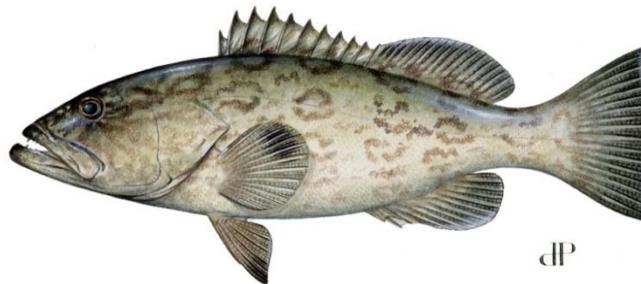


# Gag

## Annual Catch Limits, Annual Catch Targets, and Recreational Season Adjustments



GAG

*Mycteroperca microlepis*

### Revised Options Paper for a Framework Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico

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## ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ACT	annual catch target
AM	accountability measure
COI	U.S. Coast Guard certificate of inspection
EA	environmental assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
EIS	environmental impact statement
FMP	fishery management plan
FWCC	Florida Fish and Wildlife Conservation Commission
GMFMC	Gulf of Mexico Fishery Management Council
gw	gutted weight
IFQ	individual fishing quota
IRFA	initial regulatory flexibility analysis
MFMT	maximum fishing mortality threshold
mp	million pounds
MSST	minimum stock size threshold
NMFS	National Marine Fisheries Service
OY	optimum yield
RA	regional administrator
RFA	regulatory flexibility analysis
RIR	regulatory impact review
SEDAR	Southeast Data, Assessment, and Review process
SSBR	spawning stock biomass per recruit
SSC	Scientific and Statistical Committee
SPR	spawning potential ratio
TAC	total allowable catch
TL	total length
VMS	vessel monitoring system
ww	whole weight

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# CHAPTER 1. INTRODUCTION

## 1.1 Background

The 2006 reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) established new requirements to end and prevent overfishing through the use of annual catch limits (ACLs) and accountability measures (AMs). In 2009 a gag update assessment (SEDAR 10 Update 2009) indicated the gag stock size had declined 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 in addition to the normal natural and fishing mortalities. The update assessment indicated the Gulf gag stock was both overfished and undergoing overfishing, and the Gulf of Mexico Fishery Management Council (Council) was informed of this status determination in August 2009. In response, an interim rule was implemented on January 1, 2009 to reduce overfishing of gag, followed by permanent rules under Amendment 30B (GMFMC 2008). Amendment 32 (GMFMC 2011a) subsequently established a formal rebuilding plan for gag not to exceed 10 years.

A benchmark assessment for gag completed in 2014 (SEDAR 33 2014) indicated that the gag stock was no longer overfished or undergoing overfishing, and had rebuilt to above its maximum sustainable yield level. However, in 2014 a major red tide event occurred off of the Florida west coast in the region of greatest gag abundance. Due to uncertainty about the impact of this red tide event on the gag stock, the Scientific and Statistical Committee (SSC) recommended a conservative acceptable biological catch (ABC) that assumed the 2014 red tide event would have the same impact on the gag stock as the 2005 event. The Council requested that the SSC reevaluate its ABC recommendation, and in January 2015 the SSC received an analysis of the red tide event from the Florida Fish and Wildlife Research Institute which indicated that the impact of the 2014 red tide event was only 4% to 7% of the 2005 event. With this new information, the SSC revised its recommendation and recommended ABCs based on a projection scenario that assumed no significant impact from the 2014 red tide event.

### *Gulf of Mexico Fishery Management Council*

- Responsible for conservation and management of fish stocks.
- Consists of 11 voting members who are appointed by the Secretary of Commerce, 1 voting member representing each of the five Gulf states, and the Regional Administrator for the National Marine Fisheries Service Southeast Region.
- Responsible for developing fishery management plans and recommending regulations to the National Marine Fisheries Service for implementation.

### *National Marine Fisheries Service*

- Responsible for preventing overfishing while achieving optimum yield.
- Approves, disapproves, or partially approves Council recommendations.
- Implements regulations.

