Amendment 53

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

Catch Level Adjustments, Rebuilding Schedule, and Allocations for Gag

Decision Document

June 2022

Background

The most recent stock assessment for gag, SEDAR71, was completed in 2021. The terminal year of the assessment is 2019. This assessment used revised estimates for recreational catch from the Marine Recreational Information Program (MRIP) based on the Fishing Effort Survey (FES). The results of this assessment indicated that the stock is overfished and experiencing overfishing (Figure 1). The Council's SSC reviewed SEDAR 71 at their April 2021 meeting and determined that the assessment is based on the best scientific information available (BSIA). Gag management measures have been

modified through past amendments to end overfishing and better achieve ACLs. These modifications have included changes to the bag limit, minimum size limit, and season length (Appendix A).

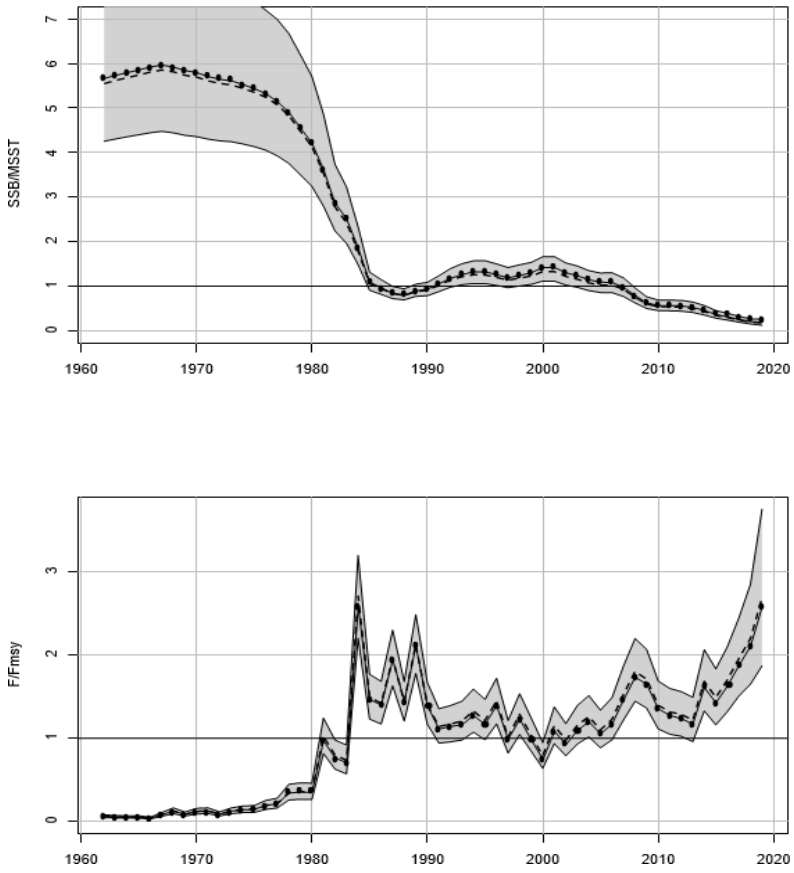

Figure 1. Estimated time series of spawning stock biomass (SSB) and fishing mortality (F) relative to benchmarks. Solid line indicates estimates from base run of the Beaufort Assessment Model; gray error bands indicate 5th and 95thpercentiles of the ensemble modeling. Top panel: SSB relative to the minimum stock size threshold (MSST); if less than 1, stock is overfished. Bottom panel: F relative to F_{MSY}; if > 1 stock is undergoing overfishing. *Source: SEDAR 71 (2021).*

NMFS notified the Council on June 10, 2021, that management action is necessary for gag as thestock is undergoing overfishing and remains overfished. Once the Council is notified that a stock is undergoing overfishing and is overfished, the Magnuson-Stevens Fishery Conservation and Management Act requires the Council and NMFS to end overfishing immediately and implement a rebuilding plan within two years.

Assessment Link:
http://sedarweb.org/docs/sar/SEDAR_71_SAR_4.19.21_final_withaddendum.pdf/

Fishery Overview: https://safmc-shinyapps.shinyapps.io/SA_FisheryDataGag/

The Council reviewed the results of the assessment and the SSC's recommendations for the overfishing limit (OFL) at their June 2021 meeting and initiated a plan amendment to adjust catch levels to end overfishing and rebuild the stock. Under National Standard 1 guidelines, if astock can be rebuilt in 10 years or less, then the rebuilding plan may not exceed 10 years.

Assessment projections indicated the gag stock can rebuild in 7 years in the absence of fishing mortality, therefore, the rebuilding plan for gag may not exceed 10 years.

During their April 2022 meeting, the Snapper Grouper Advisory Panel (AP) reviewed adiscussion document updated after the March 2022 Council meeting, which included some preferred alternatives and any alterations to the amendment. AP comments are provided in the AP Report.

Background Overview		
SEDAR History	**Stock Status**	
Assessment	**Overfished**	**Overfishing**
SEDAR 10 (2006)		X
SEDAR 10 Update (2014)		X
SEDAR 71 (2021)	X	X
Pre-Amendment Action Schedule		
Assessment results reviewed	21-Jun	
Direction to start amendment	21-Jun	
Rebuilding timeframe (T_{max}) provided	21-Sep	
NFMS letter received	June 10th 2021	

Acceptable Biological Catch and Overfishing Limit

The SSC reviewed the gag stock assessment (SEDAR 71 2021) at their May 2021 meeting. TheSSC found that the assessment addressed the terms of reference appropriately, was conducted using the BSIA, was adequate for determining stock status and supporting fishing level recommendations and addressed uncertainty consistent with expectations and available information. The Council requested several different rebuilding projections including 50% and 70% probability of rebuilding under different recruitment scenarios, including recent low recruitment and longer-term modeled recruitment based on spawning stock size. At their October 2021 meeting, the SSC recommended OFL/ABC values based on a 70% probability of rebuilding in 10 years and recruitment based on the spawner-recruit relationship from the SEDAR 71 stock assessment (2021).

