

Modifications to Mutton Snapper and Gag Management Measures



**Draft
Framework Action
to the Fishery Management Plan
for Reef Fish Resources
of the Gulf of Mexico**

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ENVIRONMENTAL ASSESSMENT COVER SHEET

Name of Action

Modifications to Mutton Snapper and Gag Management Measures Framework Action to the Reef Fish Fishery Management Plan

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Type of Action

Administrative Legislative
 Draft Final

Summary/Abstract

ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable biological catch
ACL	Annual catch limit
ACT	Annual catch target
AMs	Accountability measures
B	Biomass
CPUE	Catch per unit effort
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EIS	Environmental impact statement
F	Instantaneous rate of fishing mortality
FL	fork length
FLS	Federal logbook system
F _{30% SPR}	Fishing mortality corresponding to 30% spawning potential ratio
FMP	Fishery Management Plan
FWC	Florida Fish and Wildlife Commission
FWRI	Florida Wildlife Research Institute
GMFMC	Gulf of Mexico Fishery Management Council
IRFA	Initial regulatory flexibility analysis
M	Mortality
MFMT	Maximum fishing mortality threshold
mp	million pounds
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing level
OY	Optimum yield
RFA	Regulatory Flexibility Act of 1980
RIR	Regulatory impact review
SEDAR	Southeast Data, Assessment and Review
SEFSC	Southeast Fisheries Science Center
SMZ	Special Management Zone
SSC	Scientific and Statistical Committee
SPR	Spawning potential ratio
TAC	Total allowable catch
ww	whole weight
YPR	Yield per recruit

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CHAPTER 1. INTRODUCTION

1.1 Background

All mutton snapper in U.S. waters comes from a single stock (Faunce et al. 2007) with the center of abundance in south Florida. A stock assessment for mutton snapper was recently completed (SEDAR 15A, 2015) by the Florida Fish and Wildlife Research Institute (FWRI) and reviewed by the South Atlantic and Gulf of Mexico (Gulf) Fishery Management Council's Scientific and Statistical Committees (SSCs). Based on this assessment, the SSCs agreed that the stock was not overfished and overfishing was not occurring (Table 1.1.1). However, the results of the stock assessment indicate that the adult population of mutton snapper is smaller than estimated in the previous stock assessment (SEDAR 15A, 2008) and a reduction in harvest is necessary to ensure that overfishing does not occur. While the assessment does not indicate that management changes beyond a quota reduction are needed at this time, the Council will also be considering changing recreational and commercial mutton snapper regulations.

Table 1.1.1. Status determination criteria and stock status of mutton snapper based on SEDAR 15A (2015) accepted by the SSC. Results indicate that the mutton snapper stock is not overfished (i.e., $SSB/SSB_{F30\%} > 1$) and is not experiencing overfishing (i.e., $F/F_{30\%SPR} < 1$).

	Definition	Value
Stock status	$SSB/SSB_{F30\%}$	1.13
Overfishing evaluation	$F/F_{30\%SPR}$	0.65
MFMT	$F_{30\%SPR}$	0.18
$F_{CURRENT}$	Geometric mean (2011-2013)	0.12
	Biomass criteria	
Spawning stock biomass	$SSB_{30\%SPR}$ (females)	4,649,200 (lbs)
MSST	Pounds of females	4,137,700 (lbs)
MSY proxy	Yield at $F_{30\%SPR}$ (pounds)	912,500 (lbs)

Source: Table 4.8.1 SEDAR 15A Update.

Although mutton snapper is a single stock in the southeast region, the Gulf and South Atlantic Council manage mutton snapper independently within their respective jurisdictions (Figure 1.1.1) and Florida Fish and Wildlife Commission (FWC) establishes their own size and bag limits in state waters. For the recreational sector, regulations are the same in state and federal waters (Table 1.1.2). For the commercial sector, bag limits are restricted to 10 fish/person/day or trip (May-June) in Florida state waters and south Atlantic federal waters while there is no commercial bag limit in the Gulf federal waters (Table 1.1.3).

The mutton snapper Acceptable Biological Catch (ABC) is apportioned between regions based on a jurisdictional apportionment that was established in the Generic ACL/AM Amendment

(GMFMC 2011). This amendment established a stock OFL at 1.48 million pounds landings whole weight (mp)¹, and a stock ABC equal to 1.13 mp (landings). The ABC for the South Atlantic is 82% of the ABC and Gulf is 18% of ABC. This was established in the Generic ACL Amendment (GMFMC 2011) using 50% of catch history from 1990-2008 + 50% of catch history from 2006-2008 (GMFMC 2011).

Table 1.1.2. Recreational fishing regulations for reef fish species in Florida state waters and federal waters of the Gulf of Mexico and South Atlantic. Minimum size limits are all in total length (TL); bag limits are per person per day. Florida will increase the minimum size limit for mutton snapper to 18” TL effective January 1, 2017. The South Atlantic has also selected 18” TL as their preferred Alternative in Snapper Grouper Amendment 41.

Species	Recreational Regulations	Florida State Waters	Federal Waters Gulf of Mexico	Federal Waters South Atlantic
Mutton Snapper	Size Limit	16” TL		
	Bag Limit	10 snapper aggregate		
	Closed season	None		

Table 1.1.3. Commercial fishing regulations for reef fish species in Florida state waters and federal waters of the Gulf of Mexico and South Atlantic. Minimum size limits are all in total length (TL). Florida will increase the minimum size limit for mutton snapper to 18” TL effective January 1, 2017. The South Atlantic has also selected 18” TL as their preferred Alternative in Snapper Grouper Amendment 41.

Species	Commercial Regulations	Florida Gulf/South Atlantic State Waters	Federal Waters Gulf of Mexico*	Federal Waters South Atlantic
Mutton Snapper	Size Limit	16” TL		
	Trip Limit	None		
	Closed season	None		
	Bag Limit	May-June: Restricted to 10 fish/person/day or trip (most restrictive)	None	May-June: Restricted to 10 fish/person/day or trip (most restrictive)

Mutton snapper are typically solitary animals; however, from April to August, they form large spawning aggregations timed with the full moon. Spawning peaks from April through early July. These aggregations are highly predictable and make mutton snapper highly vulnerable to fishing pressure while spawning. The Council is considering changes to spawning season closures, bag and trip limits, and size limits. The Council may want to consider developing compatible regulations with both the South Atlantic Council and State of Florida to simplify management and increase compliance for anglers harvesting this species in south Florida.

¹ These values do not include estimated discards whereas the South Atlantic Council reports the OFL 1.52 mp and ABC 0.93 mp as the sum of landings and discards (SAFMC 2011).

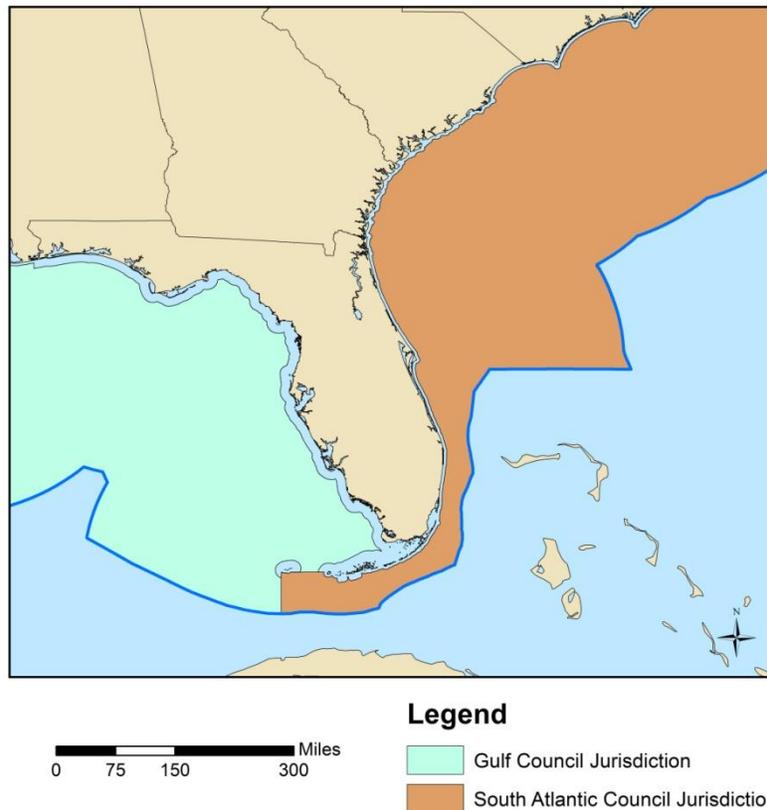


Figure 1.1.1. Jurisdictional boundaries of the Gulf of Mexico (green) and South Atlantic Fishery Management Councils.

Landings data

The vast majority of mutton snapper landings occur in Florida. Within South Atlantic Council's jurisdiction, mutton snapper landings are predominantly recreational while harvest in the Gulf Council's jurisdiction is primarily commercial (Table 1.1.4).

Table 1.1.4. Commercial and recreational landings of mutton snapper, by sector, and region from 2010 through 2015. Recreational data includes all modes.