## 1.2 Purpose and Need

The purpose of this amendment is to modify the gag annual catch limit (ACL) and annual catch target (ACT), based on the 2014 SEDAR 33 benchmark stock assessment, and to modify the recreational fishing season to allow for the recreational ACT in the Gulf of Mexico to be harvested. The need is to allow each sector to harvest gag at a level consistent with achieving optimum yield while preventing overfishing, and to address social and economic impacts of keeping the recreational gag fishing season open to achieve optimum yield.

## 1.3 History of Management

Federal management of gag began in November 1984 with the implementation of the Reef Fish Fishery Management Plan and environmental impact statement (EIS). The initial 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 the National Marine Fisheries Service (NMFS) to develop data reporting requirements in the reef fish fishery.

In July 1985, the Florida Marine Fisheries Commission (now Florida Fish and Wildlife Conservation Commission - FWCC) established a Florida state regulation to set a minimum size limit of 18 inches total length for gag and several other shallow-water grouper species. This was followed in December 1986 by 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.

On August 11, 2009, the Council was notified by NMFS that the Gulf of Mexico gag stock was both overfished and undergoing overfishing based on the results of a 2009 update stock assessment. The remaining summary focuses on the history of gag management since the stock was declared overfished. For a full history of grouper management, refer to Amendment 30B, History of Management Activities Affecting Grouper Harvest.(GMFMC 2008).

### Amendments

**Amendment 29** (EA/RIR/IRFA), implemented January 1, 2010, established an IFQ system for the commercial grouper and tilefish fisheries.

**Amendment 30B** (FEIS/RIR/IRFA), implemented May 2009, established annual catch limits (ACLs) and accountability measures (AMs) for gag and red grouper, and managed shallow-water grouper to achieve optimum yield and improve the effectiveness of federal management measures. The amendment (1) defined the gag minimum stock size threshold (MSST) and optimum yield (OY); (2) set interim allocations of gag and red grouper between recreational and commercial fisheries; (3) made adjustments to the gag and red grouper TACs to reflect the current status of these stocks; (4) established ACLs and AMs for the commercial and recreational red grouper fisheries, commercial and recreational gag fisheries, and commercial aggregate shallow-water grouper fishery; (5) adjusted recreational grouper bag limits and seasons; (6)

adjusted commercial grouper quotas; (7) reduced the red grouper commercial minimum size limit; (8) replaced the one month February 15 through March 14 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) eliminated the end date for the Madison-Swanson and Steamboat Lumps marine reserves; and (10) required 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** (FEIS/RIR/IRFA), implemented May 26, 2010, (1) prohibited the use of bottom longline gear shoreward of a line approximating the 35-fathom contour from June through August; (2) established a longline endorsement; and (3) restricted 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 from 20 to 50 fathoms by emergency rule effective May 18, 2009 to protect endangered sea turtles. 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.

**Amendment 32** (EIS/RIR/RFA), implemented May 26, 2010, established a rebuilding plan for gag that would rebuild the stock in 10 years or less. The stock-ACL was set at the yield corresponding to the annual estimate of maximum sustainable yield, and the stock-ACT was set at the yield corresponding to optimum yield. The stock ACL and ACT were then allocated to the recreational and commercial sectors at 61% and 39%. The commercial gag ACT was reduced by an additional 14% to account for dead discards as a result of insufficient gag IFQ shares that had not been accounted for in the assessment. This adjusted ACT became the commercial gag quota. In addition, the amendment revised the use of multi-use IFQ shares and reduced the commercial gag minimum size limit to 22 inches total length. The amendment set the recreational gag season as July 1 through October 31, with a 22 inch total length minimum size limit and a 2-fish gag limit within the 4-fish aggregate grouper bag limit. The amendment also implemented overage adjustments for the gag recreational sector while the stock was under a rebuilding plan.

**Amendment 38** (EA/RIR/RFA) was implemented March 1, 2013. It revised the post-season recreational accountability measure that reduces the length of the recreational season for all shallow-water grouper in the year following a year in which the ACL for gag or red grouper is exceeded. The modified accountability measure reduces the recreational season of only the species for which the ACL was exceeded.

### **Regulatory Amendments, Emergency and Interim Rules**

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. [74 FR 53889].