At the December 2021 meeting, the Council provided guidance to staff to request additional ABC recommendations based on a 60% probability of rebuilding to help minimize social and economic impacts while still preventing overfishing. The SSC met in February 2022 to review this scenario. After discussion, the SSC continued to recommend a 70% probability of rebuilding in 10 years and recruitment based on the spawner-recruit relationship from the SEDAR 71 stock assessment (2021) (**Table 1**). During the March 2022 Council meeting the Council accepted the 70% probability of rebuilding in 10 years and recruitment based on the spawner-recruit relationship from the SEDAR 71 stock assessment (2021).

Table 1. South Atlantic gag OFL and ABC recommendations based on a 70% probability ofrebuilding in 10 years and recruitment based on the spawner-recruit relationship from the SEDAR 71 (2021) (SSC Meeting Report, October 2021). Note: Commercial and recreationallandings are expressed in pounds gutted weight (lbs gw).

OFL RECOMMENDATIONS		
Year	**Landings (lbs gw)**	**Landings (Numbers)**
2023	367,235	35,621
2024	494,338	44,843
2025	605,227	52,622
2026	706,366	60,151
2027	808,266	68,072
2028	912,033	75,932
2029	1,011,133	83,028
2030	1,098,379	88,942
2031	1,171,120	93,683
2032	1,230,363	97,454
ABC RECOMMENDATIONS		
Year	**Landings (lbs gw)**	**Landings (Numbers)**
2023	175,632	16,925
2024	261,171	23,158
2025	348,352	29,077
2026	435,081	34,954
2027	524,625	41,129
2028	617,778	47,415
2029	711,419	53,422
2030	800,088	58,772
2031	879,758	63,304
2032	948,911	67,043

Proposed management changes in this amendment

- Adjust catch levels (acceptable biological catch and annual catch limit) and revise annual optimum yield
- Revise sector allocations
- Consider other changes to management

Objectives for this meeting

- Review Actions and Alternatives
- Review Snapper Grouper AP feedback where appropriate
- Select preferred alternatives as appropriate

Tentative amendment timing

March 2021	Reviewed SEDAR 36 Update results and direct staff to begin a plan amendment
September 2021	Review options paper and provide guidance to staff
October 2021	Obtain input from AP
December 2021	Review AP comments, review preliminary analyses, and approve for scoping
March 2022	Review scoping comments and make needed modifications
April 2022	Obtain input from AP
June 2022	**Review draft amendment, preliminary analysis, and provide guidance to staff**
September 2022	Review modifications to the amendment, select preferred alternatives, and approve for public hearings
Fall 2022	Conduct public hearings
December 2022	Review public hearing comments, select preferred alternatives, and approve all actions
March 2023	Review final amendment and approval for final review

Council action at previous meeting

- Reviewed the February 2022 scoping comments
- Reviewed the LE AP's comments on spearfishing enforceability
- Reviewed the SSC's February meeting recommendations to use 70% $P_{rebuild}$ and recruitment from SEDAR 71
- Accepted the 70% $P_{rebuild}$ and recruitment from SEDAR 71 as the basis for ABC values
- For **Action 1 (Rebuilding Schedule):** Selected Option 3 (T_{max} = 10 years) as the preferred alternative
- For **Action 2 (ABC, ACL, OY):** Removed option 5 (ACL=OY=80% of ABC) and selected Option 2 (ACL=OY=ABC) as the preferred alternative
- For **Action 3 (Allocations):** Removed Option 4a (Novel allocation method using 2020 as base year) and modified Option 4b and 4c to use 2017-2019 and 2015-2019 respectively as the baseline years for the method
- For **Action 4 (Commercial Management Measures):** Removed Option 3 (length and slot limit)
- For **Action 5 (Recreational Management Measures):** Removed Options 2a, 2c, and 2e (1, 3, and 5 fish vessel limit) and Option 3 (size and slot limit)
    - Requested analysis to consider the effect of a vessel limit on headboats
- For **Action 6 (Spearfishing):** Removed the Action
- For **Action 7 (Accountability Measures)**: Directed staff to modify Action language to include both the commercial and recreational sectors.

Purpose and Need Statements

The *purpose* of this fishery management plan amendment is to establish a rebuilding plan, set an acceptable biological catch and overfishing limit, sector allocations, and annual catch limits for South Atlantic gag based on the results of the most recent stock assessment.

The *need* for this fishery management plan amendment is to end overfishing of South Atlantic gag, rebuild the stock, and achieve optimum yield while minimizing, to the extent practicable, adverse social and economic effects.

Committee Action: SUGGEST MODIFICATIONS AS APPROPRIATE

Proposed Actions

Action 1. Establish a rebuilding plan for gag

Purpose of Action

A rebuilding plan must be established to end overfishing and rebuild the stock of gag in the South Atlantic as a result of the overfished determination from the SEDAR 71 (2021) stock assessment.

Alternative 1 (No Action). The South Atlantic stock of gag is currently not under a rebuilding plan.

Alternative 2. Establish a rebuilding plan with a rebuilding timeframe to equal the shortest possible time to rebuild in the absence of fishing mortality (T_{min}). This would equal 7 years with the rebuilding period ending in 2029. 2023 would be Year 1.

Preferred Alternative 3. Establish a rebuilding plan with a rebuilding timeframe to equal T_{max}. This would equal 10 years with the rebuilding period ending in 2032. 2023 would be Year 1.

Table 2. ACL, OY, and ABC alternatives of **Action 1**.

Alternative	Rebuilding Timeframe	Terminal Year
Alternative 1 (no change)	0 years	NA
Alternative 2	T_{min}, 7 Years	2029
Preferred Alternative 3	**T_{max}, 10 Years**	**2032**

Discussion:

- Note that **Alternative 2** assumes that fishing mortality is zero and discards are eliminated. Therefore, it can be expected that under this scenario rebuilding would take longer than 7 years if discards are assumed to be greater than zero.

