Amendment 41 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Decision Document

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Purpose and Need Statement

Purpose for Actions

The *purpose* of this amendment is to update the acceptable biological catch, annual catch limit, maximum sustainable yield, minimum stock size threshold, optimum yield, and revise management measures for the mutton snapper component of the snapper grouper fishery based on the results of the most recent stock assessment.

Need for Actions

The *need* for the amendment is to base mutton snapper management measures on the best scientific information available in order to achieve and maintain optimum yield and to prevent overfishing while minimizing, to the extent practicable, adverse social and economic effects.

What is the Acceptable Biological Catch Recommendation for Mutton Snapper?

An update to the stock assessment for mutton snapper in the southeastern U.S. (SEDAR 15A Update 2015) was conducted in 2015 with data through 2013. The Scientific and Statistical Committee (SSC) reviewed the results at their April 28-30, 2015 meeting and made the following fishing level recommendations for mutton snapper in the South Atlantic and Gulf of Mexico:

Mutton Snapper recommendations from SEDAR 15A Update (2015).

Criteria	Deterministic	Probabilistic
Overfished evaluation	Not overfished: $SSB/SSB_{F30\%}=1.13$	
Overfishing evaluation	Not overfishing: $F/F_{30\%SPR}=0.65$	
MFMT ($F_{30\%SPR}$)	0.18	
$SSB_{30\%SPR}$ (lbs females)	4,649,200	
MSST (lbs females)	4,137,700	
Y at $F_{30\%SPR}$ (MSY proxy, lbs)	912,500	
Y at $F_{40\%SPR}$ (lbs)	874,000	
ABC Control Rule Adjustment		20%
P-Star		30%

	OFL RECOMMENDATIONS					
Year	**Landings (lbs)**	**Discards (lbs)**	**Catch (lbs)**	**Landings (numbers)**	**Discards (numbers)**	**Catch (numbers)**
2016	713,492	54,005	767,497	148,995	29,298	178,293
2017	751,711	55,962	807,673	164,150	29,660	193,810
2018	793,823	56,994	850,817	173,656	30,071	203,727
2019	835,318	58,170	893,488	180,716	30,430	211,146
2020	850,077	58,857	908,934	184,868	30,780	215,648

	ABC RECOMMENDATIONS (P* = 0.03)					
Year	**Landings (lbs)**	**Discards (lbs)**	**Catch (lbs)**	**Landings (numbers)**	**Discards (numbers)**	**Catch (numbers)**
2016	692,000	52,800	744,800	145,400	28,600	174,000
2017	717,200	53,700	770,900	157,500	28,400	185,900
2018	746,800	53,900	800,700	164,500	28,300	192,800
2019	774,400	54,400	828,800	169,300	28,300	197,600
2020	798,300	54,500	852,800	172,700	28,300	201,000

Proposed Actions and Alternatives

ACTION 1. Specify maximum sustainable yield (MSY) for mutton snapper in the South Atlantic Region

Alternative 1 (No Action). The Maximum Sustainable Yield (MSY) for mutton snapper in the South Atlantic equals the yield produced by F_{MSY}. $F_{30\%SPR}$ is used as the F_{MSY} proxy. The value is not specified.

Preferred Alternative 2. Maximum sustainable yield (MSY) equals the yield produced by F_{MSY} or the F_{MSY} proxy. MSY and F_{MSY} are recommended by the most recent SEDAR/SSC.

Alternatives	Equation	F_{MSY}	MSY Values (lbs whole weight)
Alternative 1 (No Action)	MSY equals the yield produced by F_{MSY}. $F_{30\%SPR}$ is used as the F_{MSY} proxy.	$F_{30\%SPR}$	Not specified
Preferred Alternative 2	**MSY equals the yield produced by F_{MSY} or the F_{MSY} proxy. MSY and F_{MSY} are recommended by the most recent SEDAR/SSC.**	**$F_{30\%SPR}$**	**912,500**

Biological Effects

The maximum sustainable yield (MSY) is a reference point used by managers to assess fishery performance over the long term. Defining MSY for mutton snapper under **Preferred Alternative 2** would not alter the current harvest or use of the mutton snapper resource. Specification of MSY merely establishes a benchmark for resource evaluation on which additional management actions would be based, if necessary. MSY in **Alternative 1 (No Action)** is defined as the yield produced by F_{MSY} where $F_{30\%SPR}$ is used as a substitute, or proxy, for F_{MSY} and represents the overfishing level defined in Amendment 11to the Snapper Grouper FMP (SAFMC 1998b) for the mutton snapper stock in the South Atlantic and Gulf of Mexico.

Under **Alternative 1 (No Action)**, a yield (poundage) for MSY is not specified since one was not specified in Amendment 11. **Alternative 2 (Preferred)** would allow for

periodic adjustments of F_{MSY} and MSY values based on estimates from new assessments without the need for a plan amendment.

As neither alternative under this action would have direct effects on resource harvest or use, biological effects would be neutral. However, **Alternative 2 (Preferred)**, which is recommended in the most recent SEDAR and by the South Atlantic Fishery Management Council's (South Atlantic Council) Scientific and Statistical Committee (SSC), has a better scientific basis and thus provides a more solid ground for management actions that have economic and social implications. Bycatch and discards would not increase or decrease as a result of this action. For more information, see **Appendix D** (BPA).

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on Endangered Species Act (ESA)-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on essential fish habitat (EFH) or EFH-habitat of particular concern (HAPC) are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic region).

Economic Effects

Defining the MSY for mutton snapper does not alter the current harvest or use of the resource. Specification of this measure merely establishes a benchmark for fishery and resource evaluation from which additional management actions for the species would be based, should comparison of the species and resource with the benchmark indicate that management adjustments are necessary. The impacts of these management adjustments would be evaluated at the time they are proposed. As a benchmark, MSY would not limit how, when, where, or with what frequency participants in the snapper grouper fishery engage in harvesting mutton snapper. This includes participants who directly utilize the resource (principally commercial vessels, for-hire operations, and recreational anglers), as well as participants associated with peripheral and support industries.

Since there would be no direct effects on resource harvest or use, **Alternative 1** and **Preferred Alternative 2** would have no direct economic effects on fishery participants, associated industries or communities. Any indirect economic effects are dependent on subsequent regulatory action.

Social Effects

Social effects of management specifications such as MSY for a stock would be associated with both the biological and economic effects of the MSY value. A MSY level that reflects the best available information (**Preferred Alternative 2**) is expected to contribute to achieving management goals and minimizing risk of overfishing for mutton

snapper, resulting in greater expected long-term benefits to the commercial fleet and recreational fishermen who target mutton snapper than under **Alternative 1 (No Action)**.

COMMITTEE ACTION:

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE

ACTION 2. Specify minimum stock size threshold (MSST) for mutton snapper in the South Atlantic Region

Alternative 1 (No Action). The minimum stock size threshold for mutton snapper is ~~MSST =~~ SSB_{MSY} ((1-M) or 0.5, whichever is greater). The value is not specified. SSB_{MSY} = spawning stock biomass at maximum sustainable yield and M = natural mortality.

Alternative 2. Minimum stock size threshold = 50% of SSB_{MSY}

Preferred Alternative 3. Minimum stock size threshold = 75% of SSB_{MSY}

Alternatives	MSST Equation	M	MSST Values (lbs whole weight)
1 (No Action)	MSST = SSB_{MSY} ((1-M) or 0.5, whichever is greater).	0.11	Not specified
2	MSST = 50% of SSB_{MSY}	0.17	2,324,600
3 (Preferred)	**MSST = 75% of SSB_{MSY}**	**0.17**	**3,486,900**

Biological Effects

The minimum stock size threshold (MSST) corresponds to the level of biomass below which a stock is considered overfished. If it is determined that a stock's biomass is below the MSST, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires a rebuilding plan, which could result in harvest reductions.

SEDAR 15A Update (2015) estimated natural mortality for mutton snapper at 0.17. For species with such low natural mortality, such as mutton snapper, the biomass threshold for determining if the stock is overfished (MSST) under the current definition (**Alternatives 1 (No Action)** and **2**) is very close to the biomass level when the stock is not considered overfished (SSB_{MSY}). Since **Alternative 1 (No Action)** nearly eliminates the buffer between MSST and SSB_{MSY} for stocks with low natural mortality rates, a stock would never be permitted to fall below SSB_{MSY} without triggering an "overfished" determination and mandatory development of a rebuilding plan. The most biologically conservative alternative is **Alternative 1 (No Action)**; however, under this alternative, development of a rebuilding plan may be required when it is not biologically necessary. The biological benefits of **Alternative 1 (No Action)** would take the form of increased harvest restrictions that would be implemented with the intent to rebuild the stock according to the current MSST threshold criterion. **Alternative 2** would be the least biologically beneficial since it would allow biomass to decrease by 50% before triggering

the rebuilding plan requirement. **Preferred Alternative 3** would still require the development of a rebuilding plan if mutton snapper was deemed overfished, but would reduce the risk of requiring a rebuilding plan when decreased biomass was due to natural variations in recruitment.

Additionally, if the same management measures are used to rebuild a stock under all the alternatives considered, the stock would be expected to rebuild fastest under **Alternative 1 (No Action)** because the overfished threshold (MSST) would be closest to the rebuilt threshold SSB_{MSY}. Therefore, **Alternative 1 (No Action)** could be considered to have the greatest biological benefit among alternatives considered in this action. The tradeoff associated with the assurance provided by this conservative definition of MSST is that natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt condition (biomass at SSB_{MSY}), even if the fishing mortality rate applied to the stock was within the limits specified by the maximum fishing mortality threshold (MFMT). If realized, this situation could result in administrative and socio-economic burdens related to developing and implementing multiple rebuilding plans that may not be biologically necessary. However, simulations on a wide variety of species by Restrepo et al. (1998) indicated that stocks at biomass levels approximating $75\%SSB_{MSY}$ can rebuild to SSB_{MSY} fairly quickly with little constraint on fishing mortality. Therefore, it is not biologically necessary to have extremely small buffers between overfished and rebuilt thresholds.

Preferred Alternative 3, which would set MSST equal to $75\%SSB_{MSY}$, is consistent with how the South Atlantic Council has approached defining MSST for other snapper grouper stocks with low natural mortality estimates. The South Atlantic Council changed the MSST definition to $75\%SSB_{MSY}$ for snowy grouper (SAFMC 2008a), golden tilefish (SAFMC 2008b), red grouper (SAFMC 2011d) and, more recently, other snapper grouper species (red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack) (SAFMC 2014). These species have low estimates of natural mortality, and the overfished threshold from the status quo MSST definition is very close to the biomass threshold when stocks are not considered overfished. The biological benefits of **Preferred Alternative 3**, which would trigger a rebuilding plan when biomass is at 75% of SSB_{MSY}, would be expected to be greater than **Alternative 2**, which would have a lower biomass threshold for an overfished determination ($50\%SSB_{MSY}$). At their October 2013 meeting, the South Atlantic Council's SSC acknowledged that the $75\%SSB_{MSY}$ approach is an acceptable choice for MSST, and they voiced no concern regarding the adoption of this management reference point for South Atlantic Council managed species. Bycatch and discards would not increase or decrease as a result of this action. For more information, see **Appendix D** (BPA).

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or

EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

Economic Effects

Like MSY, MSST does not alter the current harvest or use of the resource, and thus **Alternatives 1** and **2** and **Preferred Alternative 3** would have no direct economic effects on fishery participants and associated industries or communities.

In general, a high MSST level is susceptible to triggering rebuilding actions that could limit harvest or fishing opportunities, thereby affecting the economic status of fishery participants, particularly in the short-term. A low MSST level would be associated with lower probability of enacting rebuilding actions that would alter the economic environment. To the extent that rebuilding actions necessitated by a chosen MSST would tend to have economic effects, it is possible to provide some general implications of the MSST alternatives.