In response to an uncontrolled oil spill resulting from the explosion on April 20, 2010 and subsequent sinking of the Deepwater Horizon oil rig approximately 36 nautical miles (41 statute miles) off the Louisiana coast, NMFS issued an emergency rule to temporarily close a portion of the Gulf of Mexico EEZ to all fishing [75 FR 24822]. The initial closed area extended from approximately the mouth of the Mississippi River to south of Pensacola, Florida and covered an area of 6,817 square statute miles. The coordinates of the closed area were subsequently modified periodically in response to changes in the size and location of the area affected by the spill. At its largest size on June 1, 2010, the closed area covered 88,522 square statute miles, or approximately 37 percent of the Gulf of Mexico EEZ. This closure was implemented for public safety.

While management measures for the gag rebuilding plan were being developed (Amendment 32), an interim rule was published on December 1, 2010 [75 FR 74654], to reduce gag landings consistent with ending overfishing. This interim rule implemented conservative management measures while a rerun of the update stock assessment was being completed. At issue was the treatment of dead discarded fish in the assessment. The rule reduced the commercial quota to 100,000 pounds gutted weight, suspended the use of red grouper multi-use individual fishing quota allocation so it would not be used to harvest gag, and to temporarily halted the recreational harvest of gag until recreational fishing management measures being developed in Amendment 32 could be implemented to allow harvest at the appropriate levels.

The gag 2009 update stock assessment was rerun in December 2010 addressing the problems with discards identified earlier in 2010. This assessment was reviewed in January 2011 by the Council's Scientific and Statistical Committee and presented to the Council at their February 2011 meeting. The assessment indicated that the gag commercial quota implemented in the December 1, 2010, interim rule could be increased and that a longer recreational season could be implemented. In response, the Council requested an interim rule while they continued to work on long-term measures including a gag rebuilding plan in Amendment 32. The interim rule set the commercial gag quota at 430,000 pounds gutted weight (including the 100,000 pounds previously allowed) for the 2011 fishing year, and temporarily suspended the use of red grouper multi-use IFQ allocation so it cannot be used to harvest gag. It also set a two-month recreational gag fishing season from September 16 through November 15. This temporary rule was effective from June 1, 2011 through November 27, 2011, and was extended for another 186 days or until Amendment 32 was implemented [76 FR 31874].

A December 2012 framework action (GMFMC 2012), implemented July 5, 2013, revised the recreational gag open season. It would still open on July 1, but instead of closing on October 31 it would close on the date when the ACT is projected to be reached. This framework action also modified the February 1 through March 31 recreational closed season on shallow-water grouper to apply only on waters beyond the 20-fathom boundary. In waters shoreward of 20 fathoms, recreational shallow-water grouper fishing would remain open except for gag, which is subject to a separate closed season. This modified closed season took effect with the 2014 calendar year.

An April 2013 framework action removed the requirement to have onboard and use venting tools when releasing reef fish, effective September 3, 2013.

## CHAPTER 2. MANAGEMENT ALTERNATIVES

### 2.1 Action 1 - Modifications to the Gag Annual Catch Limits and Annual Catch Targets

All weights are in million pounds gutted weight. The stock annual catch limit (ACL) is allocated 61% recreational, 39% commercial.

**Alternative 1. No Action.** Maintain the acceptable biological catch (ABC), ACL, and annual catch target (ACT) at the existing 2015 level.

Year	ABC/Stock ACL	Recreational		Commercial	
		ACL	ACT	ACL	ACT/Quota
2015+	3.12	1.903	1.708	1.217	0.939

**Alternative 2.** Set ACL and ACT mid-way between status quo and the projected equilibrium optimum yield. Set the recreational ACT buffer at 8% based on the ACL/ACT control rule, and do not use a commercial ACT.

Year	Stock ACL	Recreational		Commercial	
		ACL	ACT	ACL/Quota	ACT
2015+	3.80	2.32	2.13	1.48	none

**Alternative 3** Set ACL and ACT based upon the projected equilibrium optimum yield. Set the recreational ACT buffer at 8% based on the ACL/ACT control rule, and do not use a commercial ACT.