Year	South Atlantic			Gulf of Mexico			Stock Total
	Rec	Com	SA Total	Rec	Com	Gulf Total	
2010	477,647	74,737	552,384	1,541	54,242	55,783	608,167
2011	251,446	66,158	317,604	1,391	94,238	95,629	413,233
2012	505,583	77,122	582,705	7,156	88,695	95,851	678,556
2013	660,449	74,229	734,678	5,833	107,814	113,647	848,325
2014	538,122	91,173	629,295	6,669	109,792	116,461	745,756
2015	692,613	92,569	785,182	3,454	131,432	134,886	920,068
Mean	520,977	79,331	600,308	4,341	97,702	102,043	702,351

Gag Commercial Minimum Size Limit

Currently, the gag commercial minimum size limit is 22” TL while the recreational minimum size limit is 24” TL in Florida state waters and the federal waters of the south Atlantic. This makes it difficult for fishermen to abide by different regulations in the south Florida area, particularly the Florida Keys, where anglers can fish in multiple jurisdictions on a single trip. The rationale for the commercial minimum size limit in Gulf waters is that the 22” TL minimum size limit reduces dead discards. **Alternative 2** in **Action 5** considers increasing the minimum size limit to 24” TL to be consistent with regulations in adjoining waters.

1.2 Purpose and Need

The purpose of this amendment is to modify the allowable harvest and management measures for the Gulf of Mexico mutton snapper as a result of Mutton Snapper Stock Assessment (SEDAR 15A Update, 2015) and to modify the gag grouper commercial size limit to be consistent with the South Atlantic and State of Florida.

The need for this action is that the Gulf apportionment of the mutton snapper stock ABC established in the Generic ACL/AM Amendment exceeds the Gulf apportionment of the stock ABC for 2016 and beyond as recommended by the Scientific and Statistical Committee. This Framework action also addresses a need to simplify management of commercial gag by developing compatible commercial regulations in the Gulf, South Atlantic and Florida state waters.

1.3 History of Management

The following summary describes management actions that affect the reef fish fishery in the Gulf. The summary focuses on modifications Reef Fish Fishery Management Plan (FMP) that affect mutton snapper and gag in the Gulf of Mexico. More information on the Reef Fish FMP can be obtained from the Council at http://www.gulfcouncil.org/fishery_management_plans/index.php.

Reef Fish FMP

Reef Fish Fishery Management Plan and its associated environmental impact statement (EIS), implemented in November 1984 established 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;
- Directed the National Marine Fisheries Service (NMFS) to develop data reporting requirements in the reef fish fishery.

Amendments to the Reef Fish FMP

Amendment 1, 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 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 million pounds (mp) commercial quota for grouper, with the commercial quota divided into a 9.2 mp shallow-water grouper quota and a 1.8 mp deep-water grouper 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 deep-water grouper quota once the shallow-water grouper quota was filled. Deep-water grouper were defined as misty grouper, snowy grouper, yellowedge grouper, warsaw grouper, and scamp once the shallow-water grouper 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, 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 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 5, implemented in February 1994:

- Established restrictions on the use of fish traps in the Gulf of Mexico EEZ;

- Implemented a three-year moratorium on the use of fish traps by creating a fish trap endorsement and issuing the endorsement only to fishermen who had submitted logbook records of reef fish landings from fish traps between January 1, 1991 and November 19, 1992;
- created a special management zone (SMZ) with gear restrictions off the Alabama coast;
- created a framework procedure for establishing future SMZ's;
- required that all finfish except for oceanic migratory species be landed with head and fins attached;
- closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations.

Regulatory amendment, implemented in June 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);
- established two marine reserves (Steamboat Lumps and Madison-Swanson) that are closed year-round to fishing for all species under the Council's jurisdiction. An additional action to further increase the recreational minimum size limit for gag and black grouper by one inch per year until it reached 24 inches TL was disapproved by NMFS. [65 FR 31827].

Regulatory Actions Since Gag Stock Was Declared Overfished

A rule under the Endangered Species Act, implemented October, 2009:

- 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;
- 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;
- 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.

Amendment 29 (EA/RIR/IRFA), implemented January, 2010, established:

- an IFQ system for the commercial grouper and tilefish fisheries.

Emergency Rule:

- 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 exclusive economic zone (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.

Amendment 30B (FEIS/RIR/IRFA), implemented May 2009:

- Established annual catch limits (ACLs) and accountability measures (AMs) for gag and red grouper;
- Managed shallow-water grouper to achieve optimum yield and improve the effectiveness of federal management measures;
- Defined the gag minimum stock size threshold (MSST) and optimum yield (OY);
- Set interim allocations of gag and red grouper between recreational and commercial fisheries;
- Made adjustments to the gag and red grouper total allowable catches (TACs) to reflect the current status of these stocks;
- Established ACLs and AMs for the commercial and recreational red grouper fisheries, commercial and recreational gag fisheries, and commercial aggregate shallow-water grouper fishery;
- Adjusted recreational grouper bag limits and seasons;
- Adjusted commercial grouper quotas;
- Reduced the red grouper commercial minimum size limit;
- 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;
- Eliminated the end date for the Madison-Swanson and Steamboat Lumps marine reserves; and
- 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:

- Prohibited the use of bottom longline gear shoreward of a line approximating the 35-fathom contour from June through August;
- Established a longline endorsement; and
- 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.

Interim Rule, published December 1, 2010 [75 FR 74654]. While management measures for the gag rebuilding plan were being developed (**Amendment 32**) the **Interim Rule**:

- Reduced gag landings consistent with ending overfishing;
- 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;
- .Reduced the commercial quota to 100,000 pounds gutted weight (gw);

- Suspended the use of red grouper multi-use individual fishing quota allocation so it would not be used to harvest gag, and;
- 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 gw (including the 100,000 pounds previously allowed) for the 2011 fishing year, and temporarily suspended the use of red grouper multi-use individual fishing quota (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].

Amendment 32, implemented March 12, 2012:

- Set the commercial and recreational gag ACLs for 2012 through 2015 and beyond.
- Set the constant catch red grouper commercial ACL at 6.03 mp and the red grouper recreational ACL at 1.90 mp;
- Set the commercial and recreational gag ACTs for 2012 through 2015 and beyond;
- Implemented gag commercial quotas for 2012 through 2015 and beyond that included a 14% reduction from the ACT to account for additional dead discards of gag resulting from the reduced harvest;
- Modified grouper IFQ multi-use allocations;
- Reduced the commercial minimum size limit of gag from 24 to 22 inches TL to reduce discards;
- Set the gag recreational season from July 1 through October 31 (the bag limit remained two gag in the four grouper aggregate bag limit);
- Simplified the commercial shallow-water grouper AMs by using the IFQ program to reduce redundancy;
- Added an overage adjustment and in-season measures to the gag and red grouper recreational AMs to avoid exceeding the ACL; and
- Added an AM for the red grouper bag limit that would reduce the four red grouper bag limit in the future to three red grouper, and then to two red grouper, if the red grouper recreational ACL is exceeded.

Amendment 38, implemented March 1, 2013:

- 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.

Generic Management Amendments

Generic Sustainable Fisheries Act Amendment, partially approved and implemented in November 1999. Among the management measures implemented were:

- Set the MFMT for most reef fish stocks at a fishing mortality rate corresponding to 30% spawning potential ratio ($F_{30\% SPR}$);
- Estimates of MSY, MSST, and OY were disapproved because they were based on spawning potential ratios (SPR) proxies rather than biomass based estimates.

Generic Tortugas Marine Reserves, implemented in August 2002:

- Amended all 7 FMPs and created two marine reserves where all fishing is prohibited. One 60 sq. mile reserve was created on a spawning aggregation site for mutton snapper in the Gulf of Mexico Fishery Management Council's (GMFMC) jurisdiction. The other (125 sq. miles) was created in the jurisdictions of the National Park Service, Florida Keys National Marine Sanctuary, GMFMC, and State of Florida;
- The amendment number for each FMP is as follows: Mackerel (13), Coral (4), Red Drum (4), Reef Fish (19), Shrimp (12), Spiny Lobster (7), and Stone Crab (8).

Generic ACL/AM Amendment, implemented in August 2011:

- Established a jurisdictional apportionment of mutton snapper based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils. The ABC was based on the following method: South Atlantic = 82% of ABC and Gulf = 18% of ABC (established by using 50% of catch history from 1990- 2006 + 50% of catch history from 2004-2006).

CHAPTER 2. MANAGEMENT ALTERNATIVES

2.1 Action 1 - Establish Gulf of Mexico apportioned Mutton Snapper Annual Catch Limits (ACLs).

Alternative 1: No Action. Maintain the current ACL and ACT established in the Generic ACL Amendment. The Gulf of Mexico ACL is 18% of the stock ABC based on the apportionment. The ACL/ACT Control established a 14% ACL buffer for the ACT.

OFL = 1.48 mp ww based upon equilibrium yield @ $F_{30\%SPR}$

ABC = 1.13 mp ww based upon equilibrium yield @ $F_{40\%SPR}$

ACL = ABC

Gulf ACL = ACL * 0.18 (0.203 mp ww)

Gulf ACT = Gulf ACL * 0.86 (0.175mp ww)

The South Atlantic Council’s SSC recommended that the OFL be set equal to the equilibrium maximum sustainable yield proxy, which is the yield at $F_{30\%SPR}$ = 1.52 mp whole weight (ww [includes estimated dead discards]) and the ABC be set equal to the equilibrium optimum yield, which is the yield at $F_{40\%SPR}$ = 1.16 mp whole weight (ww [includes estimated dead discards]). The Gulf Council’s SSC recommendation of OFL and ABC is consistent with the South Atlantic SSC, but OFL and ABC are established in landed weight rather than landed weight and dead discards as was recommended by South Atlantic SSC.