With rebuilding taking place over a number of years, management actions and their economic consequences could change over time depending on a variety of factors, including the status of the stock and fishing conditions. **Alternative 2** would appear to be best from an economic standpoint in the short-term, because it is less likely to trigger restrictive rebuilding actions. One possible downside of this alternative is that once the stock is considered overfished, the required rebuilding actions could be more restrictive and potentially remain for a longer time, thereby increasing the severity of negative economic consequences for fishery participants. Additionally, allowing a stock to reach lower levels of abundance can have negative implications on both sectors through increased search or harvest costs and may impact effort. **Alternative 1 (No Action)** lies on the high end of the continuum for potential negative economic effects because it has the highest probability of triggering restrictive rebuilding actions. A likely mitigating factor with **Alternative 1 (No Action)** is the possibility that the required management actions would have adverse economic effects that would not last as long or not be as severe. However, a frequently varying regulatory regime would tend to de-stabilize business planning and fishing decisions, which could have potentially worsen economic consequences. The economic implications of **Preferred Alternative 3** and its sub-alternatives may be characterized as falling between **Alternative 1 (No Action)** and **Alternative 2**.

Social Effects

Social effects of revised biological parameters such as MSST for a stock would be associated with both the biological and economic effects of the modified MSST value. The estimated SSB as compared to MSST serves as a reference point for designating a stock as overfished. If the reference point is not accurately representing the stock status, the outcomes of the 'overfished' designation when a stock is not overfished can have negative long and short-term social effects associated with restricted or no access to the fish. Conversely, if an inaccurate proxy results in a stock designated as not overfished

when it *is* overfished, the fishing fleets, associated businesses and communities could be negatively impacted in the long term due to decline in the stock and negative broader biological impacts of overfishing. Lastly, an inaccurate proxy that causes a stock to fluctuate between overfished and not overfished would likely have negative effects on fishermen by requiring changes in regulations on harvest too often. This could negatively affect stability and planning for fishing businesses, in addition to fishing opportunities for recreational anglers, due to inconsistent access to the resource. Although for some fishermen, any access to a stock would be beneficial, the positive effects of consistency in regulations (even if access is restricted) and stability the fishery would also be expected from a more fixed designation as overfished or not overfished.

Under all alternatives, fishermen could be affected by future restricted access to mutton snapper due to an overfished designation, which could have negative effects on associated fishing businesses and communities. Although **Preferred Alternative 3** is the more restrictive approach to set the MSST than under **Alternatives 1 (No Action)** and **2**, it would also be the most likely to trigger an overfished status, which may avoid more severe biological impacts to the stock.

COMMITTEE ACTION:

NOTE EDITS TO ALTERNATIVE 1 (NO ACTION)

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE.

ACTION 3. Revise annual catch limits (ACLs) and optimum yield (OY) for mutton snapper in the South Atlantic Region

Alternative 1 (No action). The current ~~(ABC)~~ acceptable biological catch ~~and OY~~ for mutton snapper is 926,600 lbs ww based on a jurisdictional allocation for the South Atlantic of 82% of the acceptable biological catch and is set equal to optimum yield and the total annual catch limit. The ~~current~~ commercial ~~(ACL)~~ annual catch limit is 157,743 lbs ww (17.02%) and the recreational ~~ACL~~ annual catch limit is 768,857 lbs ww (82.98%). *(NOTE: The commercial allocation in the Comp ACL was 17.02% and the recreational allocation was 82.98%. However, the ACLs that were implemented were calculated using this allocation to 6 decimal places instead of 2).*

Preferred Alternative 2. ~~The jurisdictional allocation for the South Atlantic is 82% of the acceptable biological catch (ABC).~~ Specify annual catch limits ~~(ACLs)~~ and optimum yield ~~(OY)~~ for the South Atlantic using the existing sector allocations (17.02% commercial and 82.98% recreational) and specify the recreational ~~ACL~~ annual catch limit in numbers of fish. The ~~ACLs~~ annual catch limits specified for 2020 would remain in place until modified.

Preferred Sub-alternative 2a. ACL = OY = ABC.
Sub-alternative 2b. ACL = OY = 95% ABC.
Sub-alternative 2c. ACL = OY = 90% ABC.

Biological Effects

Average commercial landings of mutton snapper in the South Atlantic from 2010 to 2014 were 76,881 lbs ww (**Table 4.3.1**). This is below the range of proposed commercial ACLs under **Sub-alternatives 2a (Preferred)**, **2b**, and **2c**, which range from 111,354 lbs ww to 90,014 lbs ww, respectively (**Table 4.3.2**). If commercial catch rates in 2017 are similar to those in 2010-2014, it is not expected that the commercial ACL would be landed under any of the proposed alternatives.

Table 4.3.1. Commercial and recreational landings of mutton snapper, by sector, for the South Atlantic region, 2010-2014.

Year	Recreational		Commercial	Total
	number	lbs ww	lbs ww	lbs ww
2010	130,249	477,647	74,833	552,480
2011	60,151	251,446	66,160	317,606
2012	86,108	505,583	77,231	582,814
2013	126,241	660,449	75,010	735,459
2014	157,501	538,122	91,173	629,295
Mean	**112,050**	**486,650**	**76,881**	**563,531**

Table 4.3.2. Proposed acceptable biological catch values and annual catch limits for mutton snapper in the South Atlantic based on **Sub-alternatives 2a (Preferred)-2c**.

Preferred Sub-alt 2a - ACL = OY = ABC						
Year	**Total ABC (SA + Gulf) num**	**SA ABC num**	**Yield ABC lbs**	**Comm ACL (lbs)**	**Comm ACL (num)**	**Rec ACL (num)**
2017	157,500	129,150	587,633	100,015	13,023	116,127
2018	164,500	134,890	612,401	104,231	13,572	121,318
2019	169,300	138,826	634,435	107,981	14,060	124,766
2020	172,700	141,614	654,257	111,354	14,499	127,115

Sub-alt 2b - ACL = OY = 95% ABC						
Year	**Total ABC (SA + Gulf) num**	**SA ABC num**	**Yield ABC lbs**	**Comm ACL (lbs)**	**Comm ACL (num)**	**Rec ACL (num)**
2017	157,500	122,693	558,251	95,014	12,372	110,321
2018	164,500	128,146	581,781	99,019	12,893	115,252
2019	169,300	131,885	602,713	102,582	13,357	118,528
2020	172,700	134,533	621,544	105,787	13,774	120,759

Sub-alt 2c - ACL = OY = 90% ABC						
Year	**Total ABC (SA + Gulf) num**	**SA ABC num**	**Yield ABC lbs**	**Comm ACL (lbs)**	**Comm ACL (num)**	**Rec ACL (num)**
2017	157,500	116,235	528,869	90,014	11,721	104,514
2018	164,500	121,401	551,161	93,808	12,215	109,186
2019	169,300	124,943	570,991	97,183	12,654	112,289
2020	172,700	127,453	588,831	100,219	13,049	114,403

The South Atlantic Council prefers specifying the recreational ACL in numbers of fish and the commercial ACL in pounds. The rationale is that recreational landings are already tracked in numbers of fish while commercial landings are tracked in pounds. Issues develop, however, when different size limits are considered for management and the commercial and recreational ACLs are in different units. If the minimum size limit is increased, the average size, and therefore weight, of fish harvested would also increase. If the method for converting between an ACL in pounds and an ACL in numbers does not address the change in average weight, the expected increase in the average weight of landed fish could lead to the poundage associated with the ACL specified in numbers exceeding the ACL expressed in pounds. This could also result in a perceived shift in allocations when they are compared in the original units across sectors, and if the change in weight landed is great enough, the ABC and overfishing limit (OFL) in pounds could be exceeded. To avoid these issues, the method described in **Appendix J** was used to specify the recreational ABC and ACL for mutton snapper in numbers of fish. This method is designed to keep the numbers of fish harvested constant while allowing the yield to vary based on the possible change in selectivity due to changes in the minimum size limit. Specifying the recreational ABC and ACL in numbers results in a lower risk of exceeding the recreational ACL due to an increase in the minimum size limit.

Proposed recreational ACLs (in numbers of fish) for 2017 range from 116,127 fish under **Preferred Sub-alternative 2a**, 110,321 fish under **Sub-alternative 2b**, to 104,514 fish under **Sub-alternative 2c** (**Table 4.3.2**). The average of mutton snapper recreational landings from 2010-2014 is 112,050 fish (**Table 4.3.1**). Hence, it is possible that the recreational ACL would be harvested once implemented if harvest rates are comparable to those in 2010-2014. The South Atlantic Council is considering changes to the recreational bag limit (**Action 7**) partly to spread out the harvest and prevent a recreational closure.

Sub-alternatives 2b and **2c** would have a greater positive biological effect than **Preferred Sub-alternative 2a** because they would create a buffer between the ACL/OY and ABC, with **Sub-alternative 2c** setting the most conservative ACL at 90% of the ABC (**Table 4.3.2**), while **Alternative 1 (No Action)** would not represent the best scientific information available. Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above SSB_{MSY}. However, the South Atlantic Council's ABC control rule takes into account scientific uncertainty. The Magnuson-Stevens Act NS 1 guidelines indicate an ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. An annual catch target (ACT), which is not required, can also be set below the ACL to account for management uncertainty and provide greater assurance overfishing does not occur.

Preferred Sub-alternative 2a, **Sub-alternative 2b**, and **Sub-alternative 2c** would set OY equal to the ACL. National Standard 1 (NS1) establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex, or fishery. The NS1 guidelines discuss the relationship of the OFL to the MSY and ACL to OY. The OFL is an annual amount of catch that corresponds to the estimate of maximum fishing mortality threshold applied to a stock; MSY is the long-term average of such catches. The ACL is the limit that triggers AMs and is the management target for the species. Management measures for a fishery should, on an annual basis, prevent the ACL from being exceeded. The long-term objective is to achieve OY through annual achievement of an ACL. The NS1 guidelines state that if OY is set close to MSY, the conservation and management measures in the fishery must have very good control of the amount of catch to achieve the OY without overfishing.

The South Atlantic Council and their SSC have established an ABC control rule that takes into consideration scientific and management uncertainty to ensure catches are maintained below OFL. Setting the ACL equal to the ABC (**Preferred Sub-alternative 2a**) leaves no buffer between the two harvest parameters, which may increase risk that harvest could exceed the ABC. The South Atlantic Council considered alternatives in the Comprehensive ACL Amendment (SAFMC 2011a) and Amendment 24 to the Snapper Grouper FMP (SAFMC 2011b) that would set the ACL below the ABC but selected ACL=OY=ABC as their preferred alternative. More recently, the South Atlantic Council

has frequently set ACLs for snapper grouper species at the same level as the ABC. However, accountability measures (AMs) and ACLs are in place to ensure overfishing of mutton snapper does not occur. The NS1 Guidelines recommend a performance standard by which the system of ACLs and AMs can be measured and evaluated. If the ACL is exceeded more than once over the course of four years, the South Atlantic Council would reassess the system of ACLs and AMs for the species. The South Atlantic Council took action in Amendment 34 to the Snapper Grouper FMP (SAFMC 2015) to enhance the effectiveness of the AMs for mutton snapper.

With vastly improved commercial monitoring mechanisms recently implemented, it is unlikely that repeated commercial ACL overages would occur. The Commercial Landings Monitoring System (CLM) came online in June 2012 and is now being used to track commercial landings of federally managed fish species. The CLM system can track dealer reporting compliance with a direct link to the permits database at the NMFS Southeast Regional Office. Additionally, the Joint Dealer Reporting Amendment (GMFMC & SAFMC 2013b), which became effective on August 7, 2014, requires electronic reporting, increases required reporting frequency for dealers to once per week, and requires a single dealer permit for all finfish dealers in the Southeast Region. The new CLM quota monitoring system and actions in the Joint Generic Dealer Reporting amendment are expected to provide more timely and accurate data reporting and would thus reduce the incidence of quota overages.

