 6.88 mp 1.00 mp 14% 2006 6.07 mp 0.88 mp 14% 2007 4.64 mp 0.69 mp 15% <u>2008 5.58 mp 1.06 mp 19%</u> 5-yr 31.95 mp 4.866 mp 15%	5	For 2004-2008 comm+rec comb: Year Catch Dead disc. % ret. catch 2004 7.39 mp 3.05 mp 41% 2005 5.99 mp 1.72 mp 29% 2006 3.66 mp 1.87 mp 51% 2007 3.49 mp 2.67 mp 76% <u>2008 4.26 mp 3.75 mp 88%</u> 5-yr 24.79 mp 13.06 mp 53%	10
Total points		10		20

Based on the control rule, red grouper ACT would be the ACL reduced by 10%, and the gag ACT would be the ACL reduced by 20%

Discussion:

Amendment 30b provided a range of alternatives to set catch levels at 1) no action- existing level; 2) optimum yield level; or 3) acceptable biological catch level. The alternatives in this action provide a similar range of alternatives except that in Amendment 30b the acceptable biological catch was set equal to maximum sustainable yield. In this amendment, the acceptable biological catch for both red grouper and gag was set below the acceptable biological yield by the Scientific and Statistical Committee in order to set the acceptable biological catch at a level reduced by scientific uncertainty that had less than a 50% probability of exceeding the true overfishing limit. Sector allocations are based on the Amendment 30B red grouper allocation of 76% commercial to 24% recreational, and gag allocation of 39% commercial to 61% recreational.

Recreational landings can undergo fluctuations that result in the landings periodically spiking above annual catch limits or dipping below the limits. Amendment 30b developed a method of using a moving average of recreational annual landings and comparing it to a moving average of annual catch limits in order to smooth out spikes. These multiyear landings averages allow year-to-year fluctuations to occur, without necessarily triggering accountability measures. The commercial sector is managed under an individual fishing quota system that is closely monitored, making it unlikely that the commercial sector will exceed its annual catch limit, and negating the need to use moving averages.

Alternative 1 is the no action alternative (see Table Alternative 1) The annual catch limit remains at the equilibrium maximum sustainable yield and the annual catch target remains at the equilibrium optimum yield level as calculated in the 2006 SEDAR 11 and 12 benchmark assessments. Equilibrium yields are long-term average yields associated with the annual maximum sustainable yields and optimum yields (which fluctuate year to year) in a healthy stock. However, the red grouper and gag stock levels have declined since 2005 due apparently to an episodic mortality event, most likely the red tide event of 2005. This was not a normal year-to-year fluctuation, and the stock decline resulted in a reduced maximum sustainable yield level and subsequent recommended acceptable biological catch by the SSC. Both the annual catch limit and annual catch target in this alternative exceed the 2011 acceptable biological catch recommended by the SSC. The acceptable biological catch recommended by the SSC is lower for two reasons. The red grouper stock, although not overfished, has declined since 2005 and the yields associated with maximum sustainable yield and optimum yield have declined proportionately. The gag stock has declined to a level below the minimum stock size threshold and is in an overfished condition. Furthermore, under the 2009 National Standard 1 guidelines, the acceptable biological catch can no longer set at the maximum sustainable yield level in most cases, but at a reduced level that reflects scientific uncertainty. Since the no action annual catch limits and annual catch targets exceed the acceptable biological catch, this alternative is not an acceptable alternative under the National Standard 1 guidelines. It is included for purposes of having a no action alternative.

Alternative 2 results in the red grouper and gag stocks being fished at their optimum yield levels. This provides a buffer between the annual catch target and the annual catch limit,

reducing the likelihood of triggering accountability measures (see Table Alternative 2). The annual catch limit is set at the acceptable biological catch level established by the SSC, and the annual catch target is set at the optimum yield level calculated in the 2009 red grouper update stock assessment and subsequent 2010 update of yield streams incorporating 2009 catch data. Since these values change from year-to-year as stock size changes, they are presented as a yield stream through 2015 in Table Alternative 2. Over time, this alternative will result in the stock biomass rebuilding to its optimum yield level and the annual catch targets building up to or near equilibrium optimum yield. For gag, this alternative corresponds to a 7-year rebuilding plan (Action 1, Alternative 3).

Alternative 3 results in the red grouper and gag stocks being fished at their acceptable biological catch levels (see Table Alternative 3). For gag, this also corresponds to a level that will rebuild the stock in 10 years. Previously, this alternative for red grouper would have been the maximum sustainable yield level, but under the 2009 National Standard 1 guidelines, the acceptable biological catch is reduced from maximum sustainable yield to account for scientific uncertainty. This alternative eliminates the optional annual catch target (or sets it equal to the annual catch limit), and sets the annual catch limit at the acceptable biological catch level established by the SSC. The annual catch limit then becomes the management target. Because there is no buffer between the catch target and catch limit, accountability measures will be triggered any time a sector exceeds its management target levels. Over time, this alternative will rebuild the gag stock in 10 years and will result in the stock biomass of both stocks rebuilding to a level capable of sustaining yield at the acceptable biological yield level (this would be a lower biomass level than the optimum yield level).

2.3 Action 3. Gag, Red Grouper, and Shallow-water Grouper Accountability Measures

Alternative 1. No action. Retain the existing accountability measures for gag, red grouper and shallow-water grouper as shown below. Revised accountability measures for these stocks will be adopted under the Generic ACL/AM Amendment.

50 CFR 622.49 Accountability measures.

(3) Shallow-water grouper (SWG) combined. (i) Commercial fishery. If SWG commercial landings exceed the applicable ACL as specified in this paragraph (a)(3)(I), the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to maintain the SWG commercial quota for that following fishing year at the level of the prior year's quota. The applicable commercial ACLs for SWG, in gutted weight, are 7.99 million lb (3.62 million kg) for 2010, and 8.04 million lb (3.65 million kg) for 2011 and subsequent fishing years.

(ii) [Reserved]

(4) Gag. (i) Commercial fishery. If gag commercial landings exceed the applicable ACL as specified in this paragraph (a)(4)(I), the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to maintain the gag commercial quota for that following year at the level of the prior year's quota. The applicable commercial ACLs for gag, in gutted weight, are 1.71 million lb (0.78 million kg) for 2010, and 1.76 million lb (0.80 million kg) for 2011 and subsequent fishing years.

(ii) Recreational fishery. If gag recreational landings, as estimated by the SRD, exceed the applicable ACL specified in this paragraph (a)(4)(ii), the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to maintain the gag target catch level for that following year at the level of the prior year's target catch. In addition, the notification will reduce the length of the recreational SWG fishing season the following fishing year by the amount necessary to ensure gag recreational landings do not exceed the recreational target catch level in that following fishing year. The applicable recreational ACLs for gag, in gutted weight, are 2.59 million lb (1.17 million kg) for 2009, 2.64 million lb (1.20 million kg) for 2010, and 2.67 million lb (1.21 million kg) for 2011 and subsequent fishing years. The recreational target catch levels for gag, in gutted weight, are 2.06 million lb (0.93 million kg) for 2009, 2.14 million lb (0.97 million kg) for 2010, and 2.20 million lb (1.00 million kg) for 2011 and subsequent fishing years. Recreational landings will be evaluated relative to the applicable ACL as follows. For 2009, only 2009 recreational landings will be compared to the ACL; in 2010, the average of 2009 and 2010 recreational landings will be compared to the ACL; and in 2011 and subsequent fishing years, the 3-year running average recreational landings will be compared to the ACL.

(5) Red grouper. (i) Commercial fishery. If red grouper commercial landings exceed the ACL, 5.87 million lb (2.66 million kg) gutted weight, the AA will file a

notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to maintain the red grouper commercial quota for that following year at the level of the prior year's quota.

(ii) **Recreational fishery.** If red grouper recreational landings, as estimated by the SRD, exceed the applicable ACL specified in this paragraph (a)(5)(ii), the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to maintain the red grouper target catch level for that following year at the level of the prior year's target catch. In addition, the notification will reduce the length of the recreational SWG fishing season the following fishing year by the amount necessary to ensure red grouper recreational landings do not exceed the recreational target catch level the following fishing year. The recreational ACL for red grouper, in gutted weight, is 1.85 million lb (0.84 million kg). The recreational target catch level for red grouper, in gutted weight, is 1.82 million lb (0.82 million kg). Recreational landings will be evaluated relative to the applicable ACL as follows. For 2009, only 2009 recreational landings will be compared to the ACL; in 2010, the average of 2009 and 2010 recreational landings will be compared to the ACL; and in 2011 and subsequent fishing years, the 3-year running average recreational landings will be compared to the ACL.

(b) [Reserved]

Alternative 2. Adopt the following revised accountability measures for gag, red grouper and shallow-water grouper (revised language shown in italics).