- Guidance on how to define the upper (Tmax) and lower (Tmin) bounds of a rebuildingschedule are specified in National Standard 1 (NS1) of the National Standard Guidelines.[1]

    - "Tmin means the amount of time the stock or stock complex is expected to take to rebuild to its MSY biomass level in the absence of any fishing

mortality. In this context, the term "expected" means to have at least a 1 50 percent probability of attaining the Bmsy, where such probabilities can be calculated. The starting year for the T_{min} calculation should be the first year that the rebuilding plan is expectedto be implemented."

- "If T_{min} for the stock or stock complex is 10 years or less, then T_{max} is 10 years."

- Assessment projections indicated the gag stock can rebuild in 7 years in the absence of fishing mortality; therefore, the rebuilding plan for gag may not exceed 10 years.

Snapper Grouper AP Feedback (April 2022): The AP noted that the private recreational sector needs to be defined (i.e., tag or endorsement) for gag to have a better chance of rebuilding.

Committee Action:

- CONSIDER SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE

[1] National Standard Guidelines are available at the following web address: https://www.fisheries.noaa.gov/national/laws-and-policies/national-standard-guidelines.

Action 2. Revise the total acceptable biological catch, annual catch limit, and annual optimum yield for gag

Purpose of Action

The gag total ACL is being revised to incorporate the new ABC recommendations of the SSC, based on the SEDAR 71 (2021) stock assessment, as well as the updated recreational landings from the Marine Recreational Information Program's (MRIP) Fishing Effort Survey (FES).

Alternative 1 (No Action). The total annual catch limit and annual optimum yield for gag are equal to 95% of the **current** acceptable biological catch (734,350 pounds gutted weight). The current acceptable biological catch level is inclusive of recreational estimates from the Marine Recreational Information Program's Coastal Household Telephone Survey.

Preferred Alternative 2. Revise the acceptable biological catch for gag and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for gag and set them **equal to the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Alternative 3. Revise the acceptable biological catch for gag and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for gag and set them equal to **95% of the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Alternative 4. Revise the acceptable biological catch for gag and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for gag and set them equal to **90% of the recommended** acceptable biological catch. The recommended acceptable biological catch is inclusive of recreational estimates from the Marine Recreational Information Program's Fishing Effort Survey.

Table 3. Summary of ACL, OY, and ABC alternatives for **Action 2**.

Alternative	ABC, total ACL, annual OY	Recreational landings data used
Alternative 1 (No Action)	ACL=OY=current ABC	MRIP-CHTS
Preferred Alternative 2	**ACL=OY=updated ABC**	**MRIP-FES**
Alternative 3	ACL=OY=95% updated ABC	MRIP-FES
Alternative 4	ACL=OY=90% updated ABC	MRIP-FES

Table 4. Total ACL values in pounds gutted weight for each alternative under **Action 2**.

	ACL (pounds gw)									
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032***
Alternative 1**	734,350	734,350	734,350	734,350	734,350	734,350	734,350	734,350	734,350	734,350
Preferred Alternative 2***	**175,632**	**261,171**	**348,352**	**435,081**	**524,625**	**617,778**	**711,419**	**800,088**	**879,758**	**948,911**
Alternative 3***	166,850	248,112	330,934	413,327	498,394	586,889	675,848	760,084	835,770	901,465
Alternative 4***	158,069	235,054	313,517	391,573	472,163	556,000	640,277	720,079	791,782	854,020

*2032 values would remain in place until modified.
**The ACL for Alternative 1 is inclusive of recreational landings tracked using the MRIP Coastal Household Telephone Survey.
***The ACLs for Alternatives 2 through 5 would be inclusive of recreational landings tracked using the MRIP Fishing Effort Survey.

Discussion:

- The Council has specified OY=ACL=ABC for most snapper grouper species. NS 1 guidelines state that although a Council can establish an annual OY, it must establish a long-term OY.

- OFL and ABC recommendations are for landed catch, as discards are estimated elsewhere in the assessment.

- While not applicable to the existing sector ACL, recreational landings were similar tocommercial landings in recent years when examined in FES terms (**Figure 2**).