Harvest monitoring efforts in the recreational sector have also improved. On January 27, 2014, regulations became effective requiring headboats to report their landings electronically once per week (Generic Headboat Amendment, GMFMC & SAFMC 2013a). The Southeast Fisheries Science Center is also developing an electronic reporting system for charter boats operating in the Southeast Region and the Gulf of Mexico and South Atlantic Councils are developing amendments that would require electronic reporting for charterboats with a set reporting frequency. Therefore, there is a low risk of exceeding the commercial and recreational ACLs and **Preferred Alternative 2** and its sub-alternatives can be used as part of a successful harvest management system for mutton snapper with little risk of overfishing. See **Appendix D** (BPA) for information on bycatch and discards.

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

Economic Effects

In general, ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases. The ACL does not directly impact a fishery unless

harvest increases or the ACL is exceeded, thereby triggering AMs such as closures or other restrictive measure. As such, ACLs that do not increase harvest and set above the observed landings of a fishery do not have realized economic effects. Even though ACLs under all of the sub-alternatives of **Preferred Alternative 2** are lower than the ACL for **Alternative 1 (No Action)**, it is unlikely that the commercial mutton snapper sector would close due to reaching its ACL, assuming future commercial landings reflect average landings from 2010-2014 (**Tables 4.3.1** and **4.3.2**). Therefore, there are no expected differences for the commercial sector in terms of realized economic effects among the actions and sub-alternatives. All of the sub-alternatives would allow for some expansion of the commercial sector and increased economic benefits for the sector, with **Preferred Sub-alternative 2a** offering the greatest potential increase; however, it is not expected based on previous commercial landings.

The recreational sector experiences more variability in mutton snapper landings from year to year than the commercial sector. Using average recreational landings from 2010-2014 and associated consumer surplus estimates (CS) as a baseline (**Table 4.3.3**), the estimated short-term (2017) changes in CS resulting from the ACLs specified in **Action 1 (No Action)** and **Action 2** are presented in **Table 4.3.4**. These estimates are calculated using two proxy values of CS for recreationally caught mutton snapper. Haab et al. (2012) estimated the CS (willingness to pay (WTP) for one additional fish caught and kept) for snappers and groupers in the southeastern U.S. using four separate econometric modeling techniques. It is assumed that snapper is a better proxy for mutton snapper than grouper; however, any CS estimates derived for mutton snapper using "snapper" as a proxy should be viewed as ballpark estimates only. The finite mixture model, which takes into account variation in the preferences of fishermen, had the best prediction rates of the four models. The WTP for an additional snapper (excluding red snapper) estimated by this model was $12.37 (2014 dollars) with a 95% confidence interval (CI) of $8.25 to $17.87. The WTP for an additional snapper from the mixed-logit model was higher at $30.25 (2014 dollars) with a 95% CI of $20.62 to $39.87. Due to the variation in proxy values, both are shown to provide an upper and lower estimates of CS and the changes in CS.

Table 4.3.3. Estimated consumer surplus (2014 $) for recreational mutton snapper landings, 2010-2014.

Year	Recreational Landings (numbers)	Rec CS- Snapper (Finite Mixture Model)	Rec CS- Snapper (Mixed Logit Model)
2010	130,249	$1,611,180	$3,940,032
2011	60,151	$744,068	$1,819,568
2012	86,108	$1,065,156	$2,604,767
2013	126,241	$1,561,601	$3,818,790
2014	157,501	$1,948,287	$4,764,405
Average	112,050	$1,386,059	$3,389,513

Table 4.3.4. Estimated change in recreational landings and associated change in consumer surplus (CS) (in 2014 $) based on average recreational landings of mutton snapper from 2010-2014.

	Estimated Reduction in Landings (number of fish)	Decrease in Consumer Surplus(Finite Mixture Model: $12.37 per fish)	Decrease in Consumer Surplus (Mixed Logit Model: $30.25 per fish)
Alternative 1 (No Action)	0	$0	$0
Sub-alternative 2a	**0**	**$0**	**$0**
Sub-alternative 2b	1,729	$21,388	$52,302
Sub-alternative 2c	7,536	$93,220	$227,964

Since the ACLs specified for 2017 in **Alternative 1 (No Action)** and **Preferred Sub-alternative 2a** (**Table 4.3.2**) are higher than the average recreational landings over the 2010-2014 time series (**Table 4.3.1**), there are no anticipated economic effects that will be realized by the recreational sector. **Sub-alternative 2c** has the largest anticipated negative economic effect, as it has the lowest recreational ACL and is estimated to decrease CS by $93,220 to $227,964 (2014 $) compared to the baseline. **Sub-alternative 2b** has less potential for negative economic effects compared to **Sub-alternative 2c**, but is still estimated to decrease CS by $21,388 to $52,302 (2014 $) (**Table 4.3.3**). For all sub-alternatives of **Alternative 2**, the ACL is projected to increase in years following 2017, therefore the loss of CS is expected to be smaller in these years and the economic effects may even be neutral or turn to a net gain in CS, depending on the observed landings of mutton snapper and the sub-alternative that is chosen.

Social Effects

The ACL for any stock does not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict or close harvest could negatively impact the commercial fleet, for-hire fleet, and private anglers. AMs can have significant direct and indirect social effects because, when triggered, can restrict harvest in the current season or subsequent seasons. While the negative effects are usually short-term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects, such as increased pressure on another species, or fishermen having to stop fishing all together due to regulatory closures. However, restrictions on harvest contribute to sustainable management goals, and are expected to be beneficial to fishermen and communities in the long-term.

Section 3.3.2 describes communities that could be affected by changes to mutton snapper management, particularly in the Florida Keys. Mutton snapper is an important species for the recreational sector in south Florida. Changes in access to mutton snapper could also affect fish houses and restaurants that depend on a steady supply of the fish.

Under **Preferred Alternative 2**, the ACL for mutton snapper would be based on the most recent stock assessment, but could also set ACLs lower than recent recreational and commercial landings. This could result in early closures, paybacks, or other management

measures that could restrict access to the mutton snapper resource. **Sub-alternative 2c** could result in the lowest ACLs, followed by **Sub-alternative 2b** and **Preferred Sub-alternative 2a**. **Alternative 1 (No Action)**, although it is not based on the most recent stock assessment, would allow the most access to the mutton snapper because of the larger ACL, and be the most beneficial in the short-term to commercial and recreational fishermen who target mutton snapper. However, if the ACL is not updated based on the most recent information from the stock assessment and this results in negative biological effects on the stock, this could affect fishermen and associated communities and businesses in the future.

COMMITTEE ACTION:

NOTE EDITS TO ALTERNATIVE 1 (NO ACTION)

- APPROVE SUGGESTED EDITS TO ALTERNATIVE 2 UNDER ACTION 3

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE

- DISCUSS SETTING THE TOTAL ACL IN NUMBERS OF FISH SINCE ABC IS SPECIFIED IN NUMBERS OF FISH.

ACTION 4. Revise recreational annual catch target (ACT) for mutton snapper in the South Atlantic Region

Alternative 1 (No Action). The current annual catch target is 668,906 lbs ww and applies to mutton snapper throughout the South Atlantic Council's jurisdiction. The annual catch target equals recreational ACL*(1-PSE) or ACL*0.5, whichever is greater, and where percent standard error (PSE) = 13% = average PSE 2005-2009 (for South Atlantic only).

Preferred Alternative 2. Revise the annual catch target ~~(ACT)~~ for mutton snapper for the recreational sector and specify it ~~the recreational ACT~~ in numbers of fish. The ~~ACT~~ annual catch target for 2020 would remain in place until modified.

Sub-alternative 2a. ACT = recreational ACL*(1-PSE) or ACL*0.5, whichever is greater.

Year	PSE
2010	10.2
2011	15.2
2012	21.2
2013	15.1
2014	17.9
Average	**15.9**

Note: PSE = Percent Standard Error. The PSE is a measure of precision presented for recreational estimates. The higher the PSE, the less precise the estimate. The average PSE value for the most recent 5 complete years of recreational data would be used in the equation.

Preferred Sub-alternative 2b. ACT =85% recreational ACL.

Sub-alternative 2c. ACT = 75% recreational ACL

Biological Effects

As explained in **Section 2.4.1**, annual catch targets (ACTs) can be used to prevent ACLs from being exceeded. For species without in-season management control to prevent the ACL from being exceeded, managers may utilize ACTs that are set below ACLs so that catches do not exceed the ACLs. In managing the snapper grouper fishery; however, the South Atlantic Council has chosen not to use ACTs to trigger AMs because it is anticipated that improvements in reporting will significantly reduce management uncertainty. Since the ACT is typically set lower and would be reached sooner than the ACL, using an ACT rather than the ACL as a trigger for AMs in the recreational sector may prevent an ACL overage. This more conservative approach, would likely help to ensure that recreational data uncertainties do not cause or contribute to excessive ACL overages for vulnerable species. Using recreational ACTs rather than the ACLs to trigger recreational AMs may not eliminate ACL overages completely; however, using such a strategy for the recreational sector may reduce the need to compensate for very large overages.

Table 4.4.1 shows recreational ACTs (in numbers of fish) for mutton snapper under each of the proposed ACL alternatives from **Action 3**.

Table 4.4.1. Proposed recreational annual catch targets (ACTs) in numbers of fish for each of the proposed annual catch limit alternatives under **Action 3**.

Preferred Sub-alternative 2a (Action 3): ACL = OY = ABC				
Year	**Rec ACL (num)**	**Sub-alt 2a**	**Pref Sub-alt 2b**	**Sub-alt 2c**
2017	116,127	97,663	**98,708**	87,095
2018	121,318	102,029	**103,121**	90,989
2019	124,766	104,928	**106,051**	93,574
2020 onwards	127,115	106,903	**108,048**	95,336
Sub-alternative 2b (Action 3): ACL = OY = 95%ABC				
2017	110,321	92,780	93,773	82,741
2018	115,252	96,927	97,965	86,439
2019	118,528	99,682	100,749	88,896
2020 onwards	120,759	101,558	102,645	90,569
Sub-alternative 2c (Action 3): ACL = OY = 90%ABC				
2017	104,514	87,897	88,837	78,386
2018	109,186	91,826	92,809	81,890
2019	112,289	94,435	95,446	84,217
2020 onwards	114,403	96,213	97,243	85,802

The current recreational ACT (**Alternative 1 (No Action)**) for mutton snapper in the South Atlantic Council's area of jurisdiction is 668,906 lbs ww. Since the South Atlantic Council proposes to specify the recreational ACL for mutton snapper in numbers of fish (**Action 3**), **Alternative 1 (No Action)** is not a viable alternative as there would be no consistency in the units. Because the South Atlantic Council has not employed ACTs in its management strategy for the snapper grouper fishery, the biological effects of **Preferred Alternative 2** and its sub-alternatives would be neutral. Of the sub-alternatives under **Preferred Alternative 2**, **Preferred Sub-alternative 2b** proposes the highest values. That is, if AMs were tied to the recreational ACT, they would be triggered less frequently than under **Sub-alternative 2a** or **2c**. However, as stated previously, recreational ACTs are currently not an active part of the management strategy for snapper grouper species and accountability measures are in place to ensure that ACLs are not exceeded.

This action would not be expected to affect discards and/or bycatch, since the only consequence of reaching the ACT would be to continue to monitor the landings, which Marine Recreational Information Program does anyway. For more information on bycatch and discards, see **Appendix D** (BPA).

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or

EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

4.4.2 Economic Effects

The purpose of establishing ACTs is to help prevent a sector from exceeding its ACLs due to management uncertainty. Exceeding an ACL would have direct negative economic effects on all sectors potentially due to a reduced stock size. While not currently overfished, should mutton snapper become overfished, the sector that exceeded its ACL would have its future ACL reduced by the amount of the overage. Without being able to predict exactly how much precaution is needed in setting the ACL, it is difficult to compare alternatives. However, if a species were closed too early for a sector based on the ACT, there would be direct negative economic effects as well because the sector was prohibited from harvesting fish. The ACT being established by this action only applies to the recreational sector and is not tied to the AMs; therefore, the realized economic effects of **Action 4** are expected to be minimal. There are no commercial ACTs being proposed as commercial reporting requirements allow for the commercial sector to be closed comparatively more quickly when the commercial sector ACL is met or projected to be met.