(3) **Shallow-water grouper (SWG) combined.** (i) **Commercial fishery.** *Harvest of shallow-water grouper in excess of applicable bag limits, recreational size limits and recreational seasons, and subsequent sale, is only allowed in accordance with the provisions of the grouper IFQ program. The applicable commercial ACLs for SWG, in gutted weight, are (replace with applicable ACL yield stream from Action 3).*

(ii) [Reserved]

(4) **Gag.** (i) **Commercial fishery.** *Harvest of gag in excess of applicable bag limits, recreational size limits and recreational seasons, and subsequent sale, is only allowed in accordance with the provisions of the grouper IFQ program. The applicable commercial ACLs for gag, in gutted weight, are (replace with applicable ACL yield stream from Action 3).*

(ii) **Recreational fishery.** If gag recreational landings, as estimated by the SRD, exceed the applicable ACL specified in this paragraph (a)(4)(ii), the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, *reduce the gag target catch level for the following year from the prior year's target catch level by an overage adjustment equal to the full amount of the overage, unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overage. In the latter case, the overage adjustment will be set equal to the amount recommended by the SRD. In no case will the target catch level be increased in the year following an overage.* In addition, the notification will reduce the length of the recreational SWG fishing season the following fishing year by the amount necessary to ensure gag recreational landings do not exceed the recreational target catch level in that

following fishing year. The applicable recreational ACLs for gag, in gutted weight, are *(replace with applicable ACL yield stream from Action 3)*. The recreational target catch levels for gag, in gutted weight, are *(replace with applicable ACT yield stream from Action 3)*. Recreational landings will be evaluated relative to the applicable ACL as follows. For 2011, only 2011 recreational landings will be compared to the ACL; in 2012, the average of 2010 and 2011 recreational landings will be compared to the ACL; and in 2013 and subsequent fishing years, the 3-year running average recreational landings will be compared to the ACL⁷.

(5) Red grouper. (i) Commercial fishery. *Harvest of red grouper in excess of applicable bag limits, recreational size limits and recreational seasons, and subsequent sale, is only allowed in accordance with the provisions of the grouper IFQ program. The applicable commercial ACLs for red grouper, in gutted weight, are (replace with applicable ACL yield stream from Action 3).*

(ii) Recreational fishery. If red grouper recreational landings, as estimated by the SRD, exceed the applicable ACL specified in this paragraph (a)(5)(ii), the AA will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year, to maintain the red grouper target catch level for that following year at the level of the prior year's target catch. In addition, the notification will reduce the length of the recreational SWG fishing season the following fishing year by the amount necessary to ensure red grouper recreational landings do not exceed the recreational target catch level for the following fishing year. The *applicable* recreational ACLs for red grouper, in gutted weight, *(replace with applicable ACL yield stream from Action 3)*. The recreational target catch levels for red grouper, in gutted weight, are *(replace with applicable ACT yield stream from Action 3)*. Recreational landings will be evaluated relative to the applicable ACL as follows. For 2011, only 2011 recreational landings will be compared to the ACL; in 2012, the average of 2010 and 2011 recreational landings will be compared to the ACL; and in 2013 and subsequent fishing years, the 3-year running average recreational landings will be compared to the ACL

(b) [Reserved]

Alternative 3. Adopt the revised accountability measures for gag, red grouper and shallow-water grouper shown in Alternative 2, but do not implement an overage adjustment for recreational gag harvest. The recreational gag ACL will have the same wording as the recreational red grouper ACL.

Alternative 4. Adopt the revised accountability measures for gag, red grouper and shallow-water grouper shown in Alternative 2, but for gag, allow overage adjustments to be spread out over several seasons over a period of:

- a. Two years
- b. Three years

⁷ Recreational sector ACT and ACL are based on moving averages of the single-year ACT and ACL as indicated under "Test criteria" in the alternatives tables for Action 2, and are compared to the equivalent moving average of actual landings.

- c. **Multi-year overage adjustments are only allowed if a full overage adjustment in one year would result in the annual catch target being reduced by more than 50 percent (this can be combined with options a or b).**

Discussion:

The current accountability measures for gag, red grouper and the shallow-water grouper aggregate were adopted in Amendment 30b, with minor revisions to the wording of the regulations approved by the Council at its October 2009 meeting. As currently worded, they have a number of issues:

1. With respect to overfished fisheries, the National Standard 1 Guidelines state: “For stocks and stock complexes in rebuilding plans, the accountability measures should include overage adjustments that reduce the annual catch limits in the next fishing year by the full amount of the overages, unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overages.” The accountability measures do not currently contain the overage adjustment for overfished stocks recommended by the National Standard 1 Guidelines.
2. The accountability measures refer to a table of annual catch limits in Amendment 30b that only provides annual catch limits for 2009-2011 for gag, red grouper, and the shallow-water grouper aggregate.
3. The current commercial accountability measures are applicable to a single quota system, but an IFQ system is considered to have sufficient monitoring and reporting safeguards to prevent harvest in excess of the quota, and therefore serves as its own in-season accountability measure. Additional accountability measures in a fishery under an IFQ system are unnecessary. A multi-species IFQ system for commercial grouper harvest in the Gulf of Mexico was implemented in 2010.

The revised accountability measures are intended to address the issues identified for the current measures.

Alternative 1, no action, leaves the current accountability measures in place. The Generic ACL/AM Amendment, which is expected to be implemented by the end of 2011, will contain generic accountability measures that will apply to all stocks included in that amendment, unless explicitly excluded. Thus, any revisions made in this amendment will likely be in effect only during 2011. However, implementing accountability measures for gag, red grouper and the shallow-water grouper aggregate through Amendment 32 will avoid the time gap between implementation of Amendment 32 and the Generic ACL/AM Amendment, speed up the adoption of revised accountability measures for those stocks, eliminate outdated terminology, and bring the accountability measures into full compliance with the National Standard 1 guidelines more quickly.

Alternative 2 modifies the accountability measures in several ways.

- The accountability measures for the commercial shallow-water grouper, gag, and red grouper fisheries are removed and replaced with a statement that harvest outside of recreational bag limits, size limits and closed seasons, and subsequent sale of these stocks, is allowed only under the grouper IFQ system. Under an IFQ system the IFQ shares and reporting requirements serve as an in-season accountability measure to prevent the sector from exceeding its quota, thereby making additional accountability measures unnecessary.
- Running average ACLs are established for red grouper (as already exist for gag) since the red grouper ACL is expected to change from the fixed level in Amendment 30b to one that varies annually in response to changes in stock level. The dates for the ACL and ACT yield streams are updated to reflect implementation of Amendment 32 in 2011 instead of 2009.
- The accountability measures for recreational gag harvest are revised to include an overage adjustment that reduces the following year's recreational target catch level by the full amount of the overage. However, as recommended by the National Standard 1 guidelines, it allows for a reduced overage adjustment, or none at all, if a reduced or no overage adjustment is supported by the best scientific information available, as determined by the Southeast Fisheries Science Center. The National Standard 1 guidelines recommend overage adjustment provisions for stocks that are in rebuilding plans.
- No changes are made to the recreational red grouper accountability measures other than to update the dates for the ACL and ACT yield streams to reflect implementation of Amendment 32 in 2011 instead of 2009. The National Standard 1 guidelines do not recommend overage adjustments provisions for stocks that are not in rebuilding plans.

Alternative 3 adopts the revisions in **Alternative 2**, except that it does not implement the overage adjustment for the recreational gag sector, but instead retains the existing accountability measures for both gag and red grouper. These measures when triggered cancel any scheduled increase in the annual catch target, and to authorize NMFS to reduce the length of the recreational shallow-water grouper fishing season the following fishing year by the amount necessary to ensure red grouper recreational landings do not exceed the recreational target catch level. The National Standard 1 guidelines suggest, but do not require, overage adjustments for stocks that are under a rebuilding plan. However, failure to adjust for overages may put such stocks in danger of not meeting their rebuilding targets and deadlines.

Alternative 4 adopts the revisions in **Alternative 2**, except that allows the overage adjustment for gag to be spread out over a period of either two years (**Option a**) or three years (**Option b**). **Option c** can be combined with **Option a or b** so that the multi-year overage adjustment is allowed only in cases where it would result in a reduction in the target catch level of 50% or more. The National Standard 1 guidelines recommend that overage adjustments be applied in the following fishing year for the full amount of the overage. Overage adjustments spread out over multiple years allow the rebuilding plan to stay off-track for a longer period and may be less effective at restoring the rebuilding schedule than a single-year adjustment. However, when there are large overages, or overages are applied to small annual catch limits, there could be excessive economic hardships from applying the overage in a single year. In extreme cases, the overage could exceed the entire annual catch limit for the year. For these situations, a multi-year payback may be preferable.

2.4 Action 4. Adjustments to Multi-use IFQ Shares

Alternative 1: No Action. Do not modify percentages of red grouper and gag IFQ allocation converted into multi-use allocation. At the beginning of each fishing year, 4% of red grouper allocation would be converted into multi-use allocation and 8% of gag allocation would be converted into multi-use allocation.

Alternative 2: Based on the commercial gag ACL, gag allocation, and red grouper allocation, set the percentage of red grouper IFQ allocation converted into multi-use allocation as follows:

$$\text{Red Grouper Multi-use (in percent)} = 100 * [\text{Gag ACL} - \text{Gag Allocation}] / \text{Red Grouper Allocation}$$

The red grouper multi-use percentage will be recalculated following adjustments in commercial gag ACL, gag allocation, or red grouper allocation.

Alternative 3: Based on the commercial red grouper ACL, red grouper allocation, and gag allocation, set the percentage of gag IFQ allocation converted into multi-use allocation as follows:

$$\text{Gag Multi-use (in percent)} = 100 * [\text{Red Grouper ACL} - \text{Red Grouper Allocation}] / \text{Gag Allocation}$$

The gag multi-use percentage will be recalculated following adjustments in red grouper ACL, red grouper allocation, or gag allocation.

Alternative 4: While the rebuilding plan for gag is in effect, set the percentage of red grouper IFQ allocation converted into multi-use allocation equal to zero. Upon completion of the rebuilding plan, set the red grouper multi-use percentage as follows:

$$\text{Red Grouper Multi-use (in percent)} = 100 * [\text{Gag ACL} - \text{Gag Allocation}] / \text{Red Grouper Allocation}$$

The red grouper multi-use percentage will be recalculated following adjustments in commercial gag ACL, gag allocation, or red grouper allocation.