Year	Stock ACL	Recreational		Commercial	
		ACL	ACT	ACL/Quota	ACT
2015+	4.46	2.72	2.50	1.74	none

**Alternative 4.** Set ACL and ACT based upon SSC recommendations for ABC, 2015-2017. Set a constant ACL at the lowest ABC recommended by the SSC. Set the recreational ACT buffer at 8% based on the ACL/ACT control rule, and do not use a commercial ACT.

Year	Stock ACL	Recreational		Commercial	
		ACL	ACT	ACL/Quota	ACT
2015+	4.57	2.79	2.57	1.78	none

**Alternative 5.** Set ACL and ACT based upon SSC recommendations for ABC, 2015-2017. Set the stock ACL = ABC for each year. Set the recreational ACT buffer at 8% based on the ACL/ACT control rule, and do not use a commercial ACT.

Year	Recreational			Commercial	
	ABC/Stock ACL	ACL	ACT	ACL/Quota	ACT
2015	5.21	3.18	2.93	2.03	none
2016	4.75	2.90	2.67	1.85	none
2017+	4.57	2.79	2.57	1.78	none

Discussion: All of the alternatives set a constant catch ACL except **Alternative 5**, which adopts an annual ACL that changes each year.

**Alternative 1**, no action, represents a small increase in the ACL from 2014 levels, based on the 2009 update assessment. These ACLs and ACTs were established under Amendment 32 (GMFMC 2011a), prior to the adoption of the Generic ACL/AM Amendment (GMFMC 2011b), and are based partially on a different procedure than used today which was established in Amendment 30B (GMFMC 2008). Under the Amendment 30B procedure, the sector-ACL was set at the sector-specific allocation of ABC, as is done today. The ACT was set at the sector-specific allocation of the yield corresponding to  $F_{0.9}$ . Both sectors received an ACL and an ACT. The grouper-tilefish individual fishing quota (IFQ) program began in 2010. Due to the limited amount of gag IFQ allocation available in the initial years of the gag rebuilding plan, gag bycatch and discards from fishermen targeting red grouper or other fish were considered to be higher than assumed in the assessment projections. Consequently, Amendment 32 (implemented in 2011) added an additional 14% buffer to the commercial ACT to explicitly account for dead discards by the commercial sector that were not accounted for in the assessment analyses. This resulted in the commercial ACT shown in **Alternative 1**. This ACT is also the current commercial quota.

**Alternatives 2, 3, 4, and 5** eliminate the commercial ACT. Unlike the earlier assessment, the SEDAR 33 benchmark assessment for gag did account for all sources of discard mortality, negating the need for a supplemental buffer. In addition, commercial quotas for species managed under the grouper-tilefish IFQ program have never been exceeded, and gag is no longer overfished. Under the ACL/ACT control rule adopted in 2012 (GMFMC 2011b), this results in a buffer of 0%; thus no reduction from the ACL is recommended by the control rule. Since establishing a commercial ACT is no longer needed (if it was established, it would be set equal the ACL), **Alternatives 2-5** would eliminate the commercial ACT, and set the commercial quota equal to the ACL. If it becomes necessary to reinstate a commercial ACT in the future, it can be done under the generic framework procedure.

**Alternative 2** is a precautionary catch level that allows some increase in the ACL but also takes into account uncertainty due to anecdotal information that the stock may not be in as good shape as suggested by the assessment.

**Alternative 3** is based on maintaining the stock at or above its projected equilibrium optimum yield (OY) level. The OY is defined as the yield when fishing at a fishing mortality rate equal to 75% of the MSY fishing rate. An analysis of fishing at OY indicates that, at equilibrium, stocks will produce between 95% and 98% of the MSY yield while maintaining the spawning stock biomass level between 127% and 131% of the MSY biomass level (Restrepo et al. 1998).

Note that Table 2.1.1 shows the projected estimate of equilibrium OY higher than both equilibrium ABC and equilibrium OFL. This should not be the case. OY should be lower than ABC and OFL. This artifact highlights the uncertainty of long-range projections, and infers that the equilibrium estimates for OFL, ABC, and OY will need to be revised in a future stock assessment. However, since the projected equilibrium OY is lower than any of the ABCs for 2015-2017, it can be adopted as a conservative ACL pending the next assessment (which is scheduled as an update assessment in 2016).