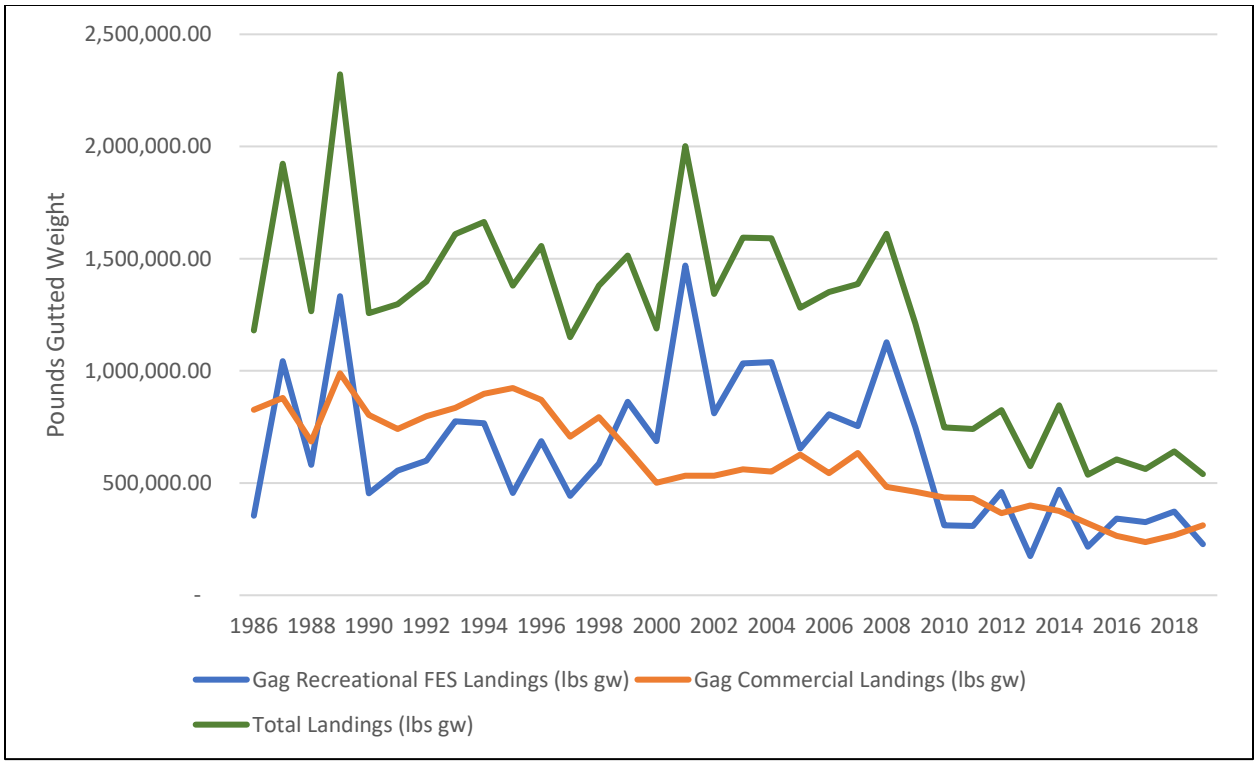

Figure 2. The recreational (MRIP FES) (blue), commercial landings (orange), and total landings (green) from 1986-2019.

- When compared to the last 5 years of total landings (lbs gw, inclusive of MRIP FES recreational landings) the ACL returns to recent total landings levels in 2028 (**Figure 3**).

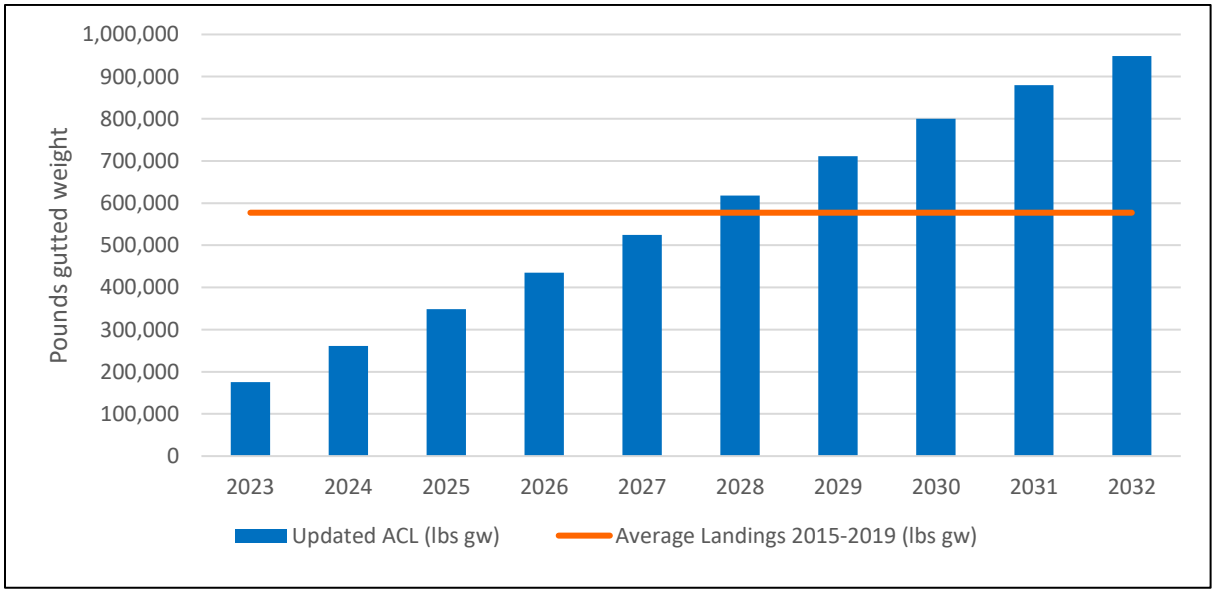

Figure 3. The comparison of the total gag landings from 2015-2019 (orange line) and proposed total ACLs (blue) under **Preferred Alternative 2** for **Action 2.**

Committee Action:

- REVIEW ALTERNATIVE LANGUAGE

Action 3. Revise the gag sector allocations and sector annual catch limits

Purpose of Action

Allocations need to be reviewed since the recreational landings stream changed in the new assessment. Recreational landings are now estimated using data from the Fishing Effort Survey rather than the Coastal Household Telephone Survey.

Alternative 1 (No Action). Retain the current recreational sector and commercial sector allocations as 49.00% and 51.00%, respectively, of the revised total annual catch limit for gag.

Alternative 2. Allocate 63.63% of the revised total annual catch limit for gag to the recreational sector and 36.37% of the revised total annual catch limit for gag to the commercial sector.

Alternative 3. Allocate 43.06% of the revised total annual catch limit for gag to the recreational sector and 56.94% of the revised total annual catch limit for gag to the commercial sector.

Alternative 4. To determine allocations throughout the rebuilding plan, use the following method: Use the total commercial and Marine Recreational Information Program Fishery Effort Survey recreational landings (*Sub-alternatives 4a and 4b*) as a baseline for initial reductions; apply the percent reduction from the total landings scenarios to the 2023 total annual catch limit evenly between sectors; apply each subsequent annual increase in the total ACL evenly to each sector ACL for Year 2 and each year thereafter throughout the rebuilding plan. Sector annual catch limits in the terminal year of the rebuilding plan (2032) would remain in place until modified.

> **Sub-Alternative 4a**. To determine allocations throughout the rebuilding plan, use the average commercial and recreational MRIP FES landings from 2017-2019 as the baseline (3-year average).
>
> **Sub-Alternative 4b**. To determine allocations throughout the rebuilding plan, use the average commercial and recreational MRIP FES landings from 2015-2019 as the baseline (5-year average).

Table 5. A summary of alternatives for **Action 3**.

Alternative	Recreational/Commercial allocation	Basis for allocation
Alternative 1 (No Action)	49%/51%	Landings distribution 1999-2003 used in Amendment 19 that incorporated CHTS recreational landings
Alternative 2	63.63%/36.37%	Updated landings distribution 1999-2003 incorporating MRIP FES recreational landings
Alternative 3	56.94%/43.06%	Comp ACL Amendment Allocation Formula
Alternative 4		
Sub-alternative 4a	Changes each year depending on initial decrease and subsequent increases	Distribution of commercial and recreational (MRIP FES) landings from 2017-2019
Sub-alternative 4b	Changes each year depending on initial decrease and subsequent increases	Distribution of commercial and recreational (MRIP FES) landings from 2015-2019

Note: all alternatives applied to the preferred alternative for the total ACL in **Action 2**.