OFL and ABC Recommendations from Gulf Council’s SSC.

OFL (ww)			ABC (ww)		
Landings	Discards	Total	Landings	Discards	Total
1,480,000	35,300	1,515,300	1,130,000	26,500	1,156,500

Alternative 2: Accept the OFLs and ABCs recommended by the Gulf and South Atlantic SSCs from 2016 through 2020. Establish the Gulf apportionment ACL equal 18% of the Stock ABC.

Option 2a. Remove Gulf ACT as a management target.

Option 2b. Apply the ACL/ACT control rule to establish the ACT which results in a 12% buffer between the Gulf ACL and the Gulf ACT.

Year	Stock OFL	Stock ABC	Gulf ACL	Gulf ACT
2016	713,492	692,000	124,560	109,613
2017	751,711	717,200	129,096	113,605
2018	793,823	746,800	134,424	118,293
2019	835,318	774,400	139,392	122,665
2020	850,077	798,300	143,694	126,451

Note: Gulf ACT Established using ACL/ACT control rule.

Alternative 3: Accept the OFLs and ABCs recommended by the Gulf and South Atlantic SSCs from 2016 through 2020. Establish the Gulf apportionment equal to 18% of the Stock ABC. Apply the ACL/ACT control to this apportionment and set the Gulf ACL equal to 88% of the apportionment (i.e., 12% buffer). Do not establish a Gulf ACT.

Year	Stock OFL	Stock ABC	Gulf ACL	Gulf ACT
2016	713,492	692,000	109,613	NA
2017	751,711	717,200	113,605	NA
2018	793,823	746,800	118,293	NA
2019	835,318	774,400	122,665	NA
2020	850,077	798,300	126,451	NA

Note: The OFL and ABC yield stream were established by the South Atlantic Council SSC. The Gulf Council SSC concurred with this recommendation. They did not provide a constant catch equivalent to this yield stream however, NMFS and the Gulf Council SSC recently concurred that the mean landings during a yield stream are approximately equivalent in terms of risk of overfishing. Also, this yield stream assumes to that recommended harvest will be caught in 2015 and beyond. If recent landings are largely different, the assessment may need to be updated with recent landings to produce an updated yield stream for 2017 and beyond.

Discussion:

Mutton snapper is managed as a single stock that encompasses the U.S. south Atlantic and Gulf of Mexico and more than 99% of the landings occur in Florida. In 2015, an update to the stock assessment for mutton snapper in the southeastern U.S. was conducted using data through 2013 (SEDAR 15A Update, 2015). The result of the 2015 assessment indicated that the stock was not overfished nor undergoing overfishing. How the adult population was determined to be smaller than previously estimated in the 2008 stock assessment (SEDAR 15A, 2008). Based on this result, reductions in allowable harvest are necessary to ensure overfishing does not occur. The SEDAR 15A update assessment was reviewed by the Gulf and South Atlantic Council's Scientific and Statistical Committee's (SSC) and recommended a yield stream of OFLs and ABCs from 2016 through 2020. This Action considers alternatives that would incorporate this scientific advice into the management of this stock. Consequently, the Council may modify existing management measures for mutton snapper (**Actions 2 - 4**) to achieve the desired level of harvest.

Alternative 1 (no action) would retain the current harvest levels for mutton snapper including the OFL (1.48 mp ww), ABC (1.13 mp ww), Gulf ACL (0.203 mp ww) and Gulf ACT (0.175mp ww). However, the current OFL (1.48 mp ww) and ABC (1.13 mp ww) exceed the SSC's OFL and ABC recommendations for 2016 through 2020.

Both **Alternative 2** and **Alternative 3** would require substantial reductions in allowable harvest but would be consistent with the SSC recommendation to reduce harvest. **Alternative 2** would set the Gulf ACL equal to the Gulf apportionment of the ABC (18%). **Alternative 2 option a** would remove the ACT as a management tool and Gulf mutton snapper would be managed to harvest the Gulf ACL. **Alternative 2 option b** would apply the ACL/ACT control rule to establish the ACT which results in a 12% buffer between the Gulf ACL and the Gulf ACT and retain the Gulf ACT as a management target. **Alternative 2** would reduce the ABC by 39% in 2016 compared to **Alternative 1** and the ACT by 37% (**option b**) in 2016 (Table 2.1.1).

Table 2.1.1. Comparison of Gulf ACL, and ACT with the annual ACLs and ACTs under Alternative 2 for the years 2016 through 2020.

Year	Gulf ACL	Alt 2 option a: Gulf ACL	ACL % Change	Gulf ACT	Alt 2 option b: Gulf ACT	ACT % Change
2016	203,000	124,560	-39%	175,000	109,613	-37%
2017	203,000	129,096	-36%	175,000	113,605	-35%
2018	203,000	134,424	-34%	175,000	118,293	-32%
2019	203,000	139,392	-31%	175,000	122,665	-30%
2020	203,000	143,694	-29%	175,000	126,451	-28%

Alternative 3 would accept the OFLs and ABCs recommended by the Gulf and South Atlantic SSCs from 2016 through 2020. **Alternative 3** would establish the Gulf apportionment ACL equal to 88% of the Stock ABC (i.e., 12% buffer) and would not establish a Gulf ACT. **Alternative 3** would reduce the ABC by 46% in 2016 compared to **Alternative 1** and eliminate the ACT as a management target (Table 2.1.2). **Alternative 2** and **Alternative 3** are both substantial reductions in ACLs in comparison to **Alternative 1**. **Alternative 2 option b** establishes the ACL at harvest levels above the ACT and prevents triggering accountability measures (AMs) due to minor, inter-annual variations in harvest. **Alternative 3** would not establish an ACT and the ACL for **Alternative 3** is set equal to the ACT in **Alternative 2 option b**. However, **Alternative 3**, does not use an ACT, therefore, there is no mechanism to account for minor, inter-annual variation in harvest without triggering AMs.

Table 2.1.2. A comparison of the current Gulf apportioned ACL in relation to the ACL under **Alternative 3**.

Year	Gulf ACL	Alt 3: Gulf ACL	ACL % Change
2016	203,000	109,613	-46%
2017	203,000	113,605	-44%
2018	203,000	118,293	-42%
2019	203,000	122,665	-40%
2020	203,000	126,451	-38%

2.2 Action 2 - Modify Mutton Snapper Recreational Bag Limit in Gulf of Mexico

Alternative 1: No Action - Mutton snapper remain part of the aggregate 10 snapper bag limit in the Gulf of Mexico.

Alternative 2. Retain mutton snapper within the recreational 10 snapper aggregate bag limit in the Gulf of Mexico, but specify a bag limit for mutton snapper during the “spawning months (April – June)

Option 2a. 2 fish/person/day

Option 2b. 3 fish/person/day

Option 2c. 4 fish/person/day

Option 2d. 5 fish/person/day

Alternative 3. Retain mutton snapper within the recreational 10 snapper aggregate bag limit in the Gulf of Mexico, but modify the bag limit for mutton snapper during the “regular season” i.e., non-spawning months (January – March and July – December).

Option 3a. 2 fish/person/day

Option 3b. 3 fish/person/day

Option 3c. 4 fish/person/day

Option 3d. 5 fish/person/day

Alternative 4. Retain mutton snapper within the recreational 10 snapper aggregate bag limit in the Gulf of Mexico, but specify a bag limit for mutton snapper within the aggregate bag limit year round.

Option 4a. 2 fish/person/day

Option 4b. 3 fish/person/day

Option 4c. 4 fish/person/day

Option 4d. 5 fish/person/day

Discussion:

There is concern by the public regarding fishing effort on mutton snapper spawning aggregations during the April – June peak spawning season in the Florida Keys despite the healthy status of the mutton snapper stock. Mutton snapper form spawning aggregations that increase their vulnerability to fishing during the spawning season and catch rates may exhibit hyperstability; a condition where catch rates (an indicator of stock size) remain stable despite a declining stock size until collapse. A reduction in the bag limit could reduce risk associated with fishing during the spawning season. Currently, mutton snapper is part of the 10 snapper aggregate in the Gulf (Table 2.2.1) and current regulations for mutton snapper in the Gulf and South Atlantic are shown in Table 2.2.2. Effective January 1, 2017, Florida will lower the mutton snapper bag limit to 5 fish/person/day (year round) within the 10 fish snapper aggregate. The South Atlantic has selected the same regulation as a preferred Alternative in Snapper Grouper Amendment 41 that is expected to be completed in December 2016

Table 2.2.1. Species composition of the 10 snapper aggregate in the Gulf.

Gulf of Mexico
Gray snapper
Mutton snapper
Yellowtail snapper
Cubera snapper
Queen snapper
Blackfin snapper
Silk snapper
Wenchman

Table 2.2.2. Current recreational mutton snapper fishing regulations in state waters off Florida, the Gulf of Mexico and the South Atlantic (June 2015). Florida will increase the minimum size limit to 18” TL January 1, 2017 and the South Atlantic has currently selected 18” TL as the Preferred Alternative in South Atlantic Amendment 41 and is intending to take final action at their December 2016 meeting.