Discussion:

The commercial grouper and tilefish fisheries are currently managed under an individual fishing quota system implemented in January 2010 (Amendment 29). Under the system, each qualifying fisherman was allocated IFQ shares based on historical participation in the grouper and tilefish fisheries. To allow for flexibility and account for varying gag to red grouper ratios across the Gulf of Mexico, at the beginning of each fishing year a percentage of the gag and red grouper

allocation is designated as multi-use shares, valid for harvesting either red or gag grouper. Reef Fish Amendment 29 established that 4% of red grouper allocation and 8% of gag allocation would be converted to multi-use. However, under the reduced red grouper and gag annual catch limits expected to be implemented in this amendment, the current multi-use allocations could result in commercial harvest of red grouper or gag exceeding its sector ACL. To prevent this from happening, adjustments need to be made to the multi-use allocations.

Alternative 1 would maintain the multi-use allocation percentages originally set in Reef Fish Amendment 29, i.e., 8% of the gag allocation and 4% of red grouper allocation converted into multi-use allocation valid for the harvest of gag or red grouper. **Alternative 1** (No Action) is expected to result in red grouper or gag harvests that would exceed specified catch limits.

Alternative 2 would set red grouper multi-use allocation based on the buffer existing between the gag annual catch limit and IFQ allocation. The existence of a buffer between the ACL and the IFQ allocation implies that the IFQ allocation is set equal to the annual catch target. In the absence of a buffer, the commercial gag allocation is equal to the ACL. In setting the percentage of red grouper allocation that could be converted into multi-use allocation, **Alternative 2** accounts for changes in the relative magnitude of the gag and red grouper ACLs and allocations considered in this amendment. In addition, under **Alternative 2**, future changes in ACLs and/or allocations would result in a recalculation of the percentage of red grouper allocation that can be converted into multi-use allocation while preventing the commercial gag harvest from exceeding the commercial gag ACL. Table 2.4.1 provides, in percentage points and in mp, the amount of red grouper allocation that can be converted into multi use allocation for 2010. For example, when the gag ACL, gag allocation, and red grouper allocation are equal to 0.32 mp, 0.26 mp, and 5.75 mp, respectively, up to 1% of the red grouper allocation could be converted into multi-use allocation valid to harvest gag or red grouper.

Table 2.4.1. Red grouper multi use allocation for alternative gag and red grouper annual catch limits and allocations - 2010

Gag Alternatives	Commercial Gag		Commercial Red Grouper Allocation	Red Grouper Multi Use Allocation	
	ACL (mp)	Allocation (mp)		MP	Percent of Red Grouper Allocation
Alternative 1	1.71	1.41	5.75	0.3	5.2
Alternative 2	0.32	0.26	5.75	0.06	1.0
Alternative 3	0.32	0.32	5.75	0	0.0
Alternative 1	1.71	1.41	3.73	0.3	8.0
Alternative 2	0.32	0.26	3.73	0.06	1.6
Alternative 3	0.32	0.32	3.73	0	0.0
Alternative 1	1.71	1.41	4.53	0.3	6.6
Alternative 2	0.32	0.26	4.53	0.06	1.3
Alternative 3	0.32	0.32	4.53	0	0.0

Alternative 3 would set gag multi-use allocation based on the difference between the commercial red grouper ACL and allocation. It follows that if there is no buffer between the red grouper ACL and allocation, i.e., if the red grouper ACL and allocation are equal, the issuance of gag multi use allocation would result in harvesting red grouper above its specified catch limit. Table 2.4.2 provides the amount of gag allocation that can be converted into multi use allocation for 2010. Given the relative magnitude of the red grouper and gag ACLs and allocation, it is conceivable that totality of gag allocation could be converted to multi use shares without running the risk of exceeding the red grouper catch limit.

Table 2.4.2. Gag multi use allocation for alternative gag and red grouper annual catch limits and allocations - 2010

Red Grouper Alternatives	Commercial Red Grouper		Commercial Gag Allocation	Gag Multi Use Allocation	
	ACL (mp)	Allocation (mp)		MP	Percent of Gag Allocation
Alternative 1	5.87	5.75	1.41	0.12	8.5
Alternative 2	4.53	3.73	1.41	0.8	56.7
Alternative 3	4.53	4.53	1.41	0	0.0
Alternative 1	5.87	5.75	0.26	0.12	46.2
Alternative 2*	4.53	3.73	0.26	0.26	100.0
Alternative 3	4.53	4.53	0.26	0	0.0
Alternative 1	5.87	5.75	0.32	0.12	37.5
Alternative 2*	4.53	3.73	0.32	0.32	100.0
Alternative 3	4.53	4.53	0.32	0	0.0

*: the difference between the red grouper ACL and allocation exceeds the gag allocation

Alternative 3 would also result in a recalculation of the allowable amount of multi use allocation whenever commercial red grouper and/or gag ACLs or allocations are adjusted. Under **Alternatives 2** and **3**, the level of flexibility afforded to IFQ participants, as measured by the amount of multi use allocation issued is proportional to the buffer between the commercial red grouper ACL and allocation and between the commercial gag ACL and allocation.

Alternative 4 would set the percentage of red grouper multi-use allocation equal to zero while the rebuilding plan for gag grouper is in effect. Once the gag stock is fully rebuilt, the percentage of red grouper allocation converted into red grouper multi-use allocation valid to harvest red or gag grouper will be determined based on the buffer existing between the gag annual catch limit and IFQ allocation and on the magnitude of the red grouper ACL. In effect, once the gag stock is fully rebuilt, the percentage of red grouper multi-use allocation under **Alternative 4** is equivalent to the one considered under **Alternative 2**. **Alternative 4** is expected to provide additional protection to gag while its stock is rebuilding.

It is worth noting that adjustments to multi-use allocations considered under this action are well within the provisions of the grouper and tilefish IFQ program included in Reef Fish Amendment 29. These provisions stipulate that the Council could create new share types and adjust existing share types to further its conservation mission or to improve the management of the IFQ

program. While multi-use adjustments provided in this section focus on adjustments to existing multi-use percentages, the Council could also consider the creation of additional multi-use shares and allocations that could be used to harvest other species included in the IFQ program, e.g., multi-use allocation valid to harvest red grouper and other shallow water grouper species (excluding gag).

2.5 Action 5. Recreational Bag Limits, Size Limits, and Closed Seasons for Gag/Red Grouper

[TO BE COMPLETED]

Updated yield projections are now available that incorporate the preliminary 2009 gag and red grouper landings as requested by the Scientific and Statistical Committee, and two estimated of 2010 landings. See the Yield Projections Update discussion in Section 2.2.

Analyses of potential recreational management scenarios were not available at the time that this options paper draft was written. A separate presentation on using the decision tool to analyze recreational management measures will be provided at the April Council meeting.

2.6 Action 6. Bycatch Issues

2.6.1 Action 6.1. Commercial Bycatch

Alternative 1: No action. Do not implement any of the commercial bycatch reduction alternatives in this section.

Alternative 2: Establish a commercial gag bycatch quota, monitored through a statistical expansion of observer data, as a post-season accountability measure. If, at the end of the fishing season, the gag bycatch quota has been exceeded, the Assistant Administrator for Fisheries would file a notification that would reduce the red grouper individual fishing quota shares in the following year by the amount necessary to ensure that the gag bycatch quota is not exceeded for that fishing year.

Alternative 3: Establish an electronic or video monitoring system for commercial reef fish vessels in the eastern Gulf of Mexico.

Option a: Request that the National Marine Fisheries Service develop a protocol for using video monitoring in combination with VMS to identify areas with high gag bycatch. The Assistant Administrator for Fisheries would then be authorized through notice action, to close areas with gag bycatch levels that exceed a threshold (to be determined) to bottom fishing for a period of up to 90 days.

Alternative 4: Set aside a portion of the commercial gag quota to account for bycatch.

Alternative 5: Reduce the commercial size limit for gag to:

- a. 22 inches**
- b. 20 inches**
- c. No size limit, require that all gag caught be retained**

Alternative 6: Reduce the commercial red grouper quota to reduce commercial dead discard of gag. With respect to dead discards, optimum yield in the red grouper fishery is defined as a catch level that produces dead discards of gag reduced from the 2000-2008 average of 4,871 fish to no more than:

- a. 4,000 fish per year (18% reduction)**
- b. 3,000 fish per year (38% reduction)**
- c. 2,000 fish per year (59% reduction)**

NOTE: ALTERNATIVES 2 AND 6 ARE ESSENTIALLY THE SAME

Discussion:

The SEDAR 10 assessment estimated that the average release mortality rate for gag in the commercial fishery was 67%, but the magnitude of commercial discards since 2000, primarily due to the size limit, was estimated to be a small fraction of total removals, about 1.3% of the

total commercial removals of gag and 2.8% of the total dead discards by weight (Table 1.2.2). A major concern is bycatch and bycatch mortality of gag while fishermen target red grouper, due to the large discrepancy expected between the red grouper and gag quotas.

In terms of numbers, total dead discards of gag from the commercial fishery were generally less than 500 per year until 2000, when the commercial minimum size limit increased from 20 inches to 24 inches. Since 2001 (the first full year of the new size limit), the number of gag dead discards has ranged from approximately 2,300 to 7,300 (Table 2.6.1.1).

The red grouper commercial minimum size limit has been at 20 inches from 1990 until 2009. In May, 2009 the commercial red grouper minimum size limit was reduced to 18 inches to reduce waste from dead discards (Table 2.6.1.1). 2009 landings and dead discards data was not available when this amendment was written.