Table 6. Total ACL and allocations for **Alternatives 1 (No Action)-3** under **Action 3**.

Alternative 1 (No Action)			
Year	**Total ACL (lbs gw)**	**Total Commercial ACL (lbs gw) (51%)**	**Recreational ACL (lbs gw) (49%)**
2023	175,632	89,572	86,060
2024	261,171	133,197	127,974
2025	348,352	177,660	170,692
2026	435,081	221,891	213,190
2027	524,625	267,559	257,066
2028	617,778	315,067	302,711
2029	711,419	362,824	348,595
2030	800,088	408,045	392,043
2031	879,758	448,677	431,081
2032	948,911	483,945	464,966
Alternative 2			
Year	**Total ACL (lbs gw)**	**Total Commercial ACL (lbs gw) (36.37%)**	**Recreational ACL (lbs gw) (63.63%)**
2023	175,632	63,877	111,755
2024	261,171	94,988	166,183
2025	348,352	126,696	221,656
2026	435,081	158,239	276,842
2027	524,625	190,806	333,819
2028	617,778	224,686	393,092
2029	711,419	258,743	452,676
2030	800,088	290,992	509,096
2031	879,758	319,968	559,790
2032	948,911	345,119	603,792
Alternative 3			
Year	**Total ACL (lbs gw)**	**Total Commercial ACL (lbs gw) (43.06%)**	**Recreational ACL (lbs gw) (56.94%)**
2023	175,632	75,627	100,005
2024	261,171	112,460	148,711
2025	348,352	150,000	198,352
2026	435,081	187,346	247,735
2027	524,625	225,904	298,721
2028	617,778	266,015	351,763
2029	711,419	306,337	405,082
2030	800,088	344,518	455,570
2031	879,758	378,824	500,934
2032	948,911	408,601	540,310

Note: The revised sector annual catch limits in Alternative 1 (No Action) through 3 reflect the revised total annual catch limit in Preferred Alternative 2 of Action 2. The revised total annual catch limit includes recreational landings from MRIP using the FES

method where appropriate, as well as updates to commercial and headboat landings used in the latest assessment (SEDAR 71).

Tables 7 and **8** present sector ACLs under **Sub-alternatives 4a** and **4b**.

Table 7. Sector ACLs for **Sub-alternative 4a** for **Action 3**, based on average gag landings from 2017-2019. Recreational landings are based on the MRIP FES method. Total ACL is reflective of Preferred Alternative 2 of Action 2.

Basis Years	Average Commercial Landings (lbs gw)	Average Recreational Landings (lbs gw)	Total Landings (lbs gw)
Average from 2017-2019	231,736	364,331	596,067

Year 1 Allocations						
Year 1	**Total ACL (lbs gw)**	**Percent Reduction Needed**	**Commercial ACL (lbs gw)**	**Commercial Allocation %**	**Recreational ACL (lbs gw)**	**Recreational Allocation %**
2023	175,632	71%	68,281	39%	107,350	61%

Remaining Rebuilding Years Allocations							
Years 2-10	**Total ACL (lbs gw)**	**Total Increase from Previous Year**	**Total Increase for Each Sector**	**Commercial ACL (lbs gw)**	**Commercial Allocation %**	**Recreational ACL (lbs gw)**	**Recreational Allocation %**
2024	261,171	85,539	42,770	111,051	43%	150,120	57%
2025	348,352	87,181	43,591	154,641	44%	193,710	56%
2026	435,081	86,729	43,365	198,006	46%	237,075	54%
2027	524,625	89,729	44,772	242,778	46%	281,847	54%
2028	617,778	89,544	46,577	289,354	47%	328,423	53%
2029	711,419	93,544	46,821	336,175	47%	375,244	53%
2030	800,088	79,670	44,335	380,509	48%	419,578	52%
2031	879,758	79,670	39,835	420,344	48%	459,413	52%
2032	948,911	69,153	34,576	454,921	48%	493,990	52%

Table 8. Sector ACLs for **Sub-alternative 4b** for **Action 3**, based on average gag landings from 2015-2019. Recreational landings are based on MRIP FES methods. Total ACL is reflective of Preferred Alternative 2 of Action 2.

Basis Years	Average Commercial Landings (lbs gw)	Average Recreational Landings (lbs gw)	Total Landings (lbs gw)
Average from 2015-2019	280,440	296,804	577,244

Year 1 Allocations						
Year 1	**Total ACL (lbs gw)**	**Percent Reduction Needed**	**Commercial ACL (lbs gw)**	**Commercial Allocation %**	**Recreational ACL (lbs gw)**	**Recreational Allocation %**
2023	175,632	70%	85,326	49%	90,306	51%

Remaining Rebuilding Years Allocations							
Year 2-10	**Total ACL (lbs gw)**	**Total Increase from Previous Year**	**Total Increase for Each Sector**	**Commercial ACL (lbs gw)**	**Commercial Allocation %**	**Recreational ACL (lbs gw)**	**Recreational Allocation %**
2024	261,171	85,539	42,770	128,096	49%	133,057	51%
2025	348,352	87,181	43,591	171,687	49%	176,666	51%
2026	435,081	86,729	43,365	215,051	49%	220,030	51%
2027	524,625	89,729	44,772	259,823	50%	264,802	50%
2028	617,778	89,544	46,577	306,400	50%	311,379	50%
2029	711,419	93,544	46,821	353,220	50%	358,199	50%
2030	800,088	88,669	44,335	397,555	50%	402,534	50%
2031	879,758	79,670	39,835	437,390	50%	442,369	50%
2032	948,911	69,153	34,577	471,966	50%	476,945	50%

Discussion:

- Sector allocations for gag were implemented through Amendment 16 to the FMP (SAFMC 2008) (commercial 51%, recreational 49%) using the landings distribution from 1999 through 2003.