Species	Regulations	State Waters Gulf and South Atlantic	Federal Waters Gulf of Mexico	Federal Waters South Atlantic
Mutton Snapper	Size Limit	16” TL		
	Bag Limit (per person/day)	10 snapper aggregate (per person/day)		
	Season	Year round		

Alternative 1 would retain mutton snapper in the 10 fish aggregate snapper bag limit but would not facilitate a management strategy to lower recreational harvest that is necessary if the recreational ACL is reduced in **Action 1**. **Alternative 2** would apply during the April – June peak spawning period. **Alternative 2** would retain mutton snapper within the 10 snapper aggregate bag limit, but the maximum number of mutton snapper that could be harvested (per person/per day) would be reduced from 10 to 2 (**Option 2a**), 3 (**Option 2b**), 4 (**Option 2c**), or 5 (**Option 2d**). The intent of **Alternative 2** is to reduce fishing pressure on spawning aggregations and slow the harvest that would be necessary if a reduction in the ACL is selected in **Action 1**.

Alternative 3 would apply outside of the peak spawning season (January – March and July – December). Similar to **Alternative 2**, mutton snapper would remain within the 10 snapper aggregate bag limit in **Alternative 3**, but, the number of mutton snapper that could be harvested would be reduced from 10 to 2 (**Option 3a**), 3 (**Option 3b**), 4 (**Option 3c**), or 5 (**Option 3d**). **Alternatives 2** and **3** could be selected independently and both could be selected as preferred alternatives. If similar regulations during spawning and non-spawning season are preferred, **Alternative 4** would specify the same options as **Alternative 2** and **Alternative 3** (2 fish, **Option 4a**), (3 fish, **Option 4b**), (4 fish **Option 4c**), or 5 (**Option 4d**) on a year-round basis.

2.3 Action 3 - Modify Mutton Snapper Commercial Trip Limit in the Gulf of Mexico

Alternative 1: No action. There is no trip limit for the commercial sector in the Gulf of Mexico.

Alternative 2. Establish a commercial trip limit for mutton snapper during the regular season (i.e., non-spawning months in the Gulf of Mexico).

Option 2a. 300 pounds whole weight

Option 2b. 400 pounds whole weight

Option 2c. 500 pounds whole weight

Alternative 3. Specify a commercial trip limit for mutton snapper during the spawning months of May and June in the Gulf of Mexico.

Option 3a. 2 fish/person/day

Option 3b. 3 fish/person/day

Option 3c. 10 fish/vessel/day

Option 3d. 12 fish/vessel/day

Option 3e. No retention

IPT recommendation

Alternative 3. Specify a commercial trip limit for mutton snapper during the spawning months of April - June in the Gulf of Mexico.

Option 3a. 2 fish/person/day

Option 3b. 3 fish/person/day

Option 3c. 5 fish/person/day

Option 3d. 10 fish/person/day

Option 3e. No retention

*Note: IPT recommendation differs in that an **Option 3c** for a 5/person/day would be modified to 5 fish/person/day (would be consistent with new Florida regulations effective January 1, 2017). **Option 3d** would be modified from a vessel limit (12/vessel/day) to an angler limit (10/person/day).

Discussion:

This action considers alternatives for mutton snapper commercial trip limits in the Gulf of Mexico. Current commercial fishing regulations for mutton snapper are detailed in **Table 2.3.1**. Currently, there is no bag or trip limit for the commercial sector in the Gulf or South Atlantic during the regular season (Jan-March and July-December). During the peak spawning season, the commercial sector in the South Atlantic is restricted to 10 mutton snapper per day or 10 mutton snapper per trip, whichever is more restrictive. The commercial sector in the Gulf has no bag limit or trip limit restrictions during the mutton snapper peak spawning season. The State of Florida will be implementing a 500 lb ww commercial trip limit for the regular season from July-March, and a five fish/per person/day trip limit during the spawning season (April – June), beginning January 1, 2017. The South Atlantic Council has selected the 500 lb ww commercial trip limit as the Preferred Alternative for the during the regular season (July-March), and a five

fish/person/per day commercial trip limit during the spawning months (April-June) in Amendment 41 that is scheduled for final action at its December 2016 Council meeting.

Table 2.3.1. Current commercial mutton snapper fishing regulations in State waters off Florida, the Gulf of Mexico and the South Atlantic (June 2015).

Species	Regulations	State Waters Gulf and South Atlantic	Federal Waters Gulf of Mexico	Federal Waters South Atlantic
Mutton Snapper	Size Limit	16" TL		
	Trip Limit	None		
	Closed Season	None		
	Bag Limit	May-June: Restricted to 10 fish/person/day or trip	None	May-June: Restricted to 10 fish/person/day or trip

The vast majority of mutton snapper are harvested in Florida (> 99% of total U.S. landings). Within Florida, commercial landings of mutton snapper are highest during the May-June peak spawning period (**Figure 2.3.1**). Overall Florida landings of mutton snapper were highest in 2008 and decreased through 2011 and increased again in 2012 and 2013 (**Figure 2.3.2**).

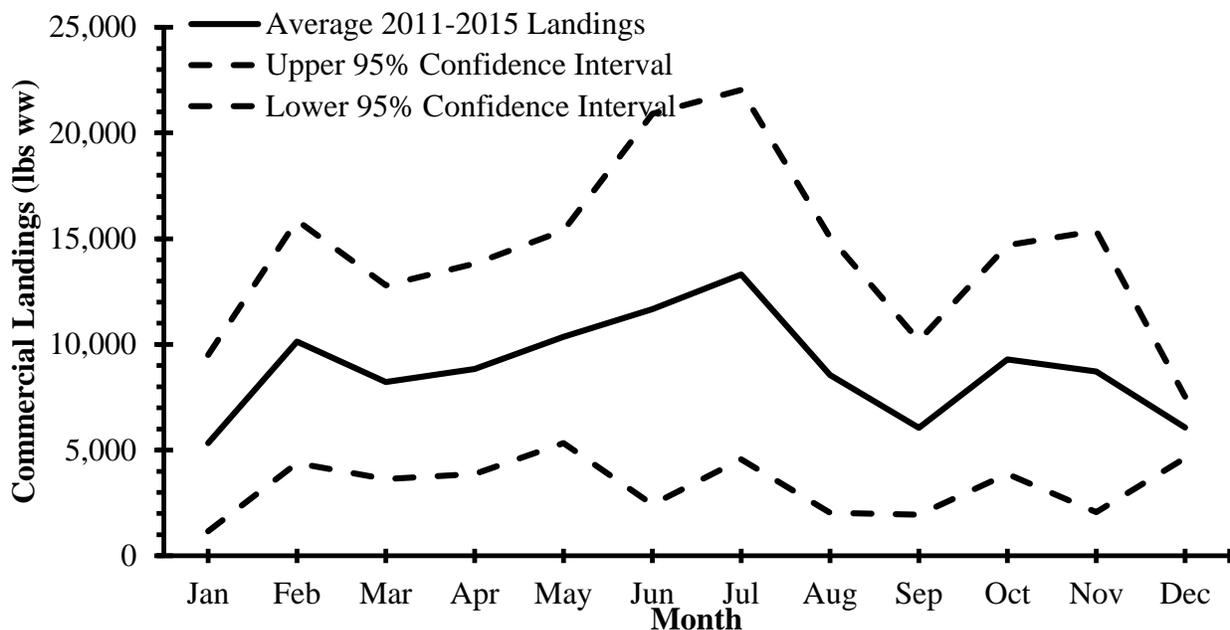


Figure 2.3.1. Mean commercial landings, by month of Gulf of Mexico mutton snapper from 2011 to 2015.

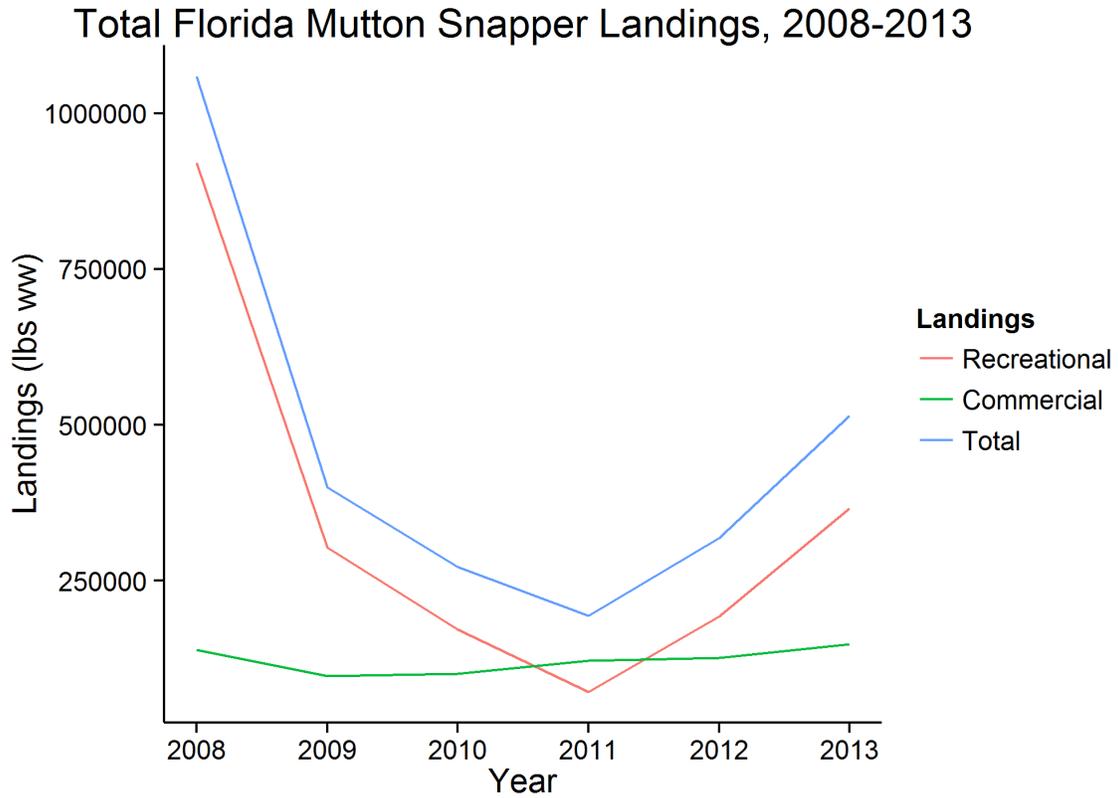


Figure 2.3.2. Total landings of mutton snapper in Florida (lbs ww). Data are from the Florida Fish and Wildlife Conservation Commission recreational landings and commercial trip ticket programs.