Table 2.6.1.1 Gag and red grouper commercial dead discards in numbers by year and gear. Source: 2009 gag and red grouper update assessments (SEDAR 2009a and b)

Gag				
Year	Longline	Handline	Other	Total
1990	126	0	0	126
1991	0	0	0	0
1992	0	0	0	0
1993	217	0	0	217
1994	0	0	0	0
1995	251	0	0	251
1996	282	0	0	282
1997	394	0	0	394
1998	528	0	0	528
1999	458	0	0	458
2000	1,271	1,082	0	2,353
2001	3,975	2,784	0	6,759
2002	4,132	2,443	0	6,575
2003	4,721	1,740	0	6,461
2004	5,032	2,294	0	7,326
2005	4,753	1,618	0	6,371
2006	2,231	956	0	3,187
2007	1,475	930	0	2,405
2008	1,394	1,004	0	2,398

Red Grouper				
Year	Longline	Handline	Trap	Total
1990	432,644	233,263	20,891	686,798
1991	811,121	347,371	42,406	1,200,898
1992	403,550	436,300	80,948	920,798
1993	540,683	197,971	22,289	760,943
1994	412,423	238,279	20,004	670,706
1995	514,351	218,443	19,733	752,527
1996	638,383	277,560	19,566	935,509
1997	715,060	267,806	15,796	998,662
1998	597,663	260,986	11,108	869,757
1999	676,715	335,615	13,423	1,025,753
2000	567,579	314,057	15,009	896,645
2001	628,331	314,818	14,159	957,308
2002	588,338	309,319	15,572	913,229
2003	605,732	309,429	12,707	927,868
2004	631,573	266,639	9,653	907,865
2005	576,157	232,954	7,506	816,617
2006	541,735	237,974	8,027	787,736
2007	338,735	240,722	244	579,701
2008	505,406	235,615	0	741,021

In 2011, there will be a large difference between the red grouper and gag commercial quotas, 4.04 to 4.32 million pounds (red grouper) vs. 0.34 to 0.46 million pounds (gag). If quotas are set at optimum yield levels for red grouper and gag, this will result in a ratio of between 9:1 and 12:1. Through July 2009, the commercial ratio of red grouper to gag landings was 4:1. If commercial fishermen continue to catch gag in 2011 at the same ratio as in 2009, then 5 to 6 out of every 9 pounds of gag caught will have to be discarded due to insufficient IFQ shares. This

could potentially amount to up to an estimated 1.01 to 1.08 mp of gag catch, of which 58% to 66%, or 623 to 666 thousand pounds, could be discarded dead.

The primary focus of any additional commercial management measures will need to be on decreasing gag bycatch mortality by reducing the number of gag caught. Time and area closures that direct fishing away from areas of high gag concentrations are a possible approach that will be discussed later in this document. Other possible approaches could include:

- Gag bycatch quota, with a post-season accountability measure
- Electronic monitoring/video monitoring
- Set aside all or some quota for bycatch
- Reduce size limits

Alternative 1, no action, would not implement any of the alternatives in this section. Given the disparity between the commercial gag and red grouper allocations and the small amount of gag allocation in the initial years of rebuilding, a significant amount of gag bycatch could occur while fishermen are targeting red grouper. However, other actions, such as time-area closures (discussed later in a separate action) could be used to reduce gag bycatch.

Alternative 2 establishes a gag bycatch quota (amount to be determined) for the commercial fishery. The National Marine Fisheries Service has developed procedures for expanding partial observer coverage into total bycatch estimates (for example, Rago et al. 2005). However, several potential sources of bias have been identified with small sample sized, and studies suggest that observer coverage levels would need to be increased to at least 20 percent for common species, and 50 percent for rare species, to give reasonably good estimates of total bycatch (Babcock et al. 2003). Furthermore, it currently takes approximately six months to expand observer data into bycatch estimates (Bonnie Ponwith, personal communication, SEFSC). One hundred percent observer coverage would negate the need to expand the data, but would be economically unfeasible. Therefore, any actions resulting from gag bycatch overages would need to be applied in the following season. Even if an in-season bycatch monitoring program could be developed, in-season bycatch quota closures could trigger the type of derby fisheries that the individual fishing quota system is intended to eliminate. Derby fisheries could be prevented by implementing individual bycatch quotas (IBQ) that would work similar to individual fishing quotas. However, an individual bycatch quota would require 100 percent observer coverage to be feasible.

Alternative 3 would establish an electronic or video monitoring system on vessels. Such a system has been demonstrated in pilot projects by Archipelago (McElderry 2008, Pria et al. 2008). This would primarily be a system to improve bycatch monitoring and would not by itself reduce gag bycatch. However, it could be potentially combined with a gag bycatch quota as in the previous alternative to improve quota monitoring. Since VMS is required on all commercial reef fish vessels, this alternative could also potentially be used to identify geographic regions with high gag bycatch, and under Option a, the Assistant Administrator for Fisheries could be authorized to issue a temporary closure of the high bycatch area. This has two advantages over a bycatch quota: 1) the observed bycatch would not have to be expanded to a total bycatch level, and 2) an area rather than a fishing closure would allow IFQ share holders to continue fishing their remaining shares. However, there are also several drawbacks: 1) video monitoring systems would have a significant cost associated with them, 2) as used in the Archipelago pilot projects (McElderry 2008, Pria et al. 2008), there would still be a lag time for technicians to retrieve and

analyze the recorded video data to determine bycatch levels, and 3) some vessels may not be able to accommodate the video equipment.

Alternative 4 would set aside a portion of the commercial gag quota to account for bycatch. This would reduce the amount of quota distributed as IFQ shares. Depending on the amount of set-aside, this could result in unused allocation if the set-aside is too large, or in an excessive bycatch if it is too small. In either case, it would reduce an already small initial gag allocation under the rebuilding program even further.

Alternative 5 would reduce gag bycatch by reducing the size limit and converting bycatch that is currently due to regulatory discards into retained catch. However, in the commercial fishery, the average size of a gag caught is already near the size limit. The primary problem is not that undersize gag are being caught and must be released, but rather that fishermen may not have sufficient IFQ shares to keep the gag, regardless of size. Therefore, this alternative is unlikely to have a significant impact on the bycatch issue facing the commercial sector. At the same time, keeping smaller and younger fish that have not yet spawned will reduce spawning potential and could negatively impact the rebuilding plan.

Alternative 6 would reduce the commercial red grouper quota in order to reduce dead discards of gag caught as bycatch, and would redefine optimum yield in the commercial red grouper fishery as a catch that produces a gag bycatch mortality of not more than a certain number of fish. Options set the target number of gag at **Option a: 4,000 gag (18% reduction)**, **Option b: 3,000 gag (38% reduction)** or **Option c: 2,000 gag (59% reduction)**. These reductions are relative to a 2000-2008 average bycatch of 4,871 gag. Gag are currently a minor bycatch in the red grouper fishery, but under the grouper IFQ and a restrictive gag quota during rebuilding, gag discards may increase due to fishermen being unable to obtain IFQ shares. The size of the dead discards could also increase. Prior to the IFQ program, most discards were likely due to the minimum size limit (note in Table 2.6.6.1 that the number of dead discards of gag increased in 2000 when the commercial minimum size limit was raised from 20" to 24"). This alternative would be a post-season accountability measure on the red grouper fishery since bycatch estimates are expanded from observer data after the season.

2.6.2 Action 6.2 – Recreational Bycatch

Alternative 1: No Action. Do not implement any of the recreational bycatch reduction alternatives in this section.

Alternative 2: Establish a recreational gag bycatch quota, monitored through a statistical expansion of MRIP and headboat survey data, as a post-season accountability measure. If, at the end of the fishing season, the gag bycatch quota has been exceeded, the Assistant Administrator for Fisheries would file a notification that would reduce the recreational gag season by the amount necessary to prevent the gag bycatch quota from being exceeded in the following fishing year.

Alternative 3: Prohibit recreational fishing for

- a. gag**
- b. all grouper**
- c. all bottom fishing**

within an area east and south of the Mobile Bay (or other region defined by the Council) encompassing a depth range of

- d. deeper than 15 fathoms (26% release mortality rate or higher)**
- e. deeper than 25 fathoms (50% release mortality rate or higher)**
- f. deeper than 35 fathoms (75% release mortality rate or higher)**

With the closed area to be in effect during

- g. January through April (gag spawning season)**
- h. Whenever the recreational fishing season for gag is closed**
- i. Whenever the recreational fishing season for gag is open**
- j. Year-round**

Alternative 4: Reduce the recreational minimum size limit for gag from 22 inches total length to

- a. 20 inches total length**
- b. 18 inches total length**
- c. no minimum size limit**

Discussion:

Alternative 1 is the no action alternative. Management measures previously taken to reduce release mortality include a requirement to use circle hooks when fishing for reef fish using natural bait, and a requirement to have venting tools on board. While these actions are expected to reduce release mortality by resulting in less gut-hooked fish and by providing a means to vent excess gasses from a fish's abdomen before releasing, the effectiveness of these actions has not been evaluated. Indeed, the effectiveness of venting fish has been questioned by some (Wilde 2009). Recreational discard mortality of gag has historically been considered to be due primarily to minimum size limit regulations. However, as more extensive closed seasons or lower bag limits are adopted, discards of legal sized gag due to seasonal or bag limit restrictions may become more prevalent. Average release mortality rate in the recreational gag fishery is estimated to be 20%, but as larger fish make up a greater proportion of the regulatory releases, the average depth of capture and depth related release mortality may increase.