While there currently are no AMs triggered by the ACT for mutton snapper, there is the potential for AMs to be tied to the ACT in the future, thereby creating economic effects. **Sub-alternative 2c** provides the largest step-down from the ACL to the ACT and would create the largest potential negative economic effect if set as trigger for the AMs, while **Sub-alternative 2b** provides the smallest step-down from the ACL to the ACT, thereby leading to the smallest potential negative economic effect. **Preferred Sub-alternative 2a** falls in between the other two sub-alternatives. **Alternative 1 (No Action)** is not a viable alternative but the economic effects would be most comparable to **Sub-alternative 2a**, as it uses similar methodology in setting the recreational ACT for mutton snapper.

4.4.3 Social Effects

Establishment of a recreational ACT for mutton snapper would likely have little effects on recreational fishermen targeting mutton snapper, unless the South Atlantic Council decides to set the ACT as a trigger for AMs at a later time. A higher ACT could be more beneficial for fishermen, depending on the levels specified in **Preferred Alternative 2**, and it would be expected that **Preferred Sub-alternative 2b** would be the most beneficial, followed by **Sub-alternative 2a**, and then **Sub-alternative 2c** (**Table 2.4.1.**). Because the ACT is used for monitoring only, it is expected that the social effects of **Alternative 1 (No Action)** and the sub-alternatives under **Preferred Alternative 2** would be the similar.

COMMITTEE ACTION:

NOTE EDITS TO ALTERNATIVE 1 (NO ACTION)

- APPROVE SUGGESTED EDITS TO ALTERNATIVE 2 UNDER ACTION 4.

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE

ACTION 5. Modify mutton snapper minimum size limit in the South Atlantic Region

Alternative 1 (No Action). The minimum size limit for mutton snapper in the South Atlantic region is 16 inches total length ~~(TL).~~

Alternative 2. Increase the minimum size limit for mutton snapper in the South Atlantic region to 17 inches total length ~~(TL).~~

Preferred Alternative 3. Increase the minimum size limit for mutton snapper in the South Atlantic region to 18 inches total length ~~(TL).~~

Alternative 4. Increase the minimum size limit for mutton snapper in the South Atlantic region to 19 inches total length ~~(TL).~~

Alternative 5. Increase the minimum size limit for mutton snapper in the South Atlantic region to 20 inches total length ~~(TL).~~

Biological Effects

According to the report for the SEDAR 15A (2008) assessment of the mutton snapper stock 50% of females achieved sexual maturity at 353 mm TL (14 inches TL) and 2.07 years of age. However, Claro (1981) reported a size at 50% maturity (L50) for this species at 520 mm fork length (FL; ca. 574 mm TL; 20 inches) and 5-6 years of age. Similarly, Figuerola and Torres (2001), using histological criteria, reported a length at 50% maturity of 414 mm FL (ca. 459 mm TL; 18 inches TL) for mutton snapper in Puerto Rico. The SEDAR 15A (2008) report further states "A shift in cohort-specific maturity schedules over time is consistent with a genetic change at the population level, and a change towards smaller size at maturity is consistent with the expected life-history response to high rates of selective exploitation (Marshall and Browman 2007). If the data of prior estimates from Caribbean populations is indicative of fishes inhabiting Florida waters in the past, then current estimates of size-at-maturity are comparatively small and may indicate growth overfishing in the Florida population.

More recently, Sadovy de Mitcheson and Colin (2011) report that male mutton snapper reach sexual maturity at 16 inches FL and females at 18 inches FL. Therefore, **Alternative 1 (No Action)** would not be as biologically beneficial as the alternatives considered under this action because it allows harvest of some reproductively immature individuals. **Alternatives 2-5** would impart biological benefits to the mutton snapper population by allowing more individuals to reach reproductive activity before being harvested. Of these, **Alternatives 4** and **5** would be more biologically beneficial than **Preferred Alternative 3** or **Alternative 2** as they would presumably encompass all the reproductively active individuals in the population. Hence, biological benefits would be greatest under **Alternative 5** and decrease with each subsequent alternative in diminishing order.

Table 4.5.1 presents projected landings for the different size limit alternatives being considered. The table also presents predicted percent reductions in landings from the status quo. Under the South Atlantic Council's **Preferred Alternative 3** (18 inches TL), recreational landings of mutton snapper at the current 10-fish bag limit are expected decrease by 74%. Minimum size limits of 19 and 20 inches TL (**Alternatives 4** and **5**, respectively), would each further reduce recreational landings by 80% and 84%, respectively. Overall, all of the minimum size limits alternatives being considered result in substantial decreases in projected landings.

Table 4.5.1. Projected recreational landings of mutton snapper (numbers of fish) and closure dates for each of the three proposed ACLs, under the current bag limit (10 mutton snapper within the aggregate), and with no further restrictions during May and June. Preferred minimum size limit alternative in bold.

Size Limit	Bag Limit	Estimated Landings	% Reduction	Projected Closure Date		
				ACL=ABC	ACL=95%ABC	ACL=90%ABC
16	10	111,966	0.0%	No	27-Dec	9-Dec
17	10	56,284	49.7%	No	No	No
18 (Pref)	**10**	**44,143**	**60.6%**	**No**	**No**	**No**
19	10	36,273	67.6%	No	No	No
20	10	30,049	73.2%	No	No	No

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

Economic Effects

Size limits that result in more spawning and/or higher fecundity would result in more long-term positive economic effects presumably through the availability of increased numbers of fish in the future. However, there could be some direct, short-term, negative economic effects as fewer fish would be available to harvest until the current population grows into the new minimum size and/or the biomass of harvestable fish increases. In the commercial sector, size limits can increase the number of discarded fish and trip costs if a vessel takes longer or more trips to mitigate the reduced landings per trip. This could negatively affect the profitability of a fishing trip and/or the overall annual profitability of a commercial fishing business. In the recreational sector, the initial decrease in fish available for harvest could negatively affect consumer surplus for a fishery. Net operating revenue for charter and head boat trips may be negatively affected as well if overall fishing effort decrease or trips become more costly due to higher search costs. The greater the increase in the minimum size limit from **Alternative 1 (No Action)**, the greater the probability for short-term negative economic effects. However, an increase in the minimum size limit above **Alternative 1 (No Action)** could also result in greater

long-term positive economic effects as long as increased size limits translate into a larger spawning stock biomass and overall biomass increasing above the minimum limit.

Haab et al. (2012) estimated the CS (willingness to pay (WTP) for one additional fish caught and kept) for snappers and groupers in the southeastern U.S. using four separate econometric modeling techniques. It is assumed that snapper is a better proxy for mutton snapper than grouper; however, any CS estimates derived for mutton snapper using "snapper" as a proxy should be viewed as ballpark estimates only. The finite mixture model, which takes into account variation in the preferences of fishermen, had the best prediction rates of the four models. The WTP for an additional snapper (excluding red snapper) estimated by this model was $12.37 (2014 dollars) with a 95% confidence interval (CI) of $8.25 to $17.87. The WTP for an additional snapper from the mixed-logit model was higher at $30.25 (2014 dollars) with a 95% CI of $20.62 to $39.87. Due to the variation in proxy values, both are shown to provide an upper and lower estimate of CS. **Table 4.5.2** shows the expected number of fish landed for the recreational sector under each alternative along with the decrease in CS using **Alternative 1 (No Action)** as a baseline. The estimated recreational landings under **Alternative 1 (No Action)** is 111,966 fish (**Table 4.5.1**) that would result in a CS ranging from $1,385,019 to $3,386,972, depending on the CS proxy value used (Finite Mixture Model: $12.37 per fish or Mixed Logit Model: $30.25 per fish**)**. The impacts on the commercial sector are left out of the table, but will be included at a later time once a similar analysis is completed examining the anticipated effects of a size limit on commercial landings.

Alternative 1 (No Action) affords the lowest negative, direct, short-term economic effect compared to **Alternatives 2** through **5**. However, **Alternative 1 (No Action)** could result in a more compressed stock size and presumably lower fecundity in the future, leading to fewer fish available to harvest when compared to the other alternatives. The economic benefit of establishing a larger minimum size limit would presumably be an increased stock size that may allow for future economic benefits associated with increased harvest and recreational opportunities.

Table 4.5.2. Estimated change in consumer surplus (2014 $) for mutton snapper in the first year of implementation.

	Size Limit	Estimated Recreational Landings (number of fish)	Estimated Reduction in Landings (number of fish)	Decrease in Consumer Surplus(Finite Mixture Model: $12.37 per fish)	Decrease in Consumer Surplus (Mixed Logit Model: $30.25 per fish)
Alternative 1 (No Action)	16" TL	111,966	0	$0	$0
Alternative 2	17" TL	56,284	55,682	$688,786	$1,684,381
Alternative 3	**18" TL**	**44,143**	67,823	$838,971	$2,051,646
Alternative 4	19" TL	36,273	75,693	$936,322	$2,289,713
Alternative 5	20" TL	30,049	81,917	$1,013,313	$2,477,989

Social Effects

Some social effects of minimum size limits would be associated with the positive and negative biological effects of minimum size limits on the mutton snapper (**Section 4.5.1**). Positive effects of allowing only fish of a certain size that are caught in the South Atlantic exclusive economic zone to be landed could help maintain sustainability of harvest and the health of the mutton snapper stock, which would be beneficial to recreational and commercial fishermen in the long term. Negative effects of potential increase in discard mortality due to higher minimum size limit could affect the stock and in turn, commercial and recreational fishing opportunities.

Recreational landings are expected to decrease as the minimum size limit increases (**Table 4.5.1.**), which would likely result in negative short-term effects on fishermen targeting mutton snapper. If fishermen are not able to meet the bag limit because of the minimum size limit, this may reduce trip satisfaction for both private recreational trips and for-hire trips. The largest minimum size limit (**Alternative 5**) would be expected to have the highest level of short-term negative effects on the recreational sector and associated businesses, followed by **Alternative 4**, **Preferred Alternative 3**, and **Alternative 2**. Although **Alternative 1 (No Action)** would have less negative effect on trip satisfaction, any minimum size limit may restrict the number of fish that can be landed.

There are also long-term benefits of reducing the rate of harvest to extend the fishing season and to contribute to long-term biological benefits when the minimum size limit is increased, as discussed in **Section 4.5.1**.

COMMITTEE ACTION:

- APPROVE SUGGESTED EDITS TO ALTERNATIVES 1-5 UNDER ACTION 5

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE

ACTION 6. Designate spawning season during which commercial and recreational management measures for mutton snapper should apply in the South Atlantic Region

Alternative 1 (No Action). ~~The spawning season for mutton snapper is designated as May-June.~~ During May and June, each year, the possession of mutton snapper in or from the exclusive economic zone on board a vessel that has a commercial permit for South Atlantic snapper grouper is limited to 10 per person per day or 10 per person per trip, whichever is more restrictive.

Alternative 2. For regulatory purposes, designate the following as "spawning months". The remainder of the year would be the "regular season."

Preferred Sub-alternative 2a. April-June

Sub-alternative 2b. April-July

Sub-alternative 2c. May-July

Biological Effects

There is no "designated" spawning season for mutton snapper by the South Atlantic Council. However, under **Alternative 1 (No Action)** May and June were recognized as the spawning months for mutton snapper throughout the South Atlantic Council's area of jurisdiction for regulatory purposes in the commercial sector. Amendment 4 to the Snapper Grouper FMP (SAFMC 1991) designated May and June as the months during which stricter commercial regulations would be implemented to prevent overharvesting of spawning aggregations. No management measures were put in place to constrain recreational harvest during those months; however. Specifying the months during which specific management measures are to apply would not in itself result in any biological effects. However, alternatives that better align the timeframe of regulations with the biology of the species would indirectly result in beneficial biological effects.