- While not previously used for gag, an allocation formula was adopted through the Comprehensive ACL Amendment (SAFMC 2011) for unassessed snapper grouper species. The same formula has also been used to allocate the total ACL for some assessed species (e.g., golden tilefish). This formula was recently selected as the preferred method for red porgy (Amendment 50 to the FMP):

Sector Allocation Percentage = ((sector's mean landings 2006 to 2008)*0.5)+((sector's mean landings 1986 to 2008)*0.5)

- **Alternative 4** is a novel allocation method that was proposed in December 2021. The method aims to implement the reductions in harvest needed in year one to achieve updated catch levels, proportional to the way the fishery is operating.

After the initial year, the catch levels increase, and this increase is split equally between sectors. **Figure 4** provides an example of this method using the three-year average basis.

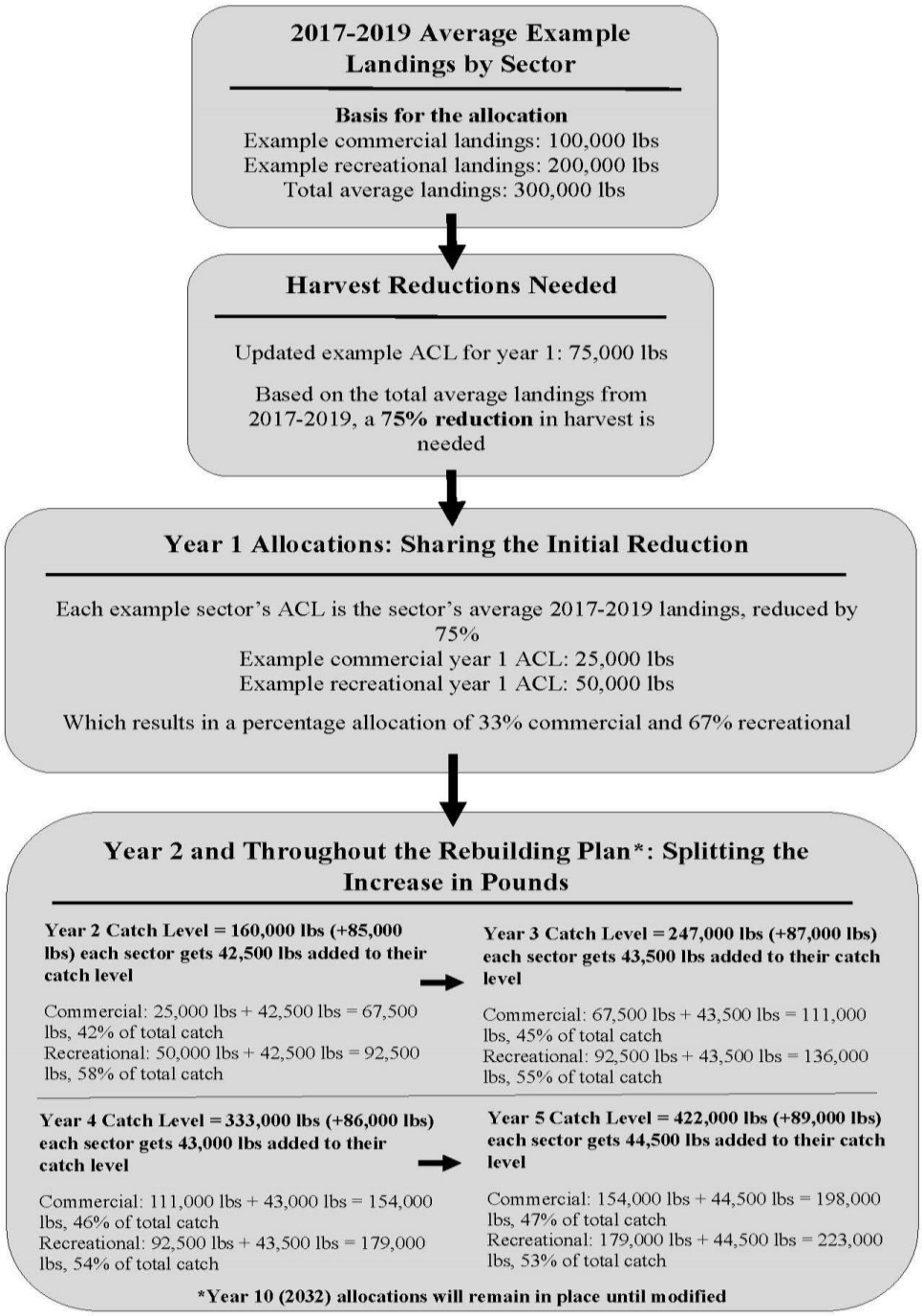

Figure 4. A 3-year based example of **Alternative 4** from **Action 3.**

- For the last 5 years, both sectors have been harvesting under their respective sector ACLs. There have been no in-season closures for gag from 2015-2019 for either

sector.

- When comparing allocation alternatives to the average commercial landings from 2015-2019, the commercial ACLs fall below the average landings for all alternatives from 2023 through 2027, with **Alternative 1 (No Action)** nearing average landings in 2027 (**Figure 5**).