Alternative 2 establishes a recreational gag bycatch quota as a post-season accountability measure on bycatch. Since dead discards by definition are not brought back to the dock, this monitoring would have to be accomplished through sampling and self-reporting programs such as the head boat survey and the MRIP Type B reports of fish that fishermen say they released but are not observed by the interviewer. The quality and variability of the data could create a large degree of uncertainty about the estimates. However, a such a program would allow dead discards to be managed much as landings are, and over time, the data inputs may improve as new and more effective monitoring programs are designed. This alternative does not specify what the bycatch quota should be. If this alternative is adopted, The Council's SSC, in conjunction with the Southeast fisheries Science Center, should evaluate the amount of dead discards projected to be produced under current regulations for a give target catch level. The bycatch quota could then be set at, above, or below that level.

Alternative 3 establishes depth related fishing restrictions in the eastern Gulf of Mexico to reduce recreational release mortality of gag by restricting recreational fishing in depths where the release mortality rate is higher. It contains three sets of options. The first set relates to which species the restrictions apply to. **Option a** applies the restriction only to gag, but could result in increased gag bycatch from fishermen targeting other grouper or other bottom species. **Option b** applies the restriction to all grouper. Fishing for snapper or other bottom fish would still be allowed, but presumably the bait and fishing methods used to target these other fish would be less likely to catch gag or other grouper. **Option c** would be the most effective at reducing gag bycatch since it would not allow any bottom fishing in the designated areas. However, this option could potentially put large areas off limits to bottom fishing and could be disruptive to the recreational community. In addition, restricting harvest by depth only to the recreational sector could create fairness and equity issues. If this alternative is adopted for the recreational sector, the Council may want to consider adopting it for the commercial sector as well.

The next three options in **Alternative 3** provide a range of depth strata where fishing would be restricted. The estimated release mortality rates for gag by depth are shown in Table 2.6.2.1 and Figure 2.6.2.1. **Option d** is the most restrictive option. It would restrict fishing in depths deeper than 90 feet (15 fathoms) where the release mortality rate of gag is 26% or greater. **Option e** is less restrictive and would restrict fishing in depths greater than 150 feet (25 fathoms) where the release mortality rate of gag is 50% or greater. **Option f** is the least restrictive and would restrict fishing in depths greater than 210 feet (35 fathoms) where the release mortality rate of gag is 75% or greater. Deeper depths already have seasonal fishing restrictions in much of the region that apply to both recreational and commercial fishing. The Madison Swanson, and Steamboat Lumps areas are closed to bottom fishing year round, while the Edges area is closed to all fishing January through April. These areas generally bracket depths of approximately 35 to 45 fathoms (210 to 270 feet), where release mortality is 75% - 90%, and encompass areas where gag spawning predominantly occurs. Implementation of these options may not reduce recreational fishing effort as much as displace it into shallower water where the release mortality rate is lower. However, the average size of gag is lower in shallower water, so the number of undersized catches will also increase. There is little information available in the recreational fishery on the number of dead discards by depth, so the absolute number of dead discards affected by these options cannot be determined. The low number of discards in the commercial fishery (Table 2.6.6.1) suggests that regulatory discards due to the size limit is a minor cause of discards in deeper waters. However, under the gag rebuilding plan, which could have shorter

seasons or reduced bag limits, regulatory discards of larger gag could increase.

The final two options in this alternative would set the season when closures are in effect. **Option g** would limit the time to January through April which is the gag spawning season. However, the greatest concentration of spawning aggregations occurs in depths of around 40 fathoms (240 feet) which are already protected by the Madison-Swanson, Steamboat Lumps, and Edges reserves. **Option h** would close the restricted areas whenever the recreational fishing season for gag is closed. This would improve the effectiveness of the closed seasons by reducing the bycatch of gag in deeper waters while fishermen target other species, but many fishermen may choose not to fish anyway during the gag and shallow-water grouper closed season, limiting the impact of this option. **Option i** is the reverse of **Option h**, it closes the restricted areas when the gag season is open. This option would likely be the most effective balance between moving the recreational gag fishery into shallower waters where release mortality rate is lower and minimizing disruptions to fishermen fishing for other stocks during the closed season. **Option j** is the most restrictive, closing the restricted area year round.

Table 2.6.2.1 Gag release mortality rate by depth based on logistic function from SEDAR 10.

(source: SEFSC 2007)

Depth Meters/feet (depth range)	Discard Mortality Rate
0 ft (0 fathoms)	6%
60 ft (10 fathoms)	17%
90 ft (15 fathoms)	26%
120 ft (20 fathoms)	37%
150 ft (25 fathoms)	50%
180 ft (30 fathoms)	63%
210 ft (35 fathoms)	75%
240 ft (40 fathoms)	84%
270 ft (45 fathoms)	90%
300 ft (50 fathoms)	94%

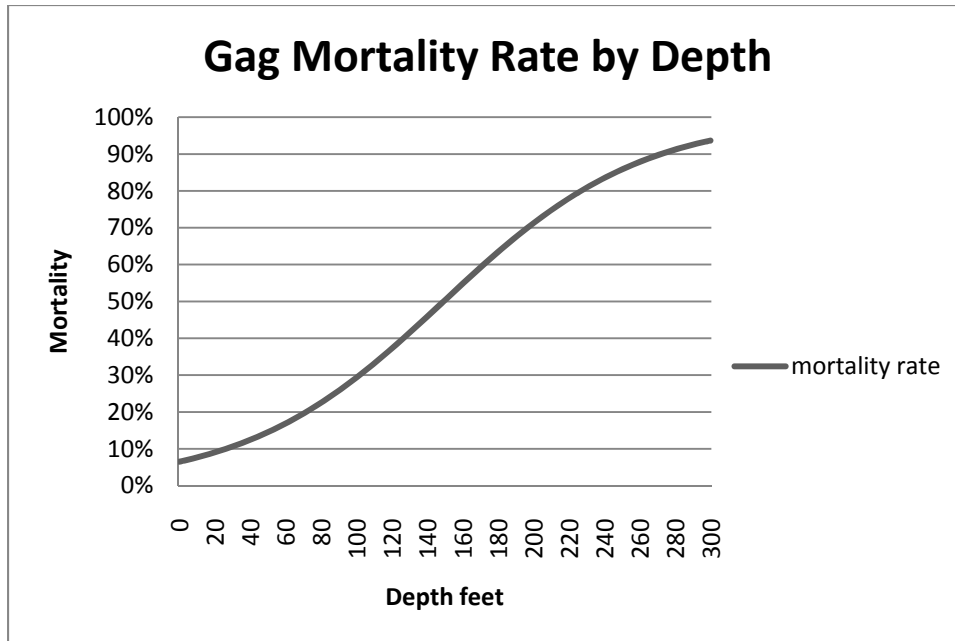


Figure 2.6.2.1 Logistic function of gag release mortality rate by depth. % mortality = $1/(1+\text{EXP}(-0.05865*(\text{depth_m}-45.5)))$ for depth in meters, converted to feet in the figure. Source: SEFSC 2007.

Alternative 4 would reduce dead discards by reducing the gag minimum size limit, thus converting the dead discards to retained catch. However, since an average of 80% of released gag are expected to survive, this would also increase the total number of smaller fish killed in the fishery. Consequently, yield per recruit and spawning potential ratio would likely decrease.

Option a would reduce the recreational minimum size limit from 22 inches to 20 inches. This was the gag minimum size limit from 1990 to 2000, when the size limit was increased to reduce harvest rate and to move the size limit closer to the size of 50% female maturity, which occurs at 23-24 inches. **Option b** would reduce the size limit further, to 18 inches. **Option c** would eliminate the size limit altogether and allow gag of any size to be retained. In addition to the negative impacts on yield per recruit and spawning potential ratio, smaller size limits will result in bag limits being filled more quickly and could encourage high grading since a fisherman who has filled his bag limit with smaller fish may be more likely to catch a fish that exceeds his current catch if he keeps fishing.

2.7 Action 7. Recreational Data Collection and Monitoring Programs

Alternative 1. No Action. Do not implement new data collection and monitoring programs for the recreational grouper fishery.

Alternative 2. Collaborate with the states to establish a recreational fish tag program. Reporting of MRIP-consistent data will be required for each tagged fish. The program will be implemented no later than 2012:

- a. gag**
- b. gag and red grouper**
- c. all shallow-water grouper**
- d. all grouper**

with the number of tags issued to be:

- e. no limit, issue tags for monitoring and data collection purposes only**
- f. the number of fish estimated to fill the annual catch target**

Alternative 3: Collaborate with the states to establish a recreational grouper vessel permit. Reporting of MRIP-consistent data will be required for each vessel trip. The program will be implemented no later than 2012:

- a. gag**
- b. gag and red grouper**
- c. all shallow-water grouper**
- d. all grouper**

with the grouper vessel permit required by:

- e. for-hire vessels**
- f. private recreational vessels**
- g. both for-hire and private recreational vessels**
- h. a statistically significant random sub-sample of the above sub-options.**

Alternative 4: By 2012, Require that permitted reef fish for hire vessels operating in the U.S. Exclusive Economic Zone participate in an electronic logbook program that includes catch and bycatch reporting consistent with the recommendations of MRIP*. Vessel permits will not be renewed for vessels that fail or refuse to participate in the program. The electronic logbook program will apply to:

- a. All permitted reef fish for hire vessels**
- b. A sub-sample of all permitted reef fish for hire vessels.**

***Note this requirement would not be effective until NMFS develops and certifies an electronic logbook system which meets the needs of MRIP.**

Alternative 5: Collaborate with the states to establish a telephone or web-based system to report MRIP-consistent data. The program will be implemented no later than 2012. Reporting will be:

- a. Voluntary**
- b. Required**

The reporting program will be for:

- c. the private recreational reef fish fishery**
- d. the for-hire reef fish fishery**
- e. both the private and for-hire reef fish fisheries**

Discussion:

Alternative 1 would not create any of the data collections and monitoring programs for the grouper fishery discussed in this section. Several similar programs are being developed by MRIP for the recreational fishery in general. Establishing separate programs for just the grouper fishery could duplicate the effort being developed by MRIP and unnecessarily increase the reporting requirements for fishermen.