**Alternative 4** sets a constant catch ACL at the lowest ABC recommended by the SSC for the 2015-2017 projections. This is the highest constant catch ACL that can be set without exceeding the ABC in one or more years.

**Alternative 5** sets an ACL that changes each year at the highest level allowed by the recommended ABC for each year 2015-2017 (Table 2.1.1). This would allow the greatest overall catch of gag during the three-year period, but would also result in a declining ABC and ACL over time due to strong year-classes exiting the resource and being replaced by year-classes with average or below average recruitment. The 2017 ACL would remain in place in subsequent years unless adjusted by subsequent rulemaking.

### *Additional Information*

The Council's Scientific and Statistical Committee (SSC) reviewed the SEDAR 33 gag benchmark assessment (SEDAR 33 2014) in June 2014<sup>1</sup>. Based on the results of the assessment, the SSC concluded that the gag stock was neither overfished nor undergoing overfishing. Therefore, a rebuilding plan is no longer needed. However, due to concerns that a red tide event occurring in 2014 could potentially have as great an impact as the 2005 red tide event, the SSC recommended a precautionary ABC of 3.07 mp gutted weight<sup>2</sup> until more could be known about the 2014 red tide event. The Council requested that the SSC review its recommendation and provide more rationale for comparing the 2014 red tide event to the 2005 event, and in January 2015, the SSC reevaluated its recommendation<sup>3</sup>. At that meeting, staff from the Florida Fish and Wildlife Research Institute presented a more detailed analysis of gag mortality due to red tide events from 2002-2014<sup>4</sup>. The results of the analysis estimated that the 2014 red tide event was

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<sup>1</sup> GMFMC. 2014. Standing and Special Reef Fish SSC (with Ecosystem SSC present) Meeting Summary – revised, June 3-5, 2014. Tab B-6 in the June 2014 Council briefing book. Available from the Council's FTP site or on request to the Council.

<sup>2</sup> GMFMC. 2014. Standing and Special Reef Fish SSC Meeting Summary, October 1-2, 2014. Tab B-16 in the October 2014 Council briefing book. Available from the Council's FTP site or on request to the Council.

<sup>3</sup> Standing, Special Reef Fish and Special Mackerel SSC Meeting Summary, January 6-8, 2015. Tab B-4 in the January 2015 Council briefing book. Available from the Council's FTP site or on request to the Council.

<sup>4</sup> Chagaris, D. 2015. Final-Estimation of red tide mortality on gag grouper. PowerPoint presentation to the SS at its January 2015 meeting. Available on request to the Council.

responsible for just 1.8% to 3.5% of the total gag biomass killed, which was about average for a normal year. The 2014 red tide was estimated to have only 4% to 7% of the impact of the 2005 event. Based on the results of the red tide analysis, the SSC revised their OFL projections upward for gag during 2015-2017. They also revised their ABC recommendations. However, the SSC felt that the buffer between ABC and OFL resulting from the ABC control rule was too small to provide protection against overfishing (exceeding OFL). Therefore, the SSC decided to recommend a yield stream based on the OY yields (Table 2.1.1).

OFL and ABC were undefined by the SSC for years beyond 2017 due to uncertainty about the longer range projections. However, projections through 2018 were provided to the SSC (Table 2.1.1). These projections suggest that OFL and ABC yields will continue to decline at least through 2018, and possibly beyond since the equilibrium levels are lower. This infers that maintaining the quota at the 2017 level could lead to overfishing (i.e., exceeding the OFL) as early as 2018.

**Table 2.1.1.** OFL, ABC, and OY projections for gag based on SEDAR 33 benchmark assessment and assuming no red tide mortality in 2014.

<b>Year</b>	<b>OFL</b>	<b>ABC from control rule</b>	<b>OY (ABC recommended by SSC)</b>
<b>2015</b>	6.77	6.43	5.21
<b>2016</b>	5.84	5.57	4.75
<b>2017</b>	5.38	5.13	4.57
<b>2018</b>	5.10	4.86	4.50
<b>Equilibrium</b>	4.45	4.21	4.46

Units are in million pounds gutted weight. The SSC did not recommend an OFL and ABC for 2018, but were provided with projections for that year which are included in the table.