Logbook data of commercial trips that harvested mutton snapper were obtained the Southeast Fisheries Science Center (SEFSC, accessed April 25, 2016) and were analyzed to calculate the harvest of mutton snapper per trip. The most recent three years of complete data (2013-2015) had 1,274 trips that harvested mutton snapper in the Gulf of Mexico. The distribution of mutton snapper harvested per trip (in pounds) in the regular season are displayed in Figure 2.3.3.

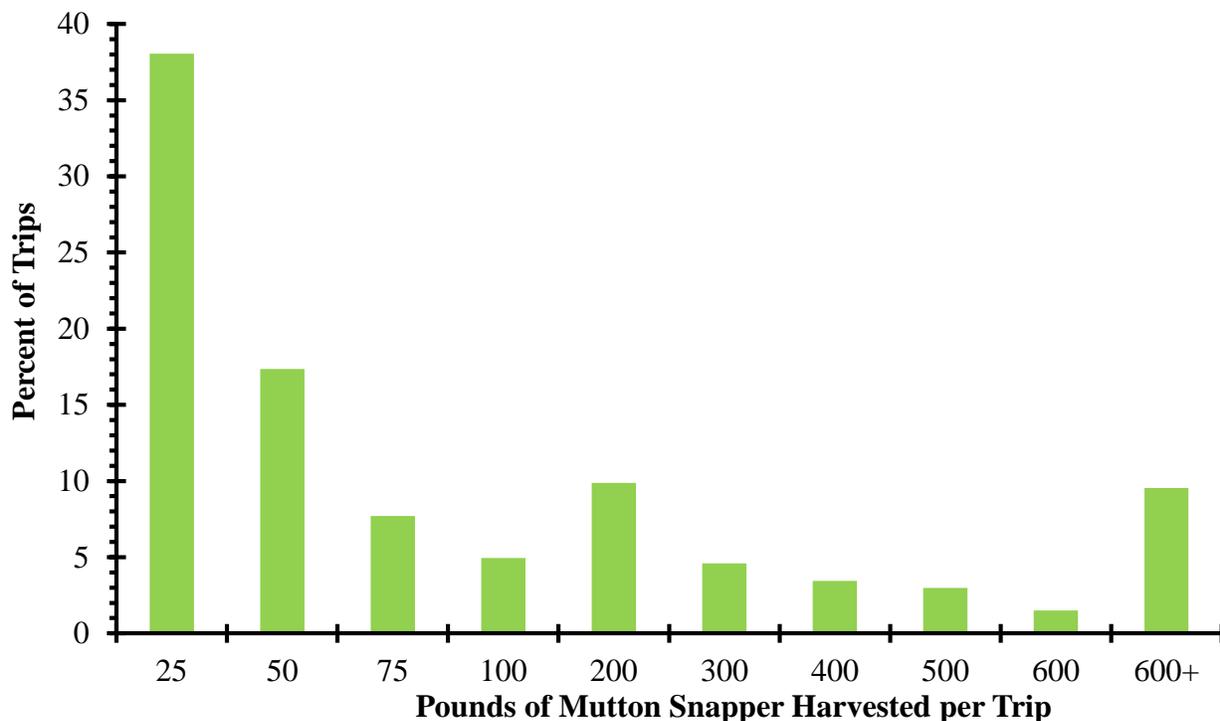


Figure 2.3.3. Distribution of the mutton snapper harvested per trip (lbs ww) during the regular season in the Gulf of Mexico region. The regular season is from January through March then July through December. Data comes from the commercial logbook dataset from 2013 to 2015 (n = 870 trips).

Alternative 2 would implement a trip limit during the regular season of 300 (**Option 2a**), 400 (**Option 2b**), and 500 (**Option 2c**) pounds whole weight (lbs ww). The SEFSC logbook data were analyzed by imposing the proposed trip limits under **Alternative 2** only during the regular season. For example, a trip in the regular season that harvested 600 lb ww of mutton snapper was reduced to 300 lbs ww to analyze the proposed 300 lbs ww trip limit, while landings during the spawning season were not reduced. The reduced landings from the imposed trip limit were compared to the total annual unmodified landings to estimate the percent reduction in landings (Table 2.3.2). These trips limits could reduce the harvest rate while allowing for incidental catch using gear that targets other reef fishes.

Table 2.3.2. Percent decreases in total landings for various commercial trip limits proposed under Alternative 2 in Action 3. This analysis only modified landings for the trip limits being proposed in the regular season (January through March and July through December). Landings outside the regular season were not modified. Data comes from the commercial logbook dataset for 2013 through 2015.

Trip Limit	Percent Reduction
300 lbs ww	42.5%
400 lbs ww	38.1%
500 lbs ww	34.7%

Within the spawning season **Alternative 3** would establish a trip limit in numbers of mutton snapper in both fish per person and fish per vessel. Current average weight of Gulf of Mexico mutton snapper in the commercial sector was determined to be 3.5 pounds whole weight in the most recent assessment (SEDAR 15A, 2015). Figure 2.3.4 provides the distribution of both the fish per person and fish per vessel within the spawning season. Specifically, the options in **Alternative 3** proposes limits of 2 fish/person/day (**Option 3a**), 3 fish/person/day (**Option 3b**), 10 fish/vessel/day (**Option 3c**), 12 fish/vessel/day (**Option 3d**), and no retention (**Option 3e**) during the spawning season.

Percent reductions in commercial landings were calculated for the proposed trip limits of 0, 2, and 3 mutton snapper per person per day by reducing trips that exceeded the proposed trip limit to match the trip limit being considered. For example, to analyze the reduced trip limit of 3 fish/person/day a trip that reported harvest of 9 mutton snapper/person/day was reduced to 3 mutton snapper/person/day. Landings during the regular season were not modified. The reduced total annual landings were then compared against unmodified total annual landings to determine the percent reduction in landings from the trip limit being considered (Table 2.3.3).

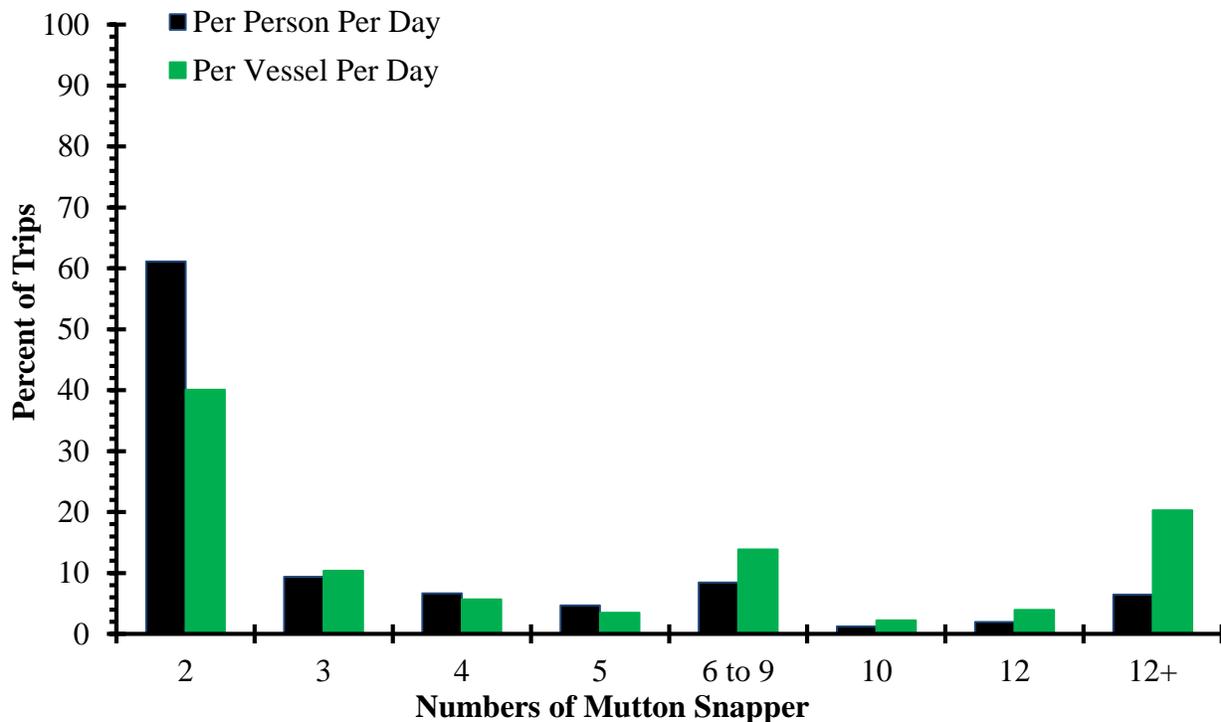


Figure 2.3.4. Distribution of the number of mutton snapper harvested both per person per day and per vessel per day during the spawning season in the Gulf of Mexico region. The spawning season is from April to June. Data comes from the commercial logbook dataset from 2013 to 2015 (n = 404 trips).