Alternative 2 would establish a fish tag system for one or more grouper species. Fish tag programs have been used in recreational fisheries on the west coast and mid-Atlantic to collect data on recreational harvest. As a method to limit harvest, this strategy has only been used in limited cases such as the Florida (and other states) tarpon tag program, where the price of the tag as well as availability serves to constrain harvest. As a type of permit, NMFS would only be allowed to collect its administrative costs if issuing tags.

A number of issues would need to be resolved before a fish tag system could be implemented. For example, how would tags be allocated and distributed? Would they be distributed directly from NMFS or via a third party such as tackle shops or charterboat operators? Would they be physical tags or would they be electronic permits to harvest a certain number of fish (eTags) similar to IFQ shares in some commercial fisheries? Would there be reporting requirements? Would there be limits on how many tags could be obtained or possessed at any given time? Another question is whether fish tags should be issued by species (e.g., gag tags, red grouper tags, scamp tags, etc.), or as aggregate grouper tags, or similar to the IFQ shares in the commercial sector (i.e., gag tags, red grouper tags, and wildcard tags that can be used for either). Because of the above and other issues involved with establishing a fish tag system, details to implement this action may be better examined by the Limited Access Privilege Program Advisory Panel (LAPP AP) and the Ad Hoc Data Collection Advisory Panel (AHDCAP).

Alternative 3 would create a grouper stamp (or endorsement) to recreationally harvest one or more grouper species. At the state level they are issued as endorsements to a recreational fishing license. Since there is no federal recreational saltwater license, grouper stamps would be issued as stand-alone permits. The primary benefit of a grouper stamp would be to define the universe of grouper fishermen to improve data collection. If issued only in a limited number, grouper stamps could also be used as a form of effort limitation to control harvest rates. Separate grouper stamp programs could be set up for the for-hire fisheries and private recreational fishermen, with the option to limit the number of stamps issued to one (or both) sectors, or a single program could be established for all recreational vessels. In the for-hire sector, grouper stamps could be used as a form of limited entry by establishing eligibility requirements. Several issues, including how stamps would be distributed, reporting requirements, eligibility requirements if any, and transferability of permits if issued as a limited entry tool would need to be considered if grouper stamps were issued as a limited entry tool. Because of these and other issues involved with establishing a grouper stamp system, details to implement this action may be better examined by the Limited Access Privilege Program Advisory Panel (LAPP AP) and the Ad Hoc Data Collection Advisory Panel (AHDCAP).

Alternative 4 would extend the electronic vessel monitoring system (VMS) currently required for commercial reef fish fishery to the recreational for-hire fishery for vessels with

charter/headboat reef fish permits. Units placed on vessels transmit a signal (typically once per hour) identifying the exact latitude and longitude of a vessel anywhere in the Gulf of Mexico. The VMS consists of a three step process:

- 1) The system itself, which includes a mobile transceiver unit placed on the vessel;
- 2) A communications service provider that supplies the wireless link between the unit on the vessel and NOAA Fisheries Service's Office for Law Enforcement; and
- 3) A secure law enforcement facility where only law enforcement staff can receive and monitor compliance.

The Save Our Sector proposal supports requiring VMS on for-hire vessels. This would allow NMFS to know when a vessel is fishing so that it can better enforce trip reporting requirements as well as enforce area-specific regulations. For-hire vessels that also have commercial reef fish permits are already required to have VMS, so for those vessels there would be no additional cost. Other for-hire vessels would be required to install systems.

VMS systems range from very simple systems that only provide location data to systems that can provide vessels with on-board e-mail capability and emergency signaling. Depending on which system is chosen by a fisherman, VMS units cost between \$3,500 and \$3,800 with annual fees for service providers costing between \$500 and \$700. **Alternative 4** offers sub-options to apply the VMS requirement to just reef fish permitted headboats or to all of the for-hire permitted reef fish vessels.

Sub-option 4a would require all permitted reef fish vessels that operate as headboats to have a VMS unit onboard. Of the approximately 1,625 vessels with reef fish permits, about **xx** are considered headboats. In general, these vessels earn substantially higher revenues than charter vessels because they carry a greater number of passengers. **Sub-option 4b** would require all permitted reef fish for-hire vessels to have a VMS.

The VMS requirement carries an expense that would reduce profits. Some feel that monitoring and data collection of the for-hire sector can be effectively implemented through other less expensive means such as web or telephone based reporting of logbooks.

Alternative 5 would create an electronic logbook reporting system for the recreational for-hire reef fish fishery. Electronic logbooks may be achieved through a variety of technologies depending the management objective. Logbooks may be physically onboard the vessel in the form of data loggers, they may be web-based where fishermen enter data via computer after a trip is made, or could be phone based were fishermen can text or call in information. Information obtained from electronic logbooks could include daily trip information on general location, number of clients, gear used, and fish species that are harvested or released. Electronic logbooks could be further enhanced to enable fishery managers to obtain information on size distribution, geographic range, disposition, and depth and fate of fishes that are caught.

An electronic logbook system could be applied to either all permitted reef fish vessels (**sub-option 5a**) or to a subsample of vessels (**sub-option 5b**). A subsample of vessels would impose less of an overall paperwork burden on the sector, but would produce less precise results than 100 percent sampling. Furthermore, delays in expanding a subsample to fishery-wide estimates of catches are likely, similar to that encountered in an observer program (see Bycatch Issues).

This is likely to negatively impact the ability to use logbooks for in-season monitoring or accountability measures. If a subsample of vessels is selected, NMFS will develop a random selection procedure for determining vessels that will be required to report. In selecting vessels, the agency will consider the suitability of the vessel for such purpose and ensure that the universe of vessels selected are representative of all statistical sub-zones in the Gulf.

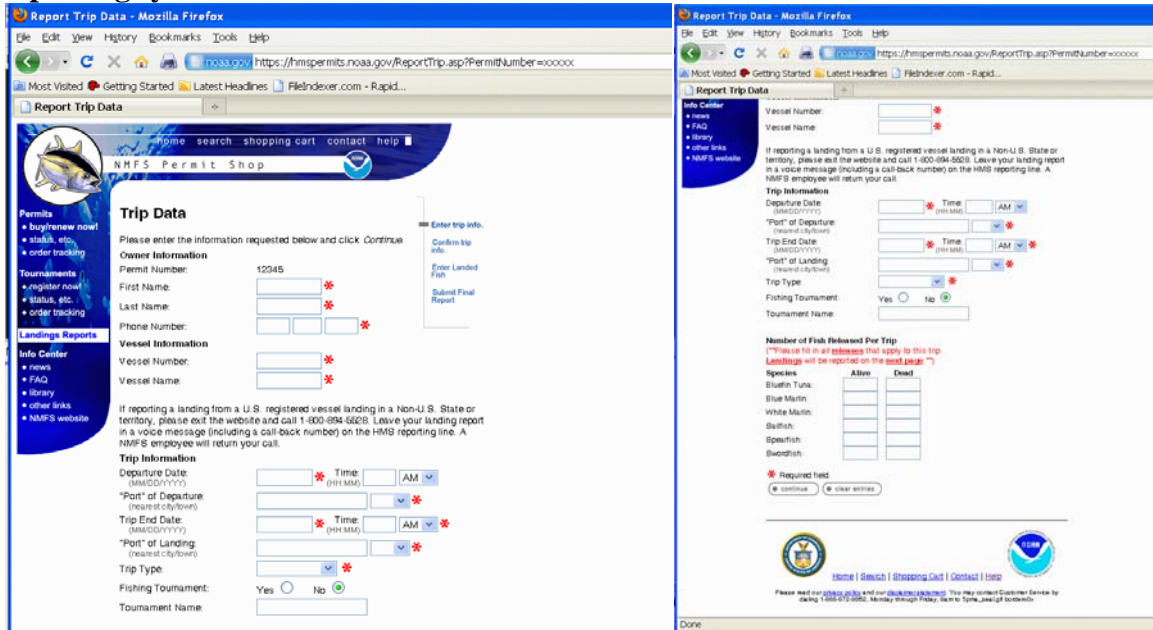
Efforts are currently underway to develop an electronic logbook for the for-hire sector as part of the Marine Recreational Information Program (MRIP). In August 2009, the MRIP For-Hire Workgroup met in New Orleans and identified essential self-reported data elements for an electronic logbook pilot study that is currently being designed. In addition, the Council has expressed interest in electronic reporting. At their August 2009 meeting, they passed three motions. These were: 1) To establish mandatory electronic reporting system criteria by February 2010 for all Council-managed Gulf fisheries; 2) for the Data Collection Committee to pursue general criteria for mandatory electronic record keeping and reporting requirements for all sectors and all fisheries within 6 months; and 3) to establish an Ad Hoc Data Collection Panel to define sector specific electronic data reporting system requirements with a target completion date of June 2010.

Others advocating electronic logbook systems include the Save Our Sector program and the Gulf of Mexico Angling Reporting System to improve the accuracy of the data collected in the for hire component of the fishery and to use electronic monitoring for an in-season monitoring program. The Save Our Sector program only recommends their use in the for-hire sector, along with vessel monitoring systems to improve monitoring of that sector's catches. The Gulf of Mexico Angling Reporting System recommends that an electronic logbook system be added to the for-hire sector in addition to the telephone/web based reporting system, and that a similar reporting system be developed for the private recreational sector.