Mutton snapper are known to form aggregations when they spawn (Figuerola et al. 1997). Burton et al. (2005 and references therein) indicate that mutton snapper spawning occurs from May through July at Riley's Hump and peaks in June, as indicated by gonadosomatic indices (M. Burton, unpubl. data). Fish begin to aggregate for spawning around the full moon (Burton et al 2005). Individuals have been observed in spawning condition in the U.S. Caribbean from February through July (Erdman 1976). Some spawning occurs during February to June off Puerto Rico, but spawning peaks during the week following the full moon in April and May. Spawning aggregations are known to occur north of St. Thomas, USVI, and south of St. Croix, USVI, in March, April, and May (Rielinger 1999).

Graham et al. (2008) report evidence of a significant decline in catch-per-unit effort, mean landings and inter-annual median lengths of mutton snapper in Belize, due to overexploitation at a spawning aggregation in Gladden Spit. The authors suggest that "a precautionary approach to spawning aggregation management is warranted that provides full protection from fishing to enhance population persistence. The findings also

highlight the need for substantially greater enforcement and long-term fisheries monitoring under a comprehensive regional management strategy."

In general, **Preferred Alternative 2** (and its sub-alternatives) would result in positive indirect biological effects in that it would lengthen the timeframe during which more restrictive regulations would presumably apply to target protection to spawning individuals. Of these, **Sub-alternative 2b** would indirectly provide the most biological benefit to mutton snapper in that it encompasses the longest amount of time (4 months) and has the greatest potential of capturing the bulk of mutton snapper spawning activity in the South Atlantic Council's area of jurisdiction. **Preferred Sub-alternative 2a** and **Sub-alternative 2b** could result in the implementation of regulations one month earlier than under **Alternative 1 (No Action)** and **Sub-alternative 2c**, possibly imparting some indirect biological benefit in light of changing climate and its observed effect on species' reproductive cycles.

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

Economic Effects

Currently, during May through June, the commercial sector is restricted to 10 mutton snapper per person per day or 10 per person per trip but regulations do not change for the recreational sector. Without a change in management measures during the spawning season, there would be no expected direct economic effects to the recreational sector from **Action 6**. If measures are put in place, such as those being considered in **Alternative 3** of **Action 7**, then both the recreational and commercial sector may experience short-term negative economic effects from the extension of the spawning season regulations as proposed in **Preferred Sub-alternative 2a** through **Sub-alternative 2c**. The recreational sector may see a decrease in consumer surplus on trips targeting or landing mutton snapper during the designated spawning season if measures are put in place that restrict the harvest of mutton snapper. Net operating revenue of charter and head boats that target mutton snapper may also be negatively affected if customers take fewer trips during the designated spawning season due to increased restrictions. Commercial fishing operations could potentially see an expansion of the current spawning season restrictions that limits the number of mutton snapper that can be landed per trip, thereby possibly decreasing the profitability of these commercial trips. Presumably these short-term negative economic effects may be offset if the biomass of mutton snapper improves as a result of additional protection during the spawning period. Since the length of the spawning season under **Preferred Sub-alternative 2a** and **Sub-alternative 2c** is the same, the anticipated short-term negative economic effects are similar. Encompassing the longest time period, **Sub-alternative 2b** has the greatest

potential for short-term economic effects. All of the sub-alternatives of **Preferred Alternative 2** are expected to have greater short-term negative effects than **Alternative 1 (No Action)**, since they will all extend the time period in which spawning season restrictions are in place.

Social Effects

The effects on commercial and recreational fishermen due to an establishment of a designated season during the year with more restrictive measures would be associated with the biological benefits of the season, and the negative social and economic effects of restricted access. Having a specified period each year with associated management measures to reduce harvest during spawning for mutton snapper **(Preferred Alternative 2**) would be expected to be beneficial to the stock. This could improve fishing opportunities in the long term by increasing spawning activity and the number of mutton snapper, but only if management measures are in place during the designated time of year.

There is no "designated" spawning season for mutton snapper by the South Atlantic Council. However, under **Alternative 1 (No Action)** May and June were recognized as the spawning months for mutton snapper throughout the South Atlantic Council's area of jurisdiction for regulatory purposes in the commercial sector but not the recreational sector. However, assuming that there are associated management measures to reduce harvest during the designated periods, the long-term benefits to the mutton snapper stock would be lower than under **Preferred Alternative 2**. The effects of the designated time (**Sub-alternatives 2a (Preferred)-2c**) would depend on how the specified season lines up with actual spawning activity and how the season lines up with times of year with higher fishing activity. The longer designated period in **Sub-alternative 2b** would likely have more negative effects on recreational fishermen than three-month periods under **Preferred Sub-alternative 2a** and **Sub-alternative 2c**, if there are management measures in place to reduce harvest during the designated period.

COMMITTEE ACTION:

NOTE EDITS TO ALTERNATIVE 1 (NO ACTION)

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE

ACTION 7. Modify mutton snapper recreational bag limit in the South Atlantic Region

Alternative 1 (No Action). Mutton snapper is part of the aggregate 10 snapper bag limit in the South Atlantic that applies throughout the fishing year. In the South Atlantic, the 10 snapper-per-person-per-day aggregate includes ~~all snapper species in the snapper grouper management unit except red snapper and vermilion snapper~~ the following snapper species: lane, yellowtail, gray, mutton, queen, blackfin, cubera, and silk. Cubera snapper less than 30 inches total length ~~(TL)~~ are included in the 10 fish bag limit. The aggregate 10 snapper bag limit includes a maximum of 2 cubera snapper per person (not to exceed 2 per/vessel) for fish 30 inches ~~TL~~ total length or larger off Florida. Note: The Gulf of Mexico Fishery Management Council and the State of Florida regulations include mutton snapper in the 10 snapper bag limit.

Alternative 2. Retain mutton snapper within the recreational 10 snapper aggregate bag limit in the South Atlantic, but specify a bag limit for mutton snapper during the "regular season" (i.e., non-spawning months)

Sub-alternative 2a. 4 fish/person/day
Sub-alternative 2b. 5 fish/person/day
Sub-alternative 2c. 10 fish/person/day

Alternative 3. Retain mutton snapper within the recreational 10 snapper aggregate bag limit in the South Atlantic, but specify bag/vessel limits for mutton snapper during the "spawning months"

Sub-alternative 3a. 2 fish/person/day
Sub-alternative 3b. 3 fish/person/day
Sub-alternative 3c. 10 fish/vessel/day
Sub-alternative 3d. 12 fish/vessel/day
Sub-alternative 3e. No retention

Preferred Alternative 4. Retain mutton snapper within the recreational 10 snapper aggregate bag limit in the South Atlantic, but specify bag limits for mutton snapper within the aggregate bag limit year round.

Sub-alternative 4a. 2 fish/person/day.
Preferred Sub-alternative 4b. 3 fish/person/day.
Sub-alternative 4c. 5 fish/person/day.

Biological Effects

Table 4.7.1 below shows landings of mutton snapper by recreational wave for 2010 through 2014. The peak of mutton snapper recreational landings occurred during the May-June spawning season (Wave 3) in the South Atlantic during 2010 through 2013. In 2014; however, landings were highest in Wave 6 (November/December) and Wave 1 (January/February). **Figure 4.7.1** shows the distribution of mutton snapper catch-per-angler for the private and charter modes (based on the Marine Recreational Fisheries Statistical Survey, MRFSS) and headboat (based on the Southeast Headboat Survey) of

mutton snapper for various time periods. From 2011 through 2013, most anglers caught three or fewer mutton snapper.

Table 4.7.1. South Atlantic recreational (private, charter, and headboat) mutton snapper landings by wave, 2010-2014.

Year	1 (J/F)	2 (M/A)	3 (M/J)	4 (J/A)	5 (S/O)	6 (N/D)	Total
2010	21,582	9,475	35,224	36,609	16,583	10,776	130,249
2011	12,253	9,758	20,427	4,020	7,113	6,579	60,151
2012	9,695	23,620	20,847	13,597	4,988	13,362	86,108
2013	12,009	8,415	38,296	29,946	24,702	12,873	126,241
2014	36,850	9,523	31,024	25,715	12,819	41,570	157,501
Mean	18,478	12,158	29,164	21,977	13,241	17,032	112,050

Source: http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/index.html.

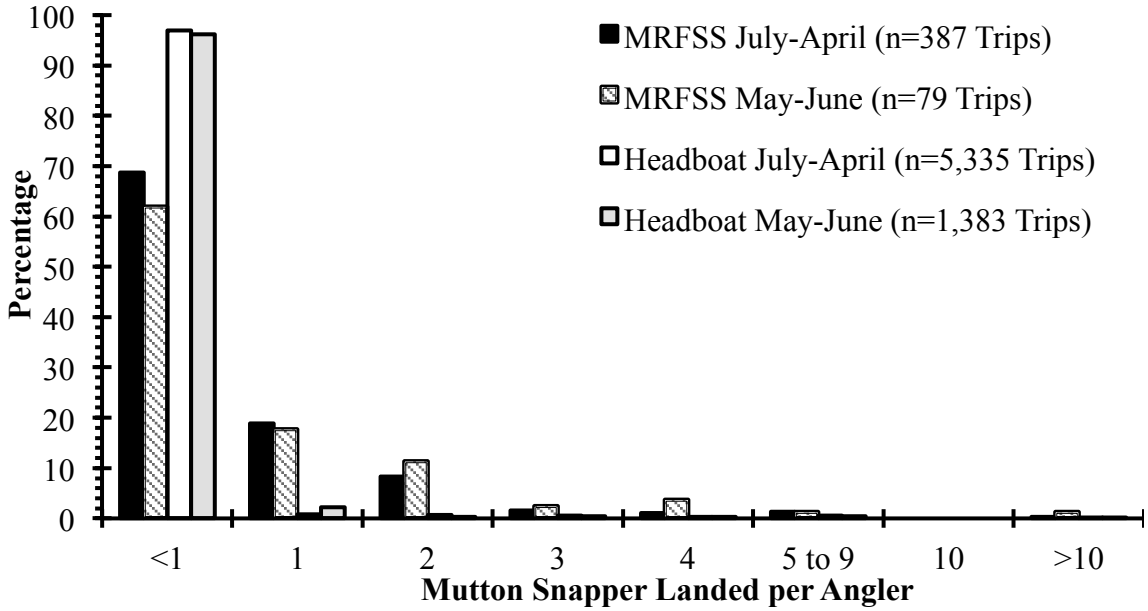


Figure 4.7.1. Distribution of South Atlantic mutton snapper landed per angler by season from the two recreational datasets (MRIP and Headboat) from 2011 through 2013.

In general, constraining recreational harvest by means of bag limits results in neutral biological effects because the ACL limits overall harvest to a level that is sustainable over the long-term. However, bag limits can be beneficial in managing harvest of species whose biology makes them particularly vulnerable to fishing mortality during part of their life cycle, such as when they are reproducing. As such, **Alternative 3** and its sub-alternatives would provide greater biological benefits over **Alternative 1 (No Action)**, **Alternative 2**, and **Preferred Alternative 4**. Among the **Alternative 3** sub-alternatives, **Sub-alternative 3e**, no retention of mutton snapper would provide the greatest biological benefit since fish would not be subject to fishing mortality while they are in spawning condition. Positive biological effects would be expected from **Sub-alternatives 3a**, **3b**,

3c, and **3d**, in that order, as these sub-alternatives would constrain recreational harvest during the spawning months.

Table 4.7.2 presents projected recreational landings under the various bag limit alternatives considered under this action for the preferred minimum size limit (18 inches TL) and spawning season (April-June).