Table 2.3.3. Percent decrease in landings for various commercial trip limits proposed in **Alternative 3** of **Action 3**. The estimates were calculated from mutton snapper commercial logbook data from 2013 through 2015, and the reductions were calculated for changes to the trip limit inside the spawning season. The spawning season is April to June.

Trip Limit	Percent Reduction
2 Fish/Person/Day	18%
3 Fish/Person/Day	15%
10 Fish/Vessel/Day	16%
12 Fish/Vessel/Day	14%
No Retention	28%

Alternative 3 considers options to reduce the commercial trip limit (and harvest rate) during the April - June spawning season. **Options 3a** and **3b** would specify a commercial trip limit for mutton snapper during the spawning season (May-June) of 2 (**Option 3a**), or 3 (**Option 3b**) fish/person/day. **Options 3c** and **3d** would specify vessel commercial trip limits of 10 fish/vessel/day (**Option 3c**) or 12 fish/vessel/day (**Option 3d**). Despite difference in harvest limits and per person or per vessel basis, there is little difference in the potential reduction of harvest among **Options 3a-3d**. **Option 3e** would prohibit retention mutton snapper during the spawning season and has the greatest overall reduction (28%) on the harvest within the spawning season. If angler behavior changes and effort on spawning aggregations is reduced, the actual reductions could be greater than the estimates based on historical data. **Alternative 3** could be selected in addition to or independently of **Alternative 2** and is intended to reduce targeting of mutton snapper during spawning season while allowing for incidental catch that occurs while targeting other reef fish species.

2.4 Action 4 - Modify mutton snapper minimum size limit in the Gulf of Mexico

Alternative 1: No Action - The minimum size limit for mutton snapper in the Gulf of Mexico is 16 inches total length (TL).

Alternative 2: Increase the minimum size limit for mutton snapper in the Gulf of Mexico to 17 inches TL.

Alternative 3: Increase the minimum size limit for mutton snapper in the Gulf of Mexico to 18 inches TL.

Alternative 4: Increase the minimum size limit for mutton snapper in the Gulf of Mexico to 19 inches TL.

Alternative 5: Increase the minimum size limit for mutton snapper in the Gulf of Mexico to 20 inches TL.

***Note: IPT recommends moving Alternatives 2 and 4 to considered but rejected.** These **Alternatives** are within the range of **Alternatives** but do not meet the purpose of achieving consistency with the South Atlantic Council and the state of Florida management.

Discussion:

Action 4 includes alternatives to increase the recreational and commercial minimum size limit for mutton snapper in the Gulf of Mexico. **Alternative 1** would maintain the current 16-inch TL minimum size limit. Other alternatives consider larger size limits that increase the age (Figure 2.4.1) and likelihood of individuals reaching sexual maturity before entering the fishery. Increasing the size limit would also reduce the proportion of retained catch and slow the harvest rate. This would contribute to achieving the harvest reductions necessary that could be selected in **Action 1** of this document. Both the South Atlantic Council and Florida are increasing the minimum size limit of mutton snapper to 18 inches TL. **Alternatives 2 - 5** increase the minimum size limit relative to **Alternative 1** with objective of reducing the rate of retained catch. **Alternative 3** is consistent with the actions being taken by the South Atlantic Council and state of Florida and would simplify the harvest regulations for both anglers and law enforcement. Mutton snapper primarily occur in south Florida and anglers routinely fish in waters managed by the Gulf Council, South Atlantic Council or the State of Florida in a single trip. Achieving consistent regulations would simplify regulations, likely increase compliance, and aid enforcements efforts in the area.

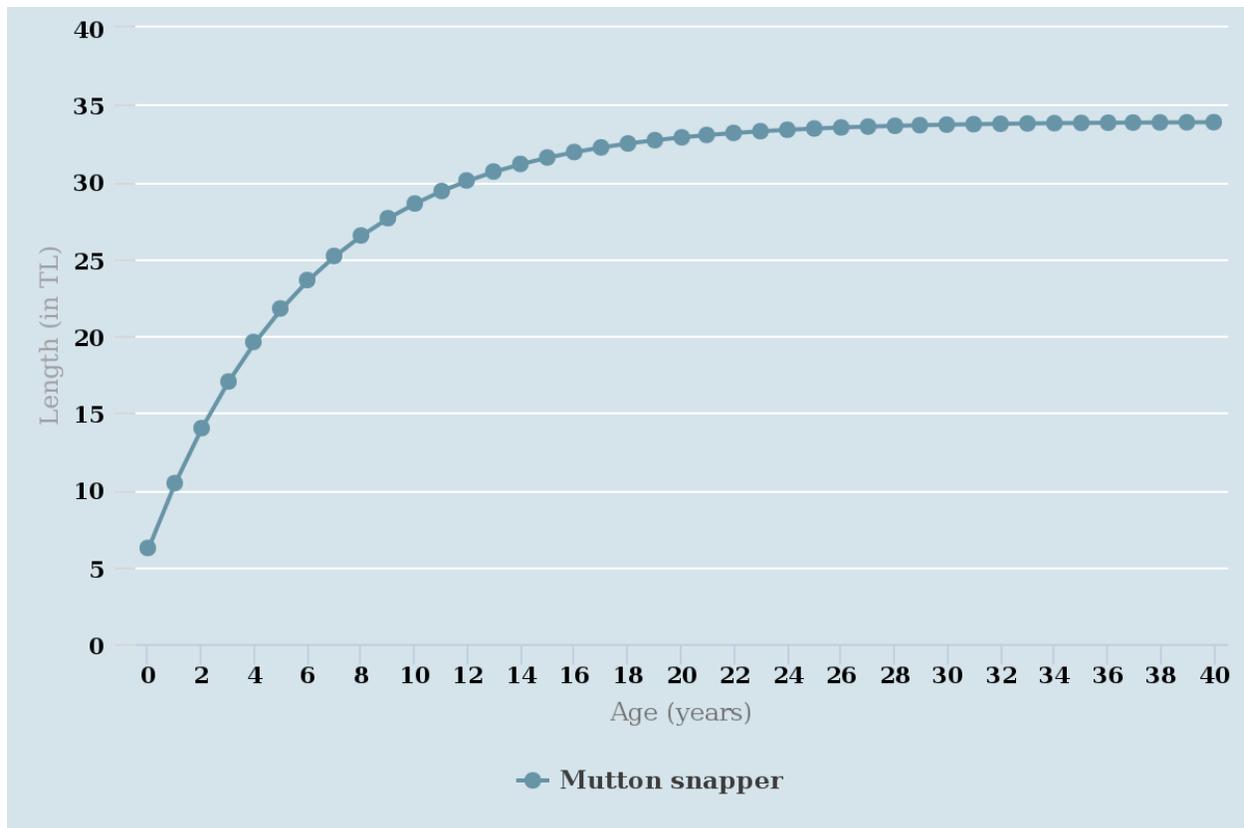


Figure 2.4.1. Age and growth relationship for mutton snapper based on data from SEDAR 15A update (2015). Mutton snapper are approximately 2.6 years old at the current 16 inch TL minimum size limit. Individuals are approximately 3.4 years old at 18 inches TL and 4.2 years old at 20 inches TL Von Bertalanffy growth equation parameter estimates from Mutton Snapper update assessment (SEDAR 15A update, 2015). N = 13,052. Approximately 50% of individuals are mature (both sexes) by 20 inches TL.

2.5 Action 5 - Modify commercial gag minimum size limit in the Gulf of Mexico

Alternative 1: No Action - The commercial minimum size limit for gag in the Gulf of Mexico is 22 inches total length (TL).

Alternative 2: Increase the commercial minimum size limit for gag in the Gulf of Mexico to 24 inches TL.

Discussion:

This action evaluates whether the current 22 inch TL gag commercial minimum size limit in the Gulf should be made consistent with the Gulf recreational and South Atlantic 24 inch TL minimum size limit. The range of alternatives is based on retaining inconsistent size limits (**Alternative 1**) or adopting a minimum size limit to be consistent with the Gulf's recreational and the South Atlantic's minimum size limit (**Alternative 2**). Therefore, only Alternative 2 is

considered reasonable to address the purpose and need. These alternatives also encompass the range of estimated sizes where 50% of female gag attain maturity. The SEDAR 33 assessment estimated that 50% of females are mature at 22 inches TL, but earlier assessments estimated the size at 24 inches TL.