Alternative 6 would establish a telephone or web-based (or both) reporting system for the recreational reef fish fishery. This could be applied to either just the private recreational sector (**sub-option 6a**), just the for-hire sector (**sub-option 6b**), or both (**sub-option 6c**). The system could be either mandatory or voluntary, but enforcement could be difficult if it were mandatory. Without a secondary source of catch information to verify the information reported, the reliability of information gathered through this system would be questionable. However, if those reporting can be considered to be a representative sample of the recreational fishery, trends in recreational usage of the resource can be collected over time. Examples of both mandatory and voluntary systems exist.

Under the Highly Migratory Species recreational billfish telephone reporting system, the owner of a vessel permitted, or required to be permitted, in the Atlantic Highly Migratory Species Angling or Atlantic Highly Migratory Species Charter/ Headboat category must report all bluefin tuna landings under the Angling category quota as well as all non-tournament landings of Atlantic blue marlin, Atlantic white marlin, Atlantic sailfish and North Atlantic swordfish, through a NMFS automated catch reporting system within 24 hours of the landing. The reports can be submitted by either a toll-free telephone number or over the internet (<https://hmspermits.noaa.gov/permitlandings.asp>) (Figure 2.7.1). Data collected by NMFS includes vessel permit number, species, length, and state of landing for each fish that must be reported.

Figure 2.7.1. Screenshots of Highly Migratory Species recreational billfish telephone reporting system



The Virginia Recreational Assessment Reporting System is a combination of a voluntary web based system for fishermen to report their catches including released fish through a tool called the “Saltwater Fisherman’s Journal” (www.vasaltwaterjournal.com), and the Marine Sportfish Collection Project, a biological data collection system where fishermen can donate their filleted fish carcasses to the agency for length and otolith collections. In the web based portion, fishing trip reports by anglers are combined and are viewable on-line. Information collected includes when and where the angler fished, whether it was from shore or a boat, what types and sizes of fish were caught, and if they were kept or released. Anglers may also enter their own trip specific information, including the time of day, weather and water conditions, as well as the type of gear and bait they used. The intent of this program is to compile information that is useful to both managers and fishermen.

The Gulf of Mexico Angling Reporting System recommends that NMFS implement an automatic telephone reporting system (similar to the current Highly Migratory Species recreational billfish telephone reporting system) and a web based reporting system (similar to the state of Virginia Recreational Assessment Reporting System). They recommend that the reporting system apply to both for-hire and private recreational vessels.

2.8 Action 8. Time and Area Closures

Alternative 1: No Action, Do not create time and area closures that prohibit fishing for gag and other reef fishes.

Alternative 2: Expand the Madison-Swanson Restricted Fishing Area to the north and west (approximately 70 square nm additional) – fishing regulations will be in accordance with existing time/area regulations (50 CFR 622.34(k)) – all fishing prohibited November 1 through April 30, surface trolling allowed May 1 through October 31.

Boundaries for additional area:

- 1) 85° 55' W, 29° 20' N (new NW corner)
- 2) 85° 38' W, 29° 20' N (new NE corner)
- 3) 85° 38' W, 29° 17' N (current NE corner)
- 4) 85° 50' W, 29° 17' N (current NE corner)
- 5) 85° 50' W, 29° 14' N (current NW corner)
- 6) 85° 55' W, 29° 14' N (SW corner of extension)

Alternative 3: Close an area bracketing the 40 fathom contour between the current closed areas of Madison-Swanson and the Edges (approximately 244 square nm), making it one continuous area – fishing regulations will be in accordance with existing time/area regulations for the Madison-Swanson and Steamboat Lumps reserves (50 CFR 622.34(k)) – all fishing prohibited November 1 through April 30, surface trolling allowed May 1 through October 31.

Note: *In the alternatives, the phrase “all fishing prohibited” means the same fishing restrictions that apply during November through April for the Madison-Swanson and Steamboat Lumps restricted fishing areas as described in 50 CFR 622.34(k)(3), i.e., “all fishing is prohibited, and possession of any fish species is prohibited, except for such possession aboard a vessel in transit with fishing gear stowed as specified in paragraph (k)(4) of this section. The provisions of this paragraph, (k)(3), do not apply to highly migratory species”.

Discussion:

The main objective of time and area closures in Amendment 30B was to protect spawning aggregations of gag and to protect a portion of the male gag population particularly vulnerable to fishing during spawning (Gilmore and Jones 1992; Coleman et al. 1996; Koenig et al. 1996; GMFMC 2008a). In addition to the Madison-Swanson and Steamboat Lumps closure to all fishing November through April, with surface trolling allowed May through October; whereas, the Edges were also closed January - April to all fishing and open May through December to all fishing (Figure 2.8.1).

There are various uses for marine protected areas and many opinions on their purpose and need as a management tool. One assumption about effective marine protected areas requires that closed areas are of sufficient size to protect enough individuals to maintain genetic diversity and maintain the species population throughout the stock's range. The Ecosystem Modeling Workshop (GMFMC 2008b) found the optimal area for a marine reserve was not a single area, but a network of 16 cross-shelf marine protected areas covering 24% of all available red snapper

habitat, suggesting that this may or may not be true for gag. The model could only evaluate cross-shelf reserves, and was limited by a lack of hard bottom habitat mapping (Ecosystem Modeling Workshop Report 2008). The evaluation of the ecosystem models and their data inputs is still in the preliminary stages, the results should be viewed as tentative. However, the basic conclusion from the simulation trials was that the offshore marine protected areas are likely to have almost no impact on abundance or fishing rates, since effort displaced from the protected areas potentially targeting younger fish inshore. Only the very large cross shelf onshore-offshore areas that protect a range of species from fishing throughout their life-cycle had impacts on fishing rates comparable to those achievable through extensive seasonal closures (Ecosystem Modeling Workshop Report 2008).

In a review of marine protected areas as a management tool by Shipp (2003), he suggested that an area protected from all or some human activity was not effective for a majority of marine species due to their mobility in and out of the closed areas. However, marine reserves are beneficial for protecting spawning, spawning aggregations, and essential fish habitat used as nursery areas (Shipp 2003; Koenig et al. 2000; National Research Council 2001). Therefore, due to the overfished status of gag and the need to protect the spawning aggregations from fishing pressure as well as reduce bycatch of gag while targeting red grouper, it is plausible that certain areas restricted to fishing during the spawning season may be beneficial for rebuilding the Gulf of Mexico gag stock. **Alternative 1** is the no action alternative and would not create time and area closures prohibiting fishing for gag or other reef fishes. If this alternative were selected by the Council as the preferred alternative then other actions would be necessary to rebuild the gag stock and reduce bycatch.

Alternative 2 would expand the Madison-Swanson Restricted Fishing Area to the north and west, named the Extended Madison-Swanson area in Amendment 30B (Figure 2.8.1). This area closure is a smaller area (approximately 70 square nautical miles) compared to the other areas that are currently closed, but was documented with as high or higher gag densities as the Edges (Harter and David 2009). In addition, red grouper densities were not significantly different among these protected areas, so closing these areas could reduce bycatch of gag due to fishers targeting red grouper or other grouper species in deeper areas. **Alternative 3** would close an area approximately 244 square nautical miles, the area bracketing the 40 fathom contour between the current closed areas of Madison-Swanson and the Edges. The Edges, currently closed January 1-April 30 to protect spawning aggregations is 62% larger than proposed **Alternative 3**. This area was anecdotally documented by fishers as an area with gag spawning aggregations as well as by researchers (Koenig et al. 1996). Spawning depths range from 27 to 66 fathoms, but are concentrated around 44 fathoms (Koenig et al. 1996).

The reduction in effort expected from closing areas with previously documented densities of gag and spawning aggregations is difficult to quantify. However, simply due to the susceptibility of gag to fishing pressure during spawning, and potential loss of large dominant males that fertilize several females, make area closures justifiable (Coleman et al. 1996; Koenig et al. 1996). Additionally, the reproductive style of gag, proven to be protogynous hermaphrodites, defined as mature female gag changing sex to males, lends itself to have significant population level consequences when subject to high exploitation (Shapiro 1987). In addition to changing sex, gag form spawning aggregations, similar to other species in the same family (Domeier and Colin 1997). During this time the male gag are particularly aggressive feeders, increasing their susceptibility to fishing (Gilmore and Jones 1992). Male gag are considered by several scientists

to be the limiting factor during the spawning season. In many cases there are concerns either the mature large females are not present or are unable to change sex in time to fertilize the other females already in a spawning aggregation (Coleman et al. 1996). Due to the high fishing pressure and low spawning stock biomass, time and area closures during the spawning season, may be important to rebuild the gag stock, by protecting spawning aggregations. Currently, in the Madison-Swanson area all fishing is prohibited November through April, but surface trolling is allowed May through October. If **Alternative 2** or **Alternative 3** is selected as preferred, the same months of closure will apply. These months overlap with the majority of the spawning season for gag (December through May) as well as part of the peak red grouper spawning season (April through May).