Table 4.7.2. Projected mutton snapper recreational landings (in numbers of fish) under various bag limits at the preferred **18-inch minimum size limit** and an **April-June** spawning season. "pp" signifies "per person" and "pv" signifies "per vessel".

Bag limit during spawning season	Bag limit outside of spawning season		
	2a - 4 pp	2b - 5 pp	2c - 10 pp
3a - 2 pp	44,042	44,049	44,051
3b - 3pp	44,108	44,115	44,117
3c - 10 pv	43,094	43,101	43,104
3d - 12 pv	43,199	43,206	43,209
3e - Closed	41,450	41,457	41,460

Preferred Alternative 4 and its sub-alternatives propose specifying a mutton snapper bag limit within the 10-snapper aggregate year-round. **Table 4.7.3** shows expected recreational landings under the **Preferred Alternative 4** sub-alternatives for the various minimum size limits considered under **Action 5**. As the majority of recreational anglers are catching less than 3 mutton snapper per day (**Figure 4.7.1**), **Preferred Sub-alternative 4c** would have little effect in constraining recreational harvest on its own and essentially be the same as **Alternative 1 (No Action)**. However, as evident in **Table 4.7.3**, imposing a minimum size limit above the status quo of 16 inches TL is expected to reduce recreational harvest by a large amount. **Sub-alternatives 4a** and **4b (Preferred)** would impart a similar level of biological benefit to the mutton snapper stock as **Sub-alternatives 3a** and **3b** since they would also lower the level of fishing mortality during the spawning season.

Table 4.7.3. Projected recreational landing of mutton snapper (numbers of fish) for sub-alternatives under **Preferred Alternative 4** (year-round bag limits) at the various minimum size limits considered under **Action 5** (preferred indicated in bold).

Bag limits	Minimum size limit (inches TL)				
	16 (current)	17	18	19	20
4a - 2pp	107,968	54,960	43,945	36,118	29.463
4b (Pref) - 3pp	**110,840**	**55,726**	**44,085**	**36,238**	**29,718**
4c - 5pp	111,796	56,121	44,140	36,271	29,970

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or

EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

Economic Effects

Currently, in the 10 fish snapper aggregate bag limit, up to 10 snappers landed could be mutton snapper. Generally, angler satisfaction increases with the number of fish that can be harvested and the size of the fish. The smaller the bag limit the greater the probability that the satisfaction from an angler trip could be affected. As shown in **Figure 4.7.1**, anglers tend to land three or less mutton snapper on a single trip. Therefore, setting the bag limit between 4 and 10 fish per person per day is expected to have minimal negative economic effects, while setting the bag limit at 1, 2, or 3 fish per person per day can be expected to have noticeably larger negative economic effects. During the regular season, **Sub-alternatives 2a** and **2b** are more restrictive than the current bag limit of up to 10 mutton snapper per person/day within the snapper aggregate bag limit, therefore some negative economic impacts may be expected. **Sub-alternative 2c** allows the harvest of up to 10 mutton snapper per person/day, which is equivalent to the current bag limit, therefore no economic effects are expected from this sub-alternative. Vessel limits in **Sub-alternative 3c** and **Sub-alternative 3d** would affect recreational participants only on trips where the vessel limit is more restrictive than the bag limit.

Table 4.7.4 shows the estimated decrease in recreational CS that may occur from projected mutton snapper landings under various bag and size limits in **Table 4.7.3** in comparison to a baseline of average landings of mutton snapper for the recreational sector from 2010-2014 and the associated CS estimates for these landings. As shown in **Table 4.3.3**, these baseline landings are 112,050 fish with a lower bound total CS estimate of $1,386,059 and an upper bound total CS estimate of $3,389,513. The two estimates of marginal CS used in this analysis are $12.37 per fish for a snapper derived from the finite mixture model and $30.25 per fish for a snapper derived from the mixed-logit snapper model (See **Section 4.3.2**). The sub-alternatives of **Preferred Alternative 4** for **Action 7** would establish a recreational bag limit that would be more restrictive than the current 10 fish per person per day aggregate snapper limit (**Alternative 1 (No Action)**). These sub-alternatives are paired with minimum size limit options from **Action 5** to provide total CS estimates for the recreational sector (**Table 4.7.4**). In general, **Action 7 Sub-Alternative 4c** has the smallest estimated short-term decrease in landings and CS followed by **Preferred Sub-alternative 4b**, with **Sub-alternative 4a** having the largest estimated short-term decrease in landings and CS.

Table 4.7.4. Estimated short-term decrease in recreational landings and consumer surplus (2014 dollars) for the sub-alternatives of **Preferred Alternative 4** of **Action 7** and minimum size limit options in **Action 5**.

Sub-alt 4a- 2 fish/person/day			
Size Limit	**Decrease in Landings (Numbers)**	**Decrease in Recreational CS - Snapper (Finite Mixture Model: $12.37/fish.)**	**Decrease in Recreational CS - Snapper (Mixed Logit Model: $30.25/fish)**
16”	4,082	$50,494	$123,481
17”	57,090	$706,203	$1,726,973
18”	68,105	$842,459	$2,060,176
19”	75,932	$939,279	$2,296,943
20”	82,587	$1,021,601	$2,498,257
Preferred Sub-alt 4b- 3 fish/person/day			
16”	1,210	$14,968	$36,603
17”	56,324	$696,728	$1,703,801
18”	**67,965**	**$840,727**	**$2,055,941**
19”	75,812	$937,794	$2,293,313
20”	82,332	$1,018,447	$2,490,543
Sub-alt 4c- 5 fish/person/day			
16”	254	$3,142	$7,684
17”	55,929	$691,842	$1,691,852
18”	67,910	$840,047	$2,054,278
19”	75,779	$937,386	$2,292,315
20”	82,080	$1,015,330	$2,482,920

Social Effects

In general, the social effects of modifying the recreational harvest limits would be associated with the biological costs of each alternative (see **Section 4.7.1**), as well as the effects on current recreational fishing opportunities. While **Alternatives 2-4 (Preferred)** could restrict recreational fishing opportunities for mutton snapper, especially under the spawning season limits in **Alternative 3**, the harvest limits would also be expected to contribute to long-term benefits to the stock and for future recreational opportunities.

Different levels of recreational fishing opportunities under each alternative could affect recreational anglers and for-hire businesses targeting mutton snapper. The social effects of bag limits and vessel limits can be associated with how many and at what times of year the recreational catch may be retained. Additionally, any long-term negative biological effects on the stock due to recreational landings from higher recreational harvest limits, or dead discards due to lower harvest limits, would also likely result in negative effects on recreational fishing opportunities in future years.

In general, social benefits from improved recreational fishing opportunities would result from harvest limits that has the largest portion of the year open to recreational harvest, with the highest number of fish per person, as long as the recreational ACL is not exceeded. **Alternative 1 (No Action)** would be the most beneficial to recreational fishermen in the short-term but could detract from measures to protect the stock during spawning activity. The limits during the 'regular season' [which depends on the potential spawning season designated in **Action 6**] under **Alternative 2** could have negative effects on opportunities to retain mutton snapper, with minimal or no effects under **Sub-alternative 2c**, and fewer potential effects under **Sub-alternative 2b**, followed by **Sub-alternative 2a**.

The potential vessel limits during the potential spawning season in **Alternative 3** could have negative effects on recreational fishing opportunities, specifically for headboat businesses with higher numbers of people on board, but would be expected to have long-term benefits to the stock. The most restrictive measure (no retention) under **Sub-alternative 3e** would be the most likely to have short-term negative effects on recreational fishermen and for-hire businesses, but would affect all levels of recreational participation (solo angler to headboats) at equal levels. The lower vessel limits would have more negative effects for vessels with more people on board, so (after no retention under **Sub-alternative 3e**) **Sub-alternative 3a** would likely have the most negative effects on recreational fishermen, followed by **Sub-alternative 3a, Sub-alternative 3b**, and **Sub-alternative 3c.**

Setting the recreational harvest limits year-round (**Preferred Alternative 4**) would reduce complexity of management measures, which would likely improve compliance. Negative short-term effects due to restrictions on retention of mutton snapper would increase with lower bag limits, so that the most negative effects would come from **Sub-alternative 4a**, followed by **Preferred Sub-alternative 4b**, and **Sub-alternative 4c**.

COMMITTEE ACTION:

NOTE EDITS TO ALTERNATIVE 1 (NO ACTION)

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERED ALTERNATIVE

ACTION 8. Modify mutton snapper commercial trip limit in the South Atlantic Region

Alternative 1 (No Action). ~~During May-June 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, and sale is allowed. There is no trip limit for the commercial sector in the Gulf or South Atlantic from July through April.~~
During May and June, each year, the possession of mutton snapper in or from the exclusive economic zone on board a vessel that has a commercial permit for South Atlantic snapper-grouper is limited to 10 per person per day or 10 per person per trip, whichever is more restrictive. There is no possession or trip limit for the commercial sector in the South Atlantic from July through April.

Preferred Alternative 2. Establish a commercial trip limit for mutton snapper during the "regular season" (i.e., non-spawning months) in the South Atlantic.

Preferred Sub-alternative 2a. 300 pounds whole weight
Sub-alternative 2b. 400 pounds whole weight
Sub-alternative 2c. 500 pounds whole weight

Preferred Alternative 3. Specify a commercial trip limit for mutton snapper during the "spawning months" in the South Atlantic.

Sub-alternative 3a. 2 fish/person/day
Preferred Sub-alternative 3b. 3 fish/person/day
Sub-alternative 3c. 10 fish/vessel/day
Sub-alternative 3d. 12 fish/vessel/day
Sub-alternative 3e. No retention

Biological Effects

Table 4.8.1 shows commercial landings of mutton snapper by gear type from 2004-2014 in the South Atlantic. The predominant gear for harvesting mutton snapper in South Atlantic waters has been vertical line gear (**Table 4.8.1**). Trap gear was phased out in the Gulf in 2007; however, trap landings of mutton snapper are still reported in the South Atlantic and are likely bycatch from the spiny lobster fishery (Matthews et al. 2005).

Commercial landings of mutton snapper in the South Atlantic region are highest during the May-June peak spawning period (**Figure 4.8.1**) despite the current restriction on harvest. Overall South Atlantic landings of mutton snapper were highest in 2004, decreased through 2011, and then had an overall increase until 2014 (**Figure 4.8.2**).

Table 4.8.1. Commercial landings of mutton snapper by gear in the South Atlantic for 2004-2013. Landings are reported in pounds whole weight. Confidential landings are labeled as "NA".

Year	Vertical	Traps	Diving	Other
2004	98,513	6,225	3,805	709
2005	81,551	2,662	5,023	2,436
2006	59,071	3,427	2,959	608
2007	59,955	5,918	3,770	1,343
2008	61,836	2,296	3,052	829
2009	69,088	1,873	3,429	915
2010	66,464	4,048	2,759	822
2011	54,997	7,111	3,599	372
2012	66,912	3,875	6,156	NA
2013	60,586	3,321	8,865	NA
2014	83,811	3,410	3,701	251

Source: Commercial ACL dataset. South Atlantic vertical line includes: hook-and-line by hand, hook-and-line power assisted (bandit) and hook-and-line troll. "Other" includes landings from the following gear types: gill nets, lift nets, seine nets, and unclassified gear.