## 2.2 Action 2 – Modifications to the Recreational Gag Fishing Season

**Alternative 1:** No action. The recreational gag season will remain July 1 through December 2 (147 days) unless shortened due to a projection that the annual catch target (ACT) will be reached sooner.

**Alternative 2:** Remove the December 3-31 fixed closed season. The recreational gag season will remain open through the end of the year or until a projection that the ACT will be reached sooner. Note: If Alternative 2 is selected, Alternative 3 or 4 may also be selected.

**Alternative 3:** Remove the January through June gag seasonal closure. Begin the season on January 1 and close when the recreational ACT is projected to be reached.

**Option 3a.** Maintain the February 1 through March 31 closed season on recreational harvest of gag beyond the 20-fathom boundary. Fishing for gag will be allowed shoreward of the boundary during those months.

**Option 3b.** Remove the February 1 through March 31 closed season on recreational harvest of gag beyond the 20-fathom boundary. Fishing for gag will be allowed in all federal waters during those months. The 20-fathom closer will continue to be in effect for other shallow-water grouper.

**Option 3c.** Close the gag recreational season from February 1 through March 31 in all Federal waters.

**Alternative 4:** Remove the January through June gag seasonal closure. Set an opening date for the recreational gag season such that the ACT is projected to be reached after December 31 (based on the 2016 ACT).

**Option 4a.** Maintain the February 1 through March 31 closed season on recreational harvest of gag beyond the 20-fathom boundary. Fishing for gag will be allowed shoreward of the boundary during those months if gag season is open.

**Option 4b.** Remove the February 1 through March 31 closed season on recreational harvest of gag beyond the 20-fathom boundary. Fishing for gag will be allowed in all federal waters during those months if gag season is open.

**Option 4c.** Open January 1 through 31, close February 1 through March 31 to recreational harvest of gag in all waters, and re-open on the date such that the 2016 ACT is projected to be reached after December 31.

**Discussion:** There is currently a closed season for all shallow-water grouper from February 1 through March 31 of each year in offshore waters beyond a series of boundary lines that approximate the 20-fathom depth contour (GMFMC 2012). During this period, recreational harvest of shallow-water grouper (red, black, gag, yellowfin, yellowmouth, and scamp) is

prohibited. Shoreward of this boundary, harvest of shallow-water grouper is allowed, except for gag which is under a January 1 through June 30 closed season. If the open season for gag is modified to include days from February or March, that opening will apply only shoreward of the 20-fathom boundary during those days. Beyond 20 fathoms, harvest would continue to be closed to all shallow-water grouper including gag.

**Alternative 1** leaves the recreational gag season at its current dates of July 1 through December 2. Preliminary landings estimates for 2014 indicate that the recreational sector landed 870,720 lbs. of gag, just 54% of the ACT. Depending upon the selection of a preferred alternative in Action 1, the ACT for 2015-2017 will increase by between 43% and 67%. It is unlikely that the recreational sector will be able to catch its allocation.

**Alternative 2** removes the December 3-31 fixed closed season. A December 2012 framework action adjusted the recreational season to close on the date when NMFS projects the ACT will be reached. For 2013, NMFS projected that the ACT would be reached on December 2. This closed date was established as a fixed closed season rather than one that could be adjusted each year in response to new ACT projections. Consequently, the recreational gag season continued to close on December 3 regardless of whether the ACT was reached. This alternative removes the December 3 closure date and allows the season to remain open for any length of time up to December 31 or until the ACT is projected to be reached. This alternative can be selected in combination with either **Alternative 3** or **Alternative 4**.