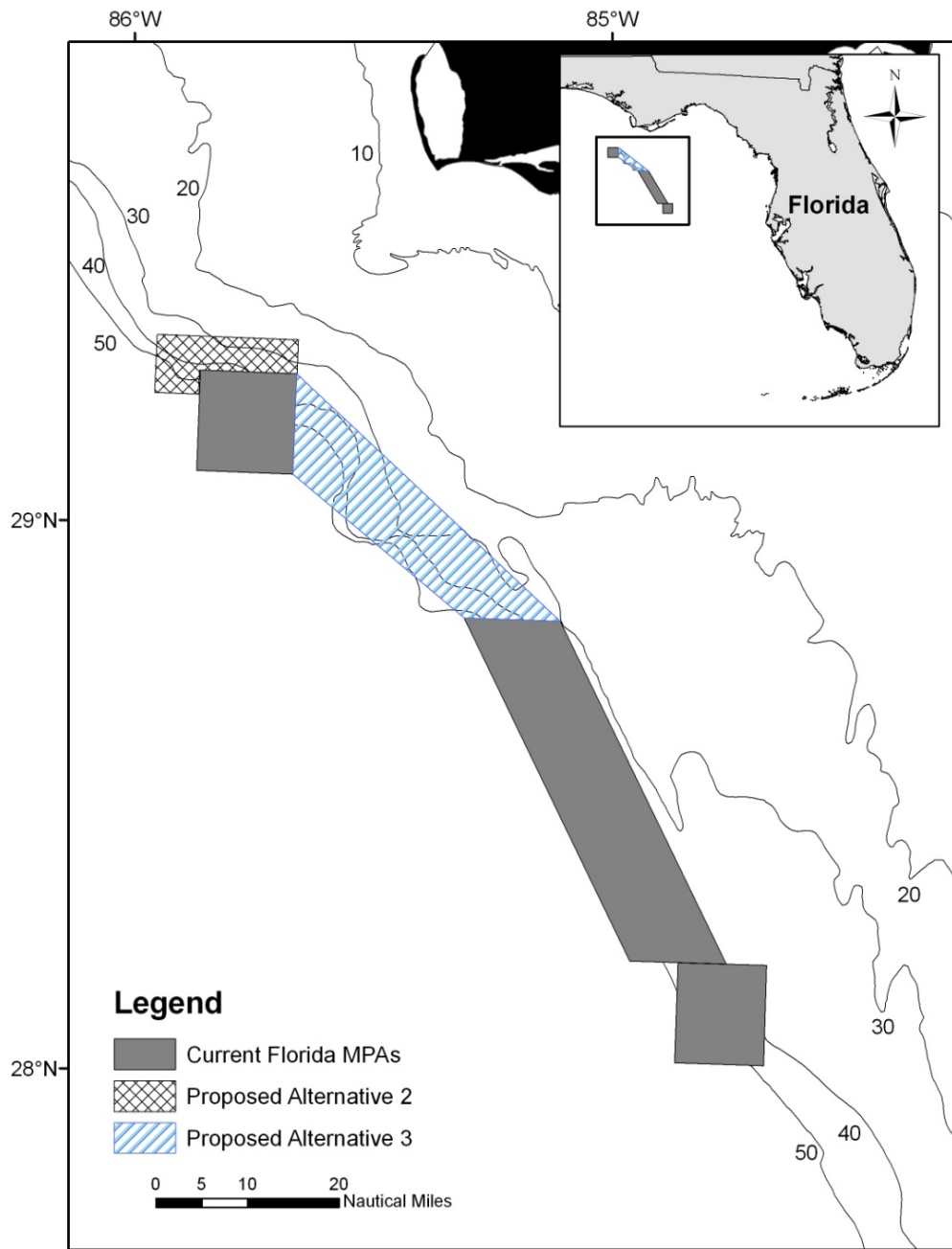


Figure 2.8.1. Current west Florida Marine Protected Areas (Madison-Swanson, the Edges, and Steamboat Lumps) and proposed Alternative 2 and 3 time and area closures.

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Supplement to Options paper for Amendment 32, Action 2. Annual Catch Limits and Annual Catch Targets

2.2.2a Alternatives for Gag and Red Grouper ACL and ACT Updated Yield Projections – High 2010 estimated catch levels

Amendment 30B established the aggregate commercial shallow-water grouper quota for each year as the sum of the gag and red grouper quotas, plus the other shallow-water grouper allowance of 0.41 million pounds. This formula is not changed in this amendment, and therefore will continue to be used to calculate the shallow-water grouper quota. The shallow-water grouper annual catch limit will also continue to be calculated as in Amendment 30B, i.e., the sum of the red grouper and gag commercial sector annual catch limits plus 0.41 million pounds.

Alternative 1: No action. As specified in Amendment 30b, the gag ACT will increase to 3.82 mp in 2011 and the ACL to 4.50 mp. Red grouper ACL remains 7.72 mp and ACT remains at 7.57 mp. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30b. For purposes of accountability measure triggers, the recreational sector ACL and ACT will be based on moving averages as devised in Amendment 30b. The resulting ACLs and ACTs are shown in Table Alternative 1.

NO CHANGE FROM ORIGINAL OPTIONS PAPER

Alternative 2: The gag and red grouper ACL = ABC for each year 2011 – 2014, and ACT is set equal to the yield corresponding to optimum yield for each year 2011 – 2014. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30. The recreational sector ACL and ACT will be based on moving averages as devised in Amendment 30B⁸. The resulting ACLs and ACTs are shown in Table Alternative 2.

Table Alternative 2 – High 2010 estimated catch levels

Recreational Fishery						
Year	Gag		Red Grouper		Test criteria	
	ACT	ACL	ACT	ACL		
2011	0.46	0.54	1.27	1.67	2011 Landings	
2012	0.58	0.66	1.30	1.67	Average of 2011+2012 landings	
2013	0.71	0.80	1.34	1.69	Average of 2011+2012+2013 landings	
2014	0.97	1.08	1.40	1.71	Average of 2012+2013+2014 landings	
2015	1.24	1.37	1.46	1.74	Average of 2013+2014+2015 landings	
Commercial Fishery						
Year	Gag		Red Grouper		Shallow-water	
	ACT	ACL	ACT	ACL	ACT	ACL
2011	0.30	0.34	4.04	5.27	4.74	6.03
2012	0.44	0.51	4.23	5.33	5.08	6.24
2013	0.62	0.69	4.47	5.44	5.50	6.54
2014	0.80	0.88	4.64	5.49	5.85	6.79
2015	0.97	1.05	4.80	5.55	6.18	7.01

See footnote for explanation of table

⁸ Use a three year moving average of the ACL and ACT, and compare to a three year moving average of actual landings for purposes of determining whether accountability measures are triggered. For 2010, only 2010 red grouper landings will be compared to the ACLs specified for 2010; in 2011, the average of 2010 and 2011 red grouper landings will be compared to average of one-year ACLs specified for 2010 and 2011; in 2012, the average of 2010-2012 red grouper landings will be compared to average of one-year ACLs specified for 2010-2012, and thereafter, the moving three-year average of red grouper landings will be compared to the moving three-year average of ACLs.

Alternative 3: The gag and red grouper ACL = ABC for each year 2011 – 2014, and ACT is not used. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30. The recreational sector ACL and ACT will be based on moving averages as devised in Amendment 30B. The resulting ACLs and ACTs are shown in Table Alternative 3.

Table Alternative 3– High 2010 estimated catch levels

Recreational Fishery				
Year	Gag	Red Grouper		
	ACL	ACL	Test criteria	
2011	0.54	1.67	2011 Landings	
2012	0.66	1.67	Average of 2011+2012 landings	
2013	0.80	1.69	Average of 2011+2012+2013 landings	
2014	1.08	1.71	Average of 2012+2013+2014 landings	
2015	1.37	1.74	Average of 2013+2014+2015 landings	
Commercial Fishery				
Year	Gag	Red Grouper	Shallow-water	
	ACL	ACL		ACL
2011	0.34	less than 5.27		<6.03
2012	0.51	less than 5.33		<6.24
2013	0.69	less than 5.44		<6.54
2014	0.88	less than 5.49		<6.79
2015	1.05	less than 5.55		<7.01

See footnote for explanation of table

The ACLs for red grouper are based on annual MSY, which is the same as OFL. However, ACL=ABC=OFL is generally not allowed under the National Standard 1 guidelines. Until the Scientific and Statistical Committee recommends a revised ABC based on the updated yield streams, all that can be said about red grouper ACL is that it will be less than OFL.

The same concern does not affect gag, since both $F_{rebuild}$ and F_{OY} are below F_{OFL} .

Alternative 4: The gag and red grouper ACL = ABC for each year 2011 – 2014, and ACT is based on an ACT control rule. These are allocated into sector ACL and sector ACT based on allocations as specified in Amendment 30. The resulting ACLs and ACTs are shown in Table Alternative 4.

Table Alternative 4– High 2010 estimated catch levels

Recreational Fishery						
Year	Gag		Red Grouper		Test criteria	
	ACT	ACL	ACT	ACL		
2011	0.43	0.54	1.50	1.67	2011 Landings	
2012	0.53	0.66	1.51	1.67	Average of 2011+2012 landings	
2013	0.64	0.80	1.52	1.69	Average of 2011+2012+2013 landings	
2014	0.87	1.08	1.54	1.71	Average of 2012+2013+2014 landings	
2015	1.09	1.37	1.56	1.74	Average of 2013+2014+2015 landings	
Commercial Fishery						
Year	Gag		Red Grouper		Shallow-water	
	ACT	ACL	ACT	ACL	ACT	ACL
2011	0.27	0.34	4.75	5.27	5.43	6.03
2012	0.41	0.51	4.79	5.33	5.61	6.24
2013	0.55	0.69	4.90	5.44	5.86	6.54
2014	0.71	0.88	4.95	5.49	6.06	6.79
2015	0.84	1.05	4.99	5.55	6.24	7.01

See footnote for explanation of table.