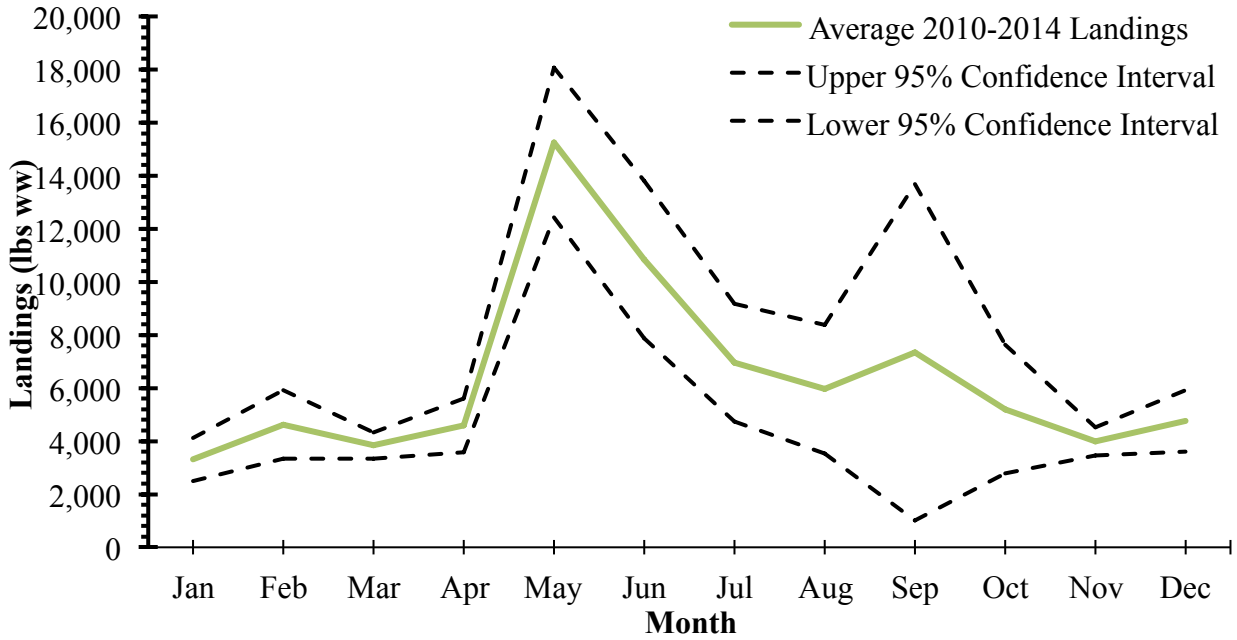


Figure 4.8.1. Average annual South Atlantic commercial mutton snapper landings by month from 2010-2014 and 95% confidence intervals.
Source: Commercial ACL dataset.

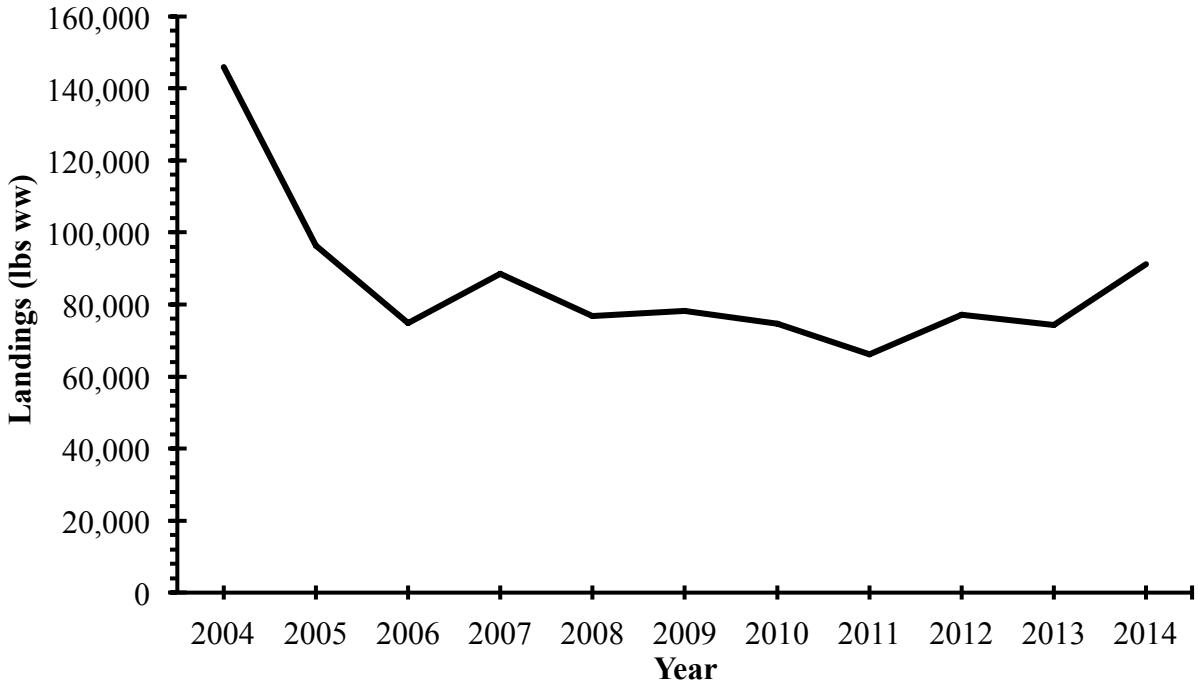


Figure 4.8.2. South Atlantic annual commercial landings (lbs ww) of mutton snapper. Source: Commercial ACL dataset.

Commercial logbook data (accessed September 3, 2015) were explored to determine trip-level harvest of mutton snapper. The most recent years of complete data (2012-2014) indicated 4,551 trips in the South Atlantic harvested mutton snapper.

Currently, restrictions on the commercial harvest of mutton snapper in the South Atlantic only apply to May-June when commercial harvest is restricted to 10 mutton snapper per person per day or 10 per person trip, whichever is more restrictive. There were no significant differences in the amount of mutton snapper landed per trip during May-June compared to the rest of the year (**Figure 4.8.3**). However, the number of trips per month was higher during May and June than during the rest of the year.

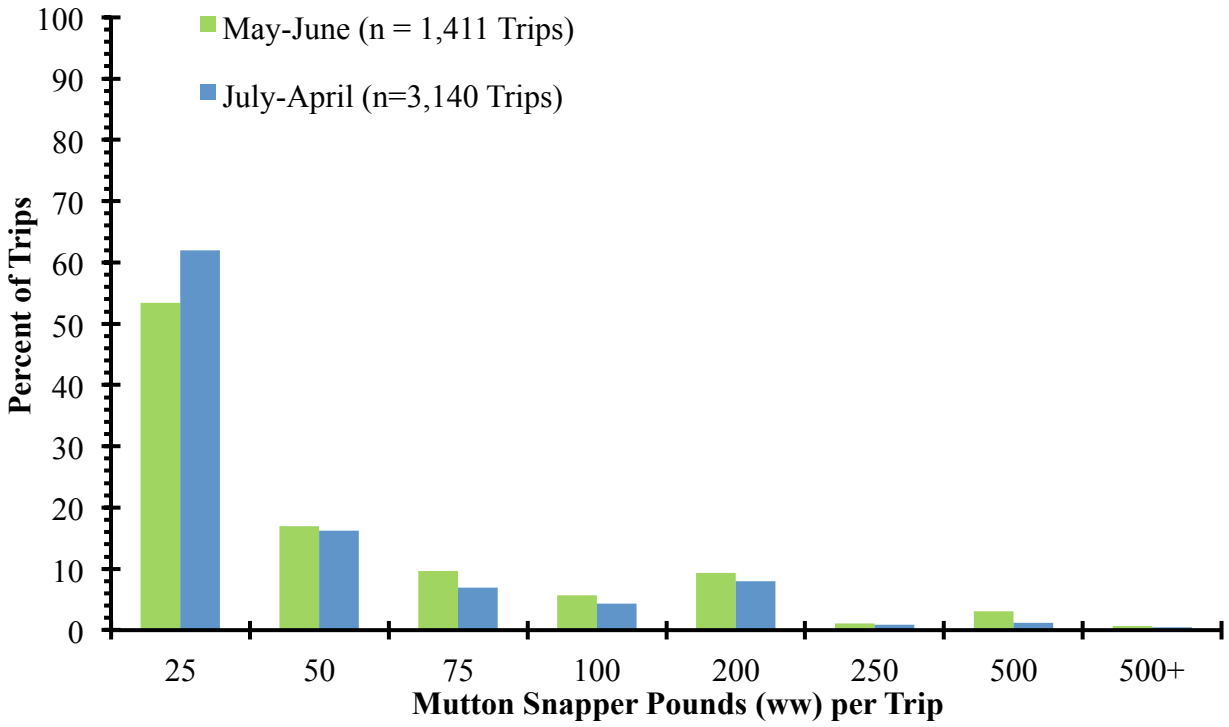


Figure 4.8.3. Distribution of mutton snapper harvested per trip (lbs ww) in the South Atlantic region from the commercial logbook dataset from 2012 to 2014. Commercial restrictions only apply to the commercial sector during May-June.

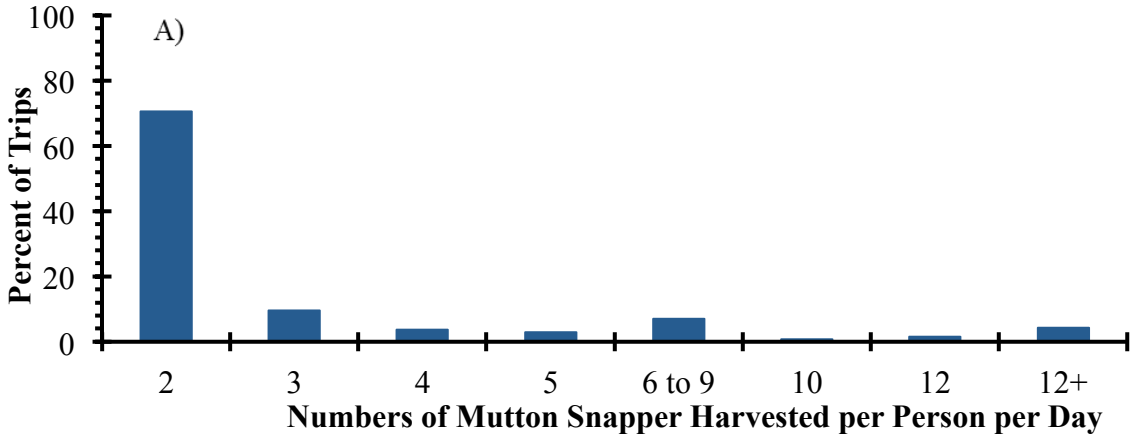
Preferred Alternative 2 and its sub-alternatives propose implementing a trip limit (defined in pounds whole weight) during the 'regular season'. Based on **Preferred Sub-alternative 2a** under **Action 6**, the "regular season" would consist of July through March. Commercial logbook data were analyzed by imposing the **Preferred Alternative 2** proposed trip limits only during the "regular season". Landings during the in "spawning months" (April-June under **Preferred Sub-alternative 2a**, **Action 6**) were not modified. Predicted percent reductions in commercial landings are shown in **Table 4.8.2**. A commercial trip limit of 300 lbs ww (**Preferred Sub-alternative 2a**) outside of the designated spawning months (April through June according to **Preferred Sub-alternative 2a**, **Action 6**) is expected to result in a 6% decrease in commercial harvest of mutton snapper.

Table 4.8.2. Percent decreases in commercial landings for trip limits proposed under **Preferred Alternative 2** of **Action 8**. Preferred indicated in bold.

Regular Season	Trip Limit		
	300 lbs ww	400 lbs ww	500 lbs ww
July - April	**-6.0%**	-4.6%	-3.7%
July - March	**-5.9%**	**-4.5%**	**-3.7%**
August - March	**-4.1%**	-3.0%	-2.3%
August - April	**-4.2%**	-3.0%	-2.3%

Source: NMFS SERO.
NOTE: Estimates are from commercial logbook data from 2012 to 2014 and percent reductions were calculated for imposing a trip limit during the 'regular season'.