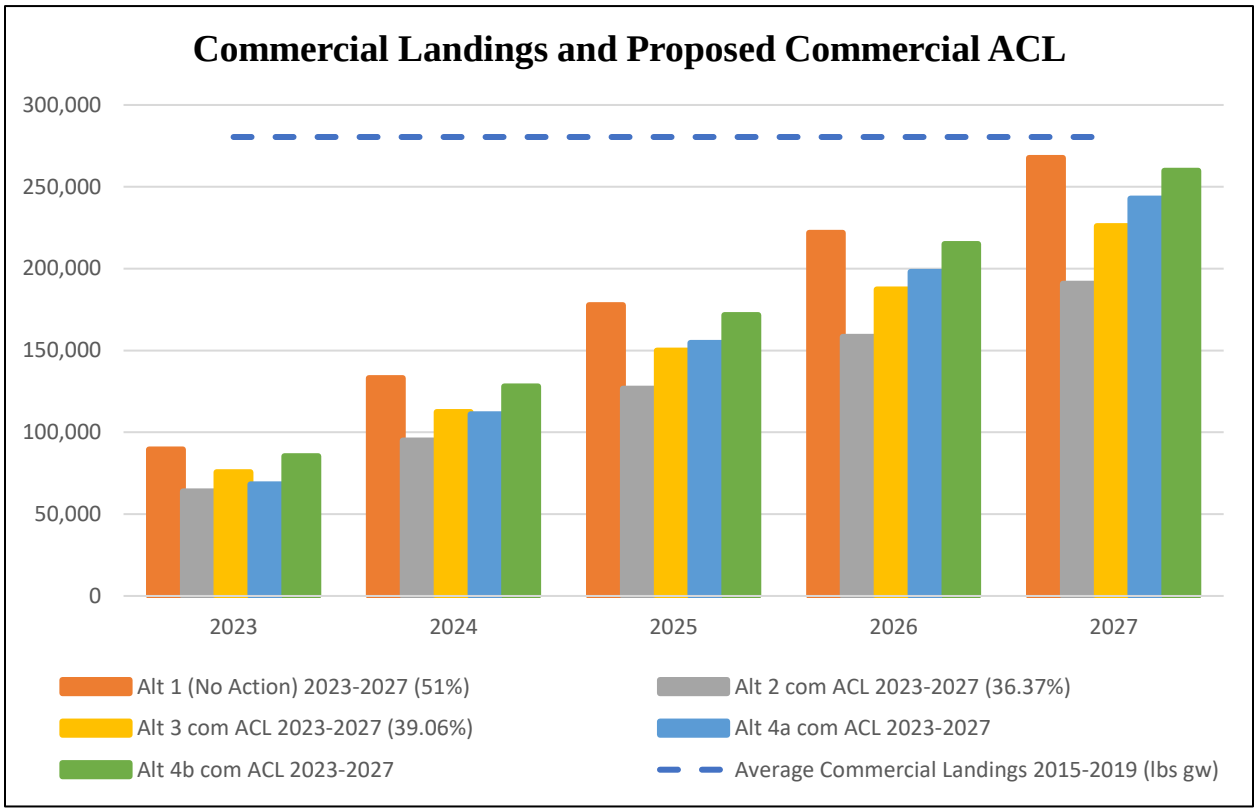

Figure 5. Average commercial landings (lbs gw) from 2015-2019 compared to the proposed ACLs from **Alternative 1 (No Action) – 4b** for **Action 3**.

- When comparing allocation alternatives to the average recreational landings from 2015-2019, the recreational ACLs fall below the average landings for all alternatives from 2023 through 2026. In 2027 recreational ACLs for **Alternative 2** and **3** are above average landings (**Figure 6**).

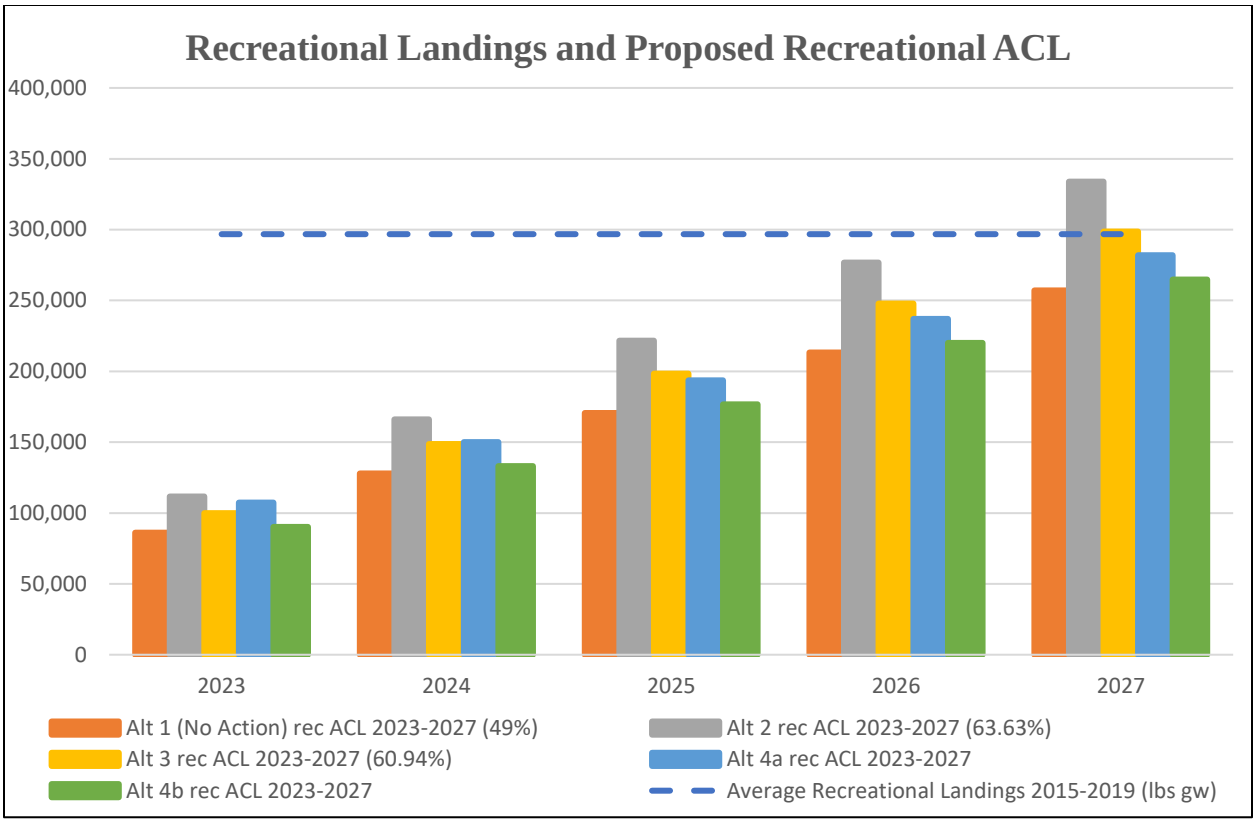

Figure 6. Average recreational landings (lbs gw) from 2015-2019 (MRIP FES units) compared to the proposed ACLs from **Alternative 1 (No Action) – Sub-Alternative 4b** for **Action 3**.