**Alternative 3** sets a gag recreational season that opens on January 1 and closes when the recreational ACT is projected to be reached. **Option 3a** leaves the February-March shallow-water grouper closed season beyond the 20-fathom boundary in place. Gag recreational harvest would be closed seaward of the 20-fathom boundary but would be open shoreward of the boundary during these months. These days are counted as open days when calculating the number of days in the gag fishing season. **Option 3b** eliminates the February-March closed season beyond the 20-fathom boundary for gag, so that gag could be caught in all waters during this period. The 20-fathom boundary closure would remain in place for other shallow-water grouper. **Option 3c** closes February-March to harvest of gag in all waters. The recreational gag season would open in January, close February and March, and then reopen on April 1 and remain open until the ACT is projected to be reached. Table 2.2.1 shows the projected season dates and number of fishing days under each combination of Action 1 alternative and Action 2, Alternative 3 option.

**Alternative 4** sets an opening date for the gag recreational season that is projected to allow the 2016 gag season to remain open (other than fixed closures) through December 31 without exceeding the ACT. **Option 4a** leaves the February-March shallow-water grouper closed season beyond the 20-fathom boundary in place. Gag recreational harvest would be closed seaward of the 20-fathom boundary but would be open shoreward of the boundary during these months if the gag season is open. These days are counted as open days when calculating the number of days in the gag fishing season. **Option 4b** eliminates the February-March closed season beyond the 20-fathom boundary for gag, so that gag could be caught in all waters during this period if the gag season is open. The 20-fathom boundary closure would remain in place for other shallow-water grouper. **Option 4c** closes February-March to harvest of gag in all waters. The

recreational gag season would open in January, close February and March, and then reopen on the date that is projected to allow the 2016 gag season to remain open (other than fixed closures) through December 31 without exceeding the ACT. Table 2.2.2 shows the projected season dates and number of fishing days under each combination of Action 1 alternative and Action 2, Alternative 4 option.

Note that these estimated projections apply to 2016 only and are subject to revision. The projection model does not account for effort shifting that may take place during a seasonal closure, nor does it consider any changes in the average size of gag over time. Additionally, reductions in harvest from closure dates are relative to future projected landings. Actual future landings may be higher or lower than projected, resulting in harvest reductions being over or underestimated.

**Table 2.2.1.** Estimated gag recreational seasons under combinations of Action 1 alternatives and Action 2, Alternative 3 options.

Action 1 Alternative	Action 2 Alternative 3 Option		
	Alt. 3a 20-fathom closure in effect	Alt. 3b No 20-fathom closure	Alt. 3c Feb-Mar closed in all waters
Alternative 1	1/1 – 8/15 (227 days)	1/1 – 8/10 (222 days)	1/1 – 8/28 (181 days)
Alternative 2	1/1 – 10/10 (283 days)	1/1 – 9/25 (268 days)	1/1 – 11/18 (263 days)
Alternative 3	1/1 – 12/13 (347 days)	1/1 – 12/3 (337 days)	No closure (306 days)
Alternative 4	1/1 – 12/24 (358 days)	1/1 – 12/14 (348 days)	No closure (306 days)
Alternative 5	No closure (365 days)	1/1 – 12/29 (363 days)	No closure (306 days)

Season closes at 12:01 am on the day following the last date of the season

**Table 2.2.2.** Estimated gag recreational seasons under combinations of Action 1 alternatives and Action 2, Alternative 4 options.

Action 1 Alternative	Action 2 Alternative 4 Option		
	Alt. 4a 20-fathom closure in effect	Alt. 4b No 20-fathom closure	Alt. 4c Open Jan, closed Feb-Mar in all waters, then open on date that will remain open through 12/31
Alternative 1	6/21 – 12/31 (194 days)		1/1 – 1/31, 7/5 – 12/31 (211 days)
Alternative 2	4/28 – 12/31 (248 days)		1/1 – 1/31, 5/17–12/31 (260 days)
Alternative 3	1/26 – 12/31 (340 days)	2/10 – 12/31 (325 days)	1/1 – 1/31, 4/1 – 12/31 (306 days)
Alternative 4	1/11 – 12/31 (355 days)	1/25 – 12/31 (341 days)	1/1 – 1/31, 4/1 – 12/31 (306 days)
Alternative 5	No closure (365 days)	1/4 – 12/31 (362 days)	1/1 – 1/31, 4/1 – 12/31 (306 days)

Season closes at 12:01 am on the day following the last date of the season

## References

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