The SEFSC provided Yield-per-recruit (YPR) and Spawning Potential Ratio (SPR) analysis results from the SEDAR 33 assessment model for both the 22 and 24 inches TL size limits (Table 2.5.1). This analysis assumes equilibrium conditions and recruitment is constant, and was run for the current stock conditions (e.g. recent estimate of fishing mortality rate). The analysis incorporated discard mortality of released gag and focused only on the recreational sector. The results showed that increasing the size limit from 22 to 24 inches TL will give a very slight reduction in YPR, however, this results in a substantial increase in SPR. Therefore, raising the size limit has the potential to slightly reduce landings but will likely positively impact the stock by increasing abundance of the spawning stock.

Table 2.5.1. Yield-per-recruit (YPR) and Spawning Potential Ratio (SPR) analysis results from the SEDAR 33 assessment model for the two size limits of 22 and 24 inches TL.

Size Limit (inches TL)	YPR	SPR
22	0.405	0.782
24	0.383	1.547

Alternative 1 is inconsistent with the Gulf recreational minimum size limit which increased to 24 inches TL in 2016 (GMFMC 2016), and South Atlantic recreational and commercial minimum size limits, which was set to 24 inches TL in 1999 (SAFMC 1999). The 22-inch TL recreational minimum size limit was implemented in the Gulf of Mexico (Gulf) for gag and black grouper in 2000 (GMFMC 1999a). At that time, the commercial minimum size limit for gag and black grouper was set at 24 inches TL, which was estimated to be the size at which 50% of female gag reach reproductive maturity (Schirripa and Goodyear 1994). The Council proposed a further increase in the recreational minimum size limit by one inch per year until it reached 24 inches TL. However, that proposal was disapproved by NMFS on the basis that setting both the commercial and recreational minimum size limits at 24 inches TL would disproportionately impact the recreational sector, which catches smaller fish on average than the commercial sector. In 2012, Amendment 32 reduced the commercial minimum size limit for gag to 22 inches TL to reduce discard mortality. More recent analysis has estimated the size at which 50% of the female gag reach reproductive maturity to be 22 inches TL (SEDAR 33 2014a). Therefore, **Alternative 1** would keep the gag size limit at the size of 50% of the females reaching reproductive maturity, but it would be inconsistent with the Gulf recreational and South Atlantic’s 24-inch TL minimum size limit.

Based on the von Bertalanffy growth equation used in SEDAR 33², it takes approximately 7 months for a gag to grow from 22 inches TL to 24 inches TL (Figure 2.5.1). Given the rapid

² $l_t = L_{\infty} * (1 - e^{-k(t-t_0)})$ where L_{∞} (mm FL) = 1277.95, $k = 0.1342$, and $t_0 = -0.6687$

growth rate during this period and low release mortality rate in shallow water, any increase in dead discards from increasing the size limit is expected to be minor.

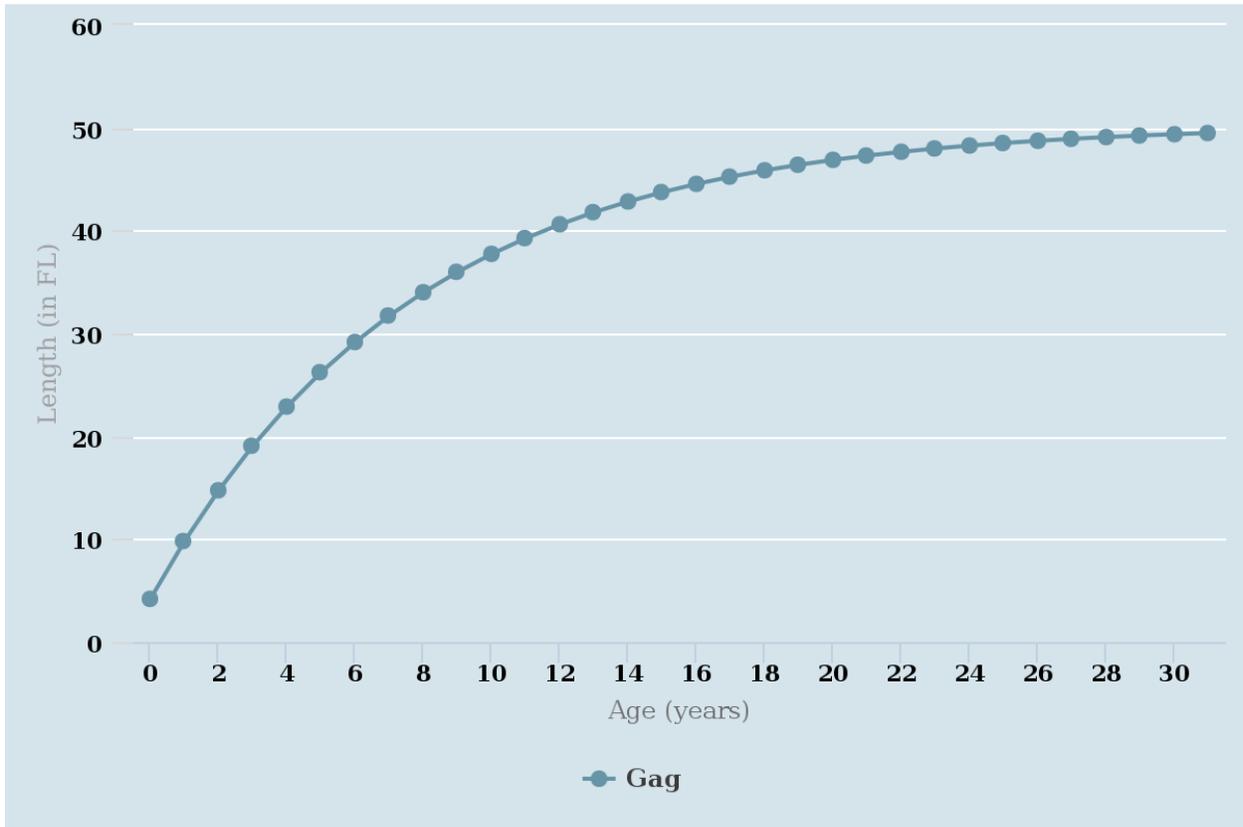


Figure 2.5.1. Age and growth relationship for gag based on data from SEDAR 33 (20xx). Gag are approximately 3.8 years old at the current 22 inch TL commercial minimum size limit and 4.3 years old at 24 inches TL Von Bertalanffy growth equation parameter estimates from Mutton Snapper update assessment (SEDAR 15A update, 2015). N = 13,052. Approximately 50% of individuals are mature (both sexes) by 20 inches TL.

CHAPTER 3. REFERENCES

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APPENDIX 1

Gulf of Mexico Mutton Snapper Trip Limit Analysis

Action 3 of a Gulf council’s Framework Action is proposing a trip limit in pounds of fish during the regular season (non-spawning months, January through March and July through December) and a trip limit in numbers of fish within the spawning season (April to June). The rationale behind these modifications is concern regarding mutton snapper harvest during the spawning season. Currently, there is no trip limit for mutton snapper in the Gulf of Mexico.

Commercial logbook data (accessed April 25, 2016) from the Southeast Fisheries Science Center (SEFSC) was analyzed to determine the harvest of mutton snapper per trip. The most recent years of complete data (2013-2015) had 1,274 trips that harvested mutton snapper in the Gulf of Mexico. The Framework Action is looking at different trip limits outside and within the spawning season, therefore, the commercial trips were separated by the different seasons (regular season and spawning). The distribution of the pounds of mutton snapper harvested per trip in the regular season are displayed in Figure 1. Within the spawning season the Framework Action is proposing a trip limit in numbers of mutton snapper in both fish per person and fish per vessel. The pounds of mutton snapper per trip from the logbook data was converted to numbers of mutton snapper by dividing the pounds by the average weight. Current average weight of Gulf of Mexico mutton snapper in the commercial sector was determined to be 3.5 pounds whole weight (lbs ww) in the most recent assessment (SEDAR 15A). Figure 2 provides the distribution of both the fish per person and fish per vessel within the spawning season.