Preliminary Analysis:

- The predicted season length for each sector are as follows:
    - Commercial sector
        - Under **Alternatives 2** and **3** the commercial sector is predicted to close in a little over a month after the season opens May 1 within the first year of the rebuilding plan (2023).
        - By 2027 the season is predicted to close in early November for **Alternative 2** and mid-December for **Alternative 3**.
        - By 2032 (end of the rebuilding plan) there is not expected to be any closures. 2029 is the first year the landings are predicted to fall below the commercial ACL (**Table 9**).
        - Under **Sub-alternatives 4a** and **4b** the commercial sector is predicted to close for 42 days and 55 days respectively within the first year of the rebuilding timeframe (2023). In 2027 and thereafter there are not predicted to be any closures (**Table 9**).
    - Recreational sector
        - Under **Alternative 2** the recreational sector is predicted to close after 58 days in 2023. The recreational season is predicted to continue to close

each year until 2027. 2027 and each year thereafter, throughout the rebuilding plan there is not predicted to be a closure.

- Under **Alternative 3**, a 52-day season, closing in June is predicted in 2023. The season length is predicted to increase in 2027, with a closure expected in early December. After 2028, there are not expected to be any closures under this alternative (**Table 9**).
- Under **Sub-alternatives 4a** and **4b** a roughly 50-day season is expected in 2023 for both alternatives. Closures are predicted to continue through 2027 where the season is expected to close in early November for **Sub-alternative 4a** and mid-October for **Sub-alternative 4b**. By 2028 and thereafter, closures are not expected (**Table 9**).

- See Appendix C for full analysis.

Table 9. The projected South Atlantic gag commercial and recreational landings (lbs gw) and closure dates expected with each proposed annual catch limit alternative for Action 3. Alternative 1 (No Action) of Action 3 is omitted since it is identical to Action 2 Alternatives.
Note: All sector allocation options considered in alternatives 2-3 were applied to the revised total ACL of preferred Alternative 2 of Action 2. All ACLs and projected landings are in pounds gutted weight.
*The recreational ACLs presented are inclusive of recreational landings tracked using the MRIP Fishing Effort Survey.

Action 3, Alternative 2: 63.63% recreational and 36.37% commercial								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	111,755	311,339	**Jun 28**	58	63,877	231,667	**Jun 9**	39
2027	333,819		None	245	190,806		**Nov 4**	187
2032	603,792		None	245	345,119		None	245
Action 3, Alternative 3: 43.06% recreational and 56.94% commercial								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	100,005	311,339	**Jun 22**	52	75,627	231,667	**Jun 18**	48
2027	298,721		**Dec 9**	222	225,904		**Dec 22**	235
2032	540,310		None	245	408,601		None	245
Action 3, Alternative 4a: 3-year average shared reduction								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	107,350	311,339	**Jun 26**	56	68,281	231,667	**Jun 12**	42
2027	281,847		**Nov 9**	192	242,778		None	245
2032	493,990		None	245	454,921		None	245
Action 3, Alternative 4b: 5-year average shared reduction								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	90,306	311,339	**Jun 17**	47	85,327	231,667	**Jun 25**	55
2027	264,802		**Oct 22**	174	259,823		None	245
2032	476,945		None	245	471,966		None	245

Committee Action:

- REVIEW ALTERNATIVE LANGUAGE
- SELECT PREFERRED TO FACILITATE ANALYSIS

DRAFT MOTION: SELECT ALTERNATIVE X AS THE PREFERRED ALTERNATIVE FOR ACTION 3.

Action 4. Modify the commercial management measures for gag

4.1 Sub-action 4a. Reduce the commercial trip limit for gag

Purpose of Sub-action

The Council is considering modifying the commercial trip limit to achieve the reduction in harvest needed to constrain catch to the updated commercial ACLs, while maintaining an extended commercial season.

Alternative 1 (No Action). The commercial gag trip limit is 1,000 pounds gutted weight until 75% of the commercial ACL is met, at which time the commercial trip limit is reduced to 500 pounds gutted weight for the remainder of the fishing year or until the commercial ACL is met.

Alternative 2. Reduce the gag commercial trip limit to 200 pounds gutted weight.

Alternative 3. Reduce the gag commercial trip limit to 300 pounds gutted weight.

Alternative 4. Reduce the gag commercial trip limit to 400 pounds gutted weight.

Alternative 5. Reduce the gag commercial trip limit to 500 pounds gutted weight.

Table 10. Summary of Alternatives under Action 4, Sub-action 4a.

Alternatives	Trip Limit
Alternative 1 (No Action)	1,000 lbs gw until 75% of the commercial ACL is met then 500 lbs gw
Alternative 2	200 lbs gw
Alternative 3	300 lbs gw
Alternative 4	400 lbs gw
Alternative 5	500 lbs gw

Discussion:

- The current gag commercial trip limit and step down were established through Regulatory Amendment 14 to the FMP (2014). Since its implementation, landings have gone above 75% of the commercial ACL a total of 3 years (2014-2016); however, the trip limit step down was triggered in 2015 only.
  - From 2014 to 2019 there has been only one commercial closure, which occurred in November of 2014 (**Table 11**).

Table 11. Commercial trip limit step downs from 2014 (implementation) to 2019.

Year	% Commercial ACL Used	Trip Limit Reduction Y/N	Reduction Date
2019	74.5	N	NA
2018	71.5	N	NA
2017	61.8	N	NA
2016	78.9	N	N
2015	96.3	Y	October 18, 2015
2014	102.9	N	N

Preliminary Analysis:

- A majority (78%) of trips harvesting gag landed less than 200 lbs gw, and most (94%) landed less than 500 lbs gw (**Figure 6**).

- See Appendix C for full analysis.