The commercial logbook data provide landings in pounds; however, the current South Atlantic mutton snapper commercial harvest restriction during May-June is specified in numbers of fish. As such, the commercial sector is restricted to 10 mutton snapper per person per day during May and June, or 10 per person per trip, whichever is more restrictive. **Preferred Alternative 3** of **Action 8** proposes trip limits in numbers of fish during the "spawning months" designated under **Action 6**. Landings in pounds were converted to numbers of fish by dividing the harvest in pounds by the mutton snapper average weight. Average weight was determined to be 7.68 lbs ww in the commercial sector in the recent assessment (SEDAR 15A Update 2015). **Figure 4.8.4** shows the distribution of numbers of mutton snapper harvested per person per day (A) and per vessel per day (B) during May-June from 2012 through 2014. As mentioned previously, **Alternative 1 (No Action)** specifies a commercial trip limit of 10 fish per person per day or 10 fish per person per trip , whichever is more restrictive. There is the potential, however, for vessels to intentionally carry additional people on commercial trips during May and June to maximize harvest of mutton snapper. **Figure 4.8.4 (A)** shows that 5.8% of the trips that took place during May and June from 2012 through 2014 exceeded the current 10 fish per person per day limit.



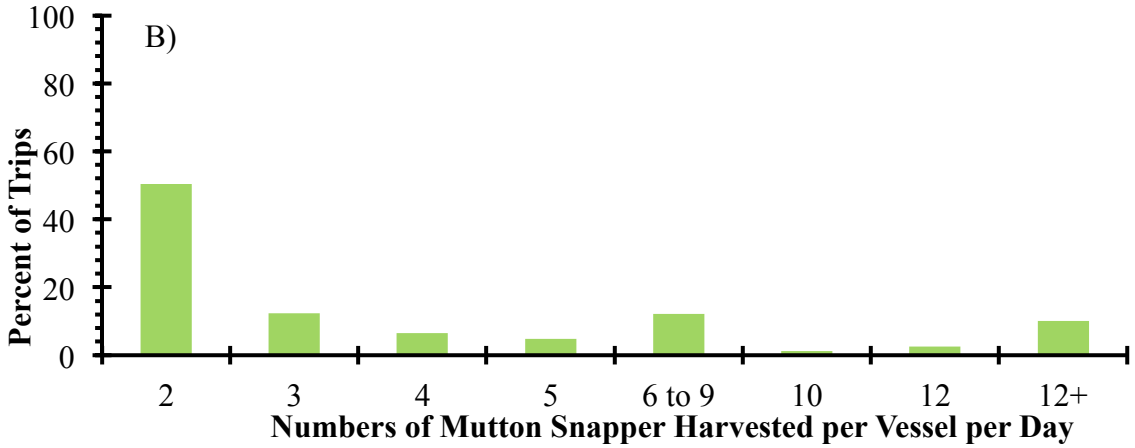


Figure 4.8.4. Distribution of the numbers of mutton snapper harvested per person per day (A) and per vessel per day (B) in the South Atlantic region during May and June. Data are from the commercial logbook dataset from 2012 through 2014 (n = 1,411 trips).

Percent reductions in commercial landings were calculated for the reduced bag limits of 0 (no retention, **Sub-alternative 3e**), 2 fish (**Sub-alternative 2a**), and 3 fish (**Preferred sub-alternative 3b**) during the proposed "spawning season" alternatives under **Action 6**.

The analysis for **Preferred Alterative 3** only focused on trips during the "spawning season" alternatives as defined under **Action 6**. Trips outside the "spawning season" were not analyzed and/or modified. Under the preferred alternative to designate April through June as the spawning months for regulatory purposes (**Preferred Sub-alternative 2a**, **Action 6**) and under the preferred commercial possession limit of 3 fish per person per day (**Preferred Sub-alternative 3b**), commercial harvest of mutton snapper is expected to decrease by 19% (**Table 4.8.3**). **Sub-alternatives 3c** (10 fish/vessel/day) and **3d** (12 fish/vessel/day) , which would apply during the "spawning months", would result in a decrease in commercial landings compared to **Alternative 1 (No Action)** because the current 10 fish limit is per person. Therefore, under current regulations, a one-day trip with two people could potentially land 20 mutton snapper. However, under **Sub-alternatives 3c** and **3d** a one-day trip could only result in 10 or 12 mutton snapper harvested, respectively, regardless of the number of people on the boat. **Sub-alternatives 3c** and **3d** would result in a slightly smaller (5% and 3.5%, respectively) reduction in harvest than **Preferred Sub-alternative 2a**. Overall, if the South Atlantic Council were to propose adoption of both **Preferred Sub-alternative 2a** and **Preferred Sub-alternative 3b**, commercial landings of mutton snapper would be expected to decrease by about 25%.

Table 4.8.3. Projected percent decrease in commercial landings of mutton snapper for commercial trip limits proposed under Preferred Alternative 3 of Action 8. PP denotes "per person" and PV denotes "per vessel". Preferred alternatives indicated in bold.

Spawning Season	Trip Limit				
	No Retention	2 fish/ person/day	3 fish/ person/day	10 fish/ vessel/day	12 fish/ vessel/day
May-June	-35.8%	-20.0%	**-16.3%**	-4.1%	-2.8%
April-June	**-41.7%**	**-23.5%**	**-19.3%**	**-5.0%**	**-3.5%**
April-July	-52.6%	-29.6%	**-24.2%**	-6.9%	-5.1%
May-July	-46.6%	-29.6%	**-21.3%**	-6.0%	-4.5%

Source: NMFS SERO. Commercial logbook data 2012-2014

Trip limits do not generally result in biological effects, positive or negative, since harvest is constrained by the ACL to a level that is sustainable over the long-term. However, as with recreational bag limits, measures that limit fishing mortality when a species is most vulnerable to harvest, such as during formation of spawning aggregations, would be biologically beneficial. As such, **Preferred Alternative 3** and its sub-alternatives would be more biologically beneficial than **Preferred Alternative 2** and its sub-alternatives since they would presumably reduce harvest when mutton snapper are spawning. However, even though **Alternative 1 (No Action)** places some level of constraint on commercial harvest of mutton snapper during the spawning season, commercial landings have been highest during this time of year (**Figure 4.8.1** and **Table 4.8.2**) indicating that current regulations are ineffective. Therefore, **Preferred Alternative 3** and its sub-alternatives would likely result in biological benefits relative to **Alternative 1 (No Action)**. Among the **Preferred Alternative 3** sub-alternatives, **Sub-alternative 3e** would be the most biologically beneficial to the mutton snapper stock as it would prohibit commercial harvest during the spawning months. **Sub-alternatives 3a-3d** do not, however, cap commercial harvest on multi-day trips, as do current regulations under **Alternative 1 (No Action)**. While this may have the potential of reducing the efficacy of regulations aimed at protecting spawning fish, the percentage of commercial vessels engaging in multi-day trip is small. According to commercial logbook data from 2012 through 2014, 70% (n = 989 trips) of commercial fishing trips that landed mutton snapper during May and June were one-day trips.

The alternatives and sub-alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types used. Therefore, there are no impacts on ESA-listed species or designated critical habitats anticipated as a result of this action (see **Section 3.2.4** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no impacts on EFH or EFH-HAPC are expected to result from any of the alternatives considered for this action (see **Section 3.1** for a detailed description of EFH in the South Atlantic Region).

Economic Effects

Generally, trip limits are not considered to be economically efficient because they require an increase in the number of trips and associated trip costs to land the same

amount of fish. However, the negative economic effects of this inefficiency can be offset by price support resulting from the supply limitations and the lengthening of seasons. Given the fairly restrictive ACL of mutton snapper, the alternative with the fewest number of trips that have to stop targeting mutton snapper because the trip limit has been reached would result in the least amount of direct negative economic effects, assuming the season does not close. There are no specific trip costs available for trips landing mutton snapper; therefore, specific values associated with trip costs cannot be estimated.

The sub-alternatives of **Preferred Alternative 2** set trip limits during the non-spawning season. The lower the trip limit, the more likely some commercial vessels will experience negative economic effects. Lower trip limits may reduce profitability for commercial vessels through a reduction in revenue and efficiency. Some permit holders are restricted to a 225-pound limit of snapper grouper species and would not be effected by the commercial trip limits in **Preferred Alternative 2**. For the remaining permit holders, negative economic effects may occur due to trip limits proposed in **Preferred Alternative 2**, however these effects are expected to be minimal on most trips, as the vast majority of commercial trips land 300 pounds or less of mutton snapper per trip (**Figure 4.8.3**).

The sub-alternatives of **Preferred Alternative 3** set trip limits during the designated spawning season (**Action 5**). The severity of such impacts would be based on the overall dependence a vessel has on mutton snapper, the ability of the vessel to exceed the current trip limits specified during the spawning season in **Action 1 (No Action)**, and the vessel's ability to substitute other species to make up for loss of revenue from reduced mutton snapper landings. The potential positive or negative economic effects of **Sub-alternative 3a** and **Preferred Sub-alternative 3b** would be dependent on how many crew members are onboard a vessel and the length of the trip, but there is the potential to increase commercial mutton snapper landings per trip over what is currently allowed under **Alternative 1 (No Action)** on multi-day trips if more than 10 mutton snapper can be legally kept given the number of crew. If the number of crew and length of trip do not allow the retention of 10 mutton snapper per vessel, then negative economic effects could occur from these sub-alternatives. Increased harvest of mutton snapper per trip during the spawning season could also occur under **Sub-alternative 3c** and **Sub-alternative 3d** on multi-day trips, since the trip limit would be per vessel instead of per trip, whichever is more restrictive. **Sub-alternative 3e** would have the highest potential negative economic effect of the sub-alternatives under **Preferred Alternative 3**, with no retention of mutton snapper on commercial trips during the spawning season.

Social Effects

Commercial fishermen in the communities identified in **Section 3.3.2** would likely be those affected by a change in commercial harvest limits for mutton snapper. However, it is likely that fishermen who have targeted mutton snapper in recent years also target other species, and would be able to adjust their businesses to adapt to regulatory changes. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded, but trip limits that are too low may make fishing

trips inefficient and too costly if fishing grounds are too far away. Additionally, if the trip limit is too low, the commercial ACL may not be met.

The effects of establishing a trip limit for non-spawning season months (**Preferred Alternative 2**) would depend on the level of landings of mutton for commercial trips in recent years. In general, most trips land less than 300 lbs ww of mutton snapper, and a large proportion lands under 50 lbs ww per trip (**Figure 4.8.3**). This suggests that mutton snapper are part of a varied catch combination on commercial trips. The expected effects on commercial fishermen on trips targeting mutton snapper (likely along with several other species on the same trip) under **Preferred Sub-alternative 2a**, **Sub-alternative 2b**, and **Sub-alternative 2c** are expected to be minimal to none.

The effects of the vessel limit for the spawning season (**Preferred Alternative 3**) would depend on if commercial vessels were reaching the limits in **Alternative 1 (No Action)** and the level of restriction relative to current commercial harvest. During the period of potential designated spawning season, most commercial trips land 50 lbs ww or less (**Figure 4.8.3**). Even with a possession limit proposed under **Sub-alternatives 3a-3d**, there would likely be minimal effects on commercial fishermen on trips targeting mutton snapper (likely as part of multi-species trips). **Sub-alternative 3e** would be the most restrictive and could have negative effects on commercial vessels if mutton snapper is a primary target species, but would not be expected to have more than minimal effects for most commercial fishermen. The lower vessel limits would have more negative effects for vessels with more people on board; so (after no retention under **Sub-alternative 3e**) **Sub-alternative 3a** could have the most negative effects, followed by **Preferred Sub-alternative 3b**, **Sub-alternative 3c**, and **Sub-alternative 3d.**

COMMITTEE ACTION:

NOTE EDITS TO ALTERNATIVE 1 (NO ACTION)

- APPROVE EDITS TO ALTERNATIVE 2 UNDER ACTION 8

- CONSIDER PUBLIC COMMENT AND SELECTION OF PREFERRED ALTERNATIVE.

- DISCUSS WHETHER TO ADD LANGUAGE TO ALTERNATIVES TO ADDRESS “PER TRIP” LIMIT

Timing

- September 2016 – review public comments, make modifications as needed, and approve all actions
- December 2016 – approve for formal review