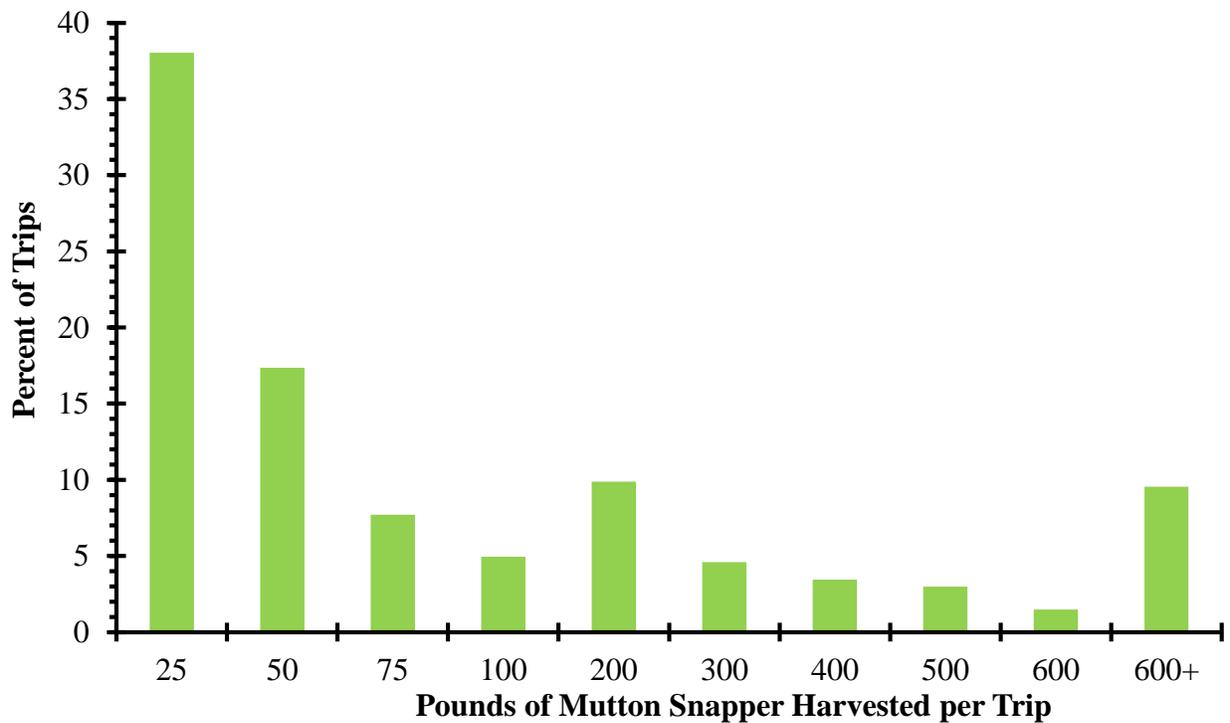


Figure 1. Distribution of the mutton snapper harvested per trip (lbs ww) during the regular season in the Gulf of Mexico region. The regular season is from January through March then July through December. Data comes from the commercial logbook dataset from 2013 to 2015 (n = 870 trips).

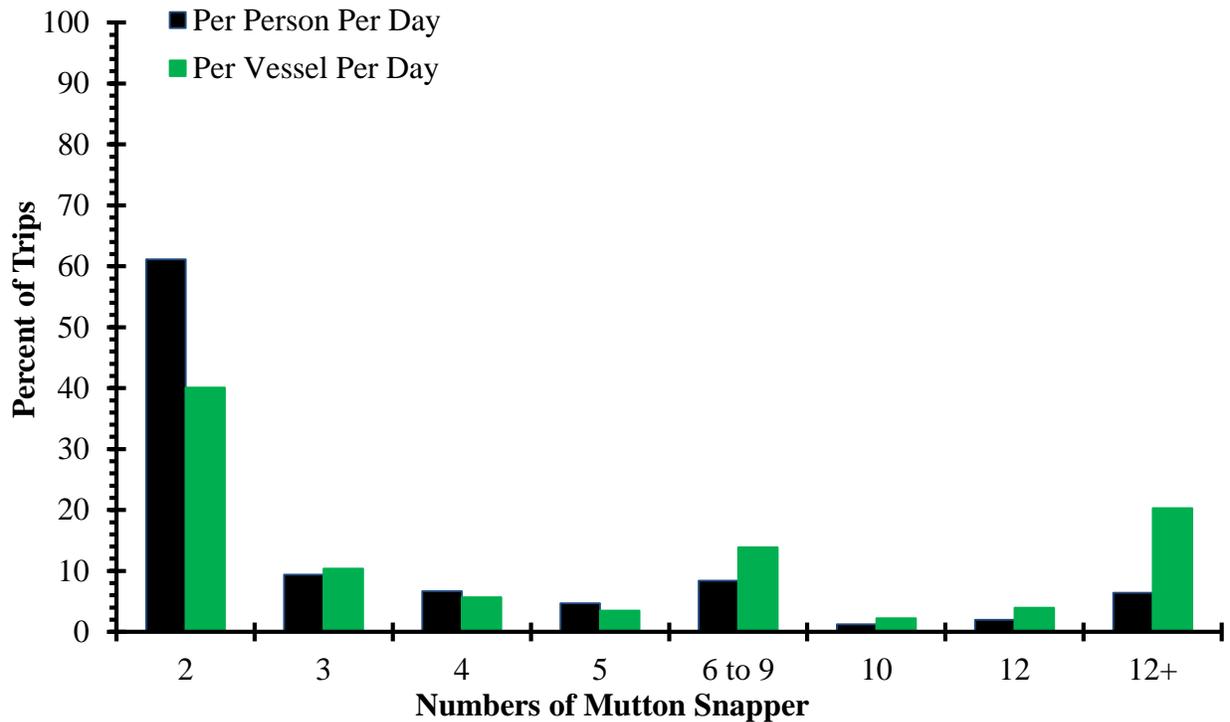


Figure 2. Distribution of the number of mutton snapper harvested both per person per day and per vessel per day during the spawning season in the Gulf of Mexico region. The spawning season is from April to June. Data comes from the commercial logbook dataset from 2013 to 2015 (n = 404 trips).

Trip Limit Analysis

Alternative 2 of Action 3 considers implementing a trip limit during the regular season of 300, 400, and 500 pounds whole weight (lbs ww). The SEFSC logbook data were analyzed by imposing the proposed trip limits under Alternative 2 only during the regular season. For example, a trip in the regular season that harvested 600 lb ww of mutton snapper was reduced to 300 lbs ww to analyze the proposed 300 lbs ww trip limit, while landings during the spawning season were not reduced. The reduced landings from the imposed trip limit were compared to the total annual unmodified landings to estimate the percent reduction in landings (Table 1).

Table 1. Percent decreases in total landings for various commercial trip limits proposed under Alternative 2 in Action 3. This analysis only modified landings for the trip limits being proposed in the regular season (January through March and July through December). Landings outside the regular season were not modified. Data comes from the commercial logbook dataset for 2013 through 2015.

Trip Limit	Percent Reduction
300 lbs ww	42.5%
400 lbs ww	38.1%
500 lbs ww	34.7%

The commercial logbook data provides landings in pounds; however, the proposed trip limits during the spawning season (April to June) are specified in numbers of fish. To conduct the analysis, landings in pounds were converted to numbers of fish by dividing the harvest by the average weight of mutton snapper in the commercial sector. Average weight of mutton snapper in the Gulf of Mexico was determined to be 3.5 lbs ww in the commercial sector in the most recent stock assessment (SEDAR 15A).

Alternative 3 of Action 3 proposes commercial trip limits in the spawning season in numbers of fish in two ways: per person per day, and per vessel per day. Specifically the Sub-alternatives under Alternative 3 proposes limits of 2 fish/person/day (Option 3a), 3 fish/person/day (Option 3b), 10 fish/vessel/day (Option 3c), 12 fish/vessel/day (Option 3d), and no retention (Option 3e) during the spawning season. The per-person trip limits were analyzed by dividing the total catch by the total number of people, including the captain, on the commercial trip. The per-vessel trip limit analysis focused on trip level data and ignored the number of people on the boat. The per day part of the analysis was analyzed by dividing the catch per trip by the number of days at sea reported. Figure 2 provides the distribution of the percentage of trips for the harvest of mutton snapper in numbers of fish for both per person per day and per vessel per day during the spawning season from 2013 through 2015. An examination of this commercial logbook mutton snapper trip data during the spawning season revealed only 4% of the trips (n = 16 trips) had only 1 person on the trip, and some trips had as much as 6 people. Therefore, the majority of the trips had more than one person. An examination of the number of days for a trip had only 28% (n = 114 trips) of the mutton snapper commercial fishing trips during the spawning season as one-day trips. Therefore, the majority of the commercial trips harvesting mutton snapper are multiday trips.

Percent reductions in commercial landings were calculated for the proposed trip limits of 0, 2, and 3 mutton snapper per person per day by reducing trips that exceeded the proposed trip limit to match the trip limit being considered. For example, to analyze the reduced trip limit of 3 fish/person/day a trip that reported harvest of 9 mutton snapper/person/day was reduced to 3 mutton snapper/person/day. Landings during the regular season were not modified. The reduced total annual landings were then compared against unmodified total annual landings to determine the percent reduction in landings from the trip limit being considered.

Table 2. Percent decrease in landings for various commercial trip limits proposed in Alternative 3 of Action 3. The estimates were calculated from mutton snapper commercial logbook data from 2013 through 2015, and the reductions were calculated for changes to the trip limit inside the spawning season. The spawning season is April to June.

Trip Limit	Percent Reduction
2 Fish/Person/Day	18%
3 Fish/Person/Day	15%
10 Fish/Vessel/Day	16%
12 Fish/Vessel/Day	14%
No Retention	28%

This analysis attempted to predict realistic changes to the landings from the various trip limit options presented in the amendment. Uncertainty exists in these projections, as economic conditions, weather events, changes in catch-per-unit effort, fisher response to management regulations, and a variety of other factors may cause departures from this assumption. The bounds of this uncertainty are not captured by the model as currently configured; as such, it should be used with caution as a ‘best guess’ for future dynamics. In addition to the aforementioned sources of uncertainty, the modeled reductions associated with management measures assume that past performance in the fishery is a good predictor of future dynamics. An attempt was made to constrain the range of data considered to recent years to reduce the unreliability of this assumption.

References

SEDAR 15A. 2015. Stock Assessment of Mutton Snapper (*Lutjanus analis*) of the U.S. South Atlantic and Gulf of Mexico through 2013. Southeast Data, Assessment and Review. North Charleston, South Carolina. <http://www.sefsc.noaa.gov/sedar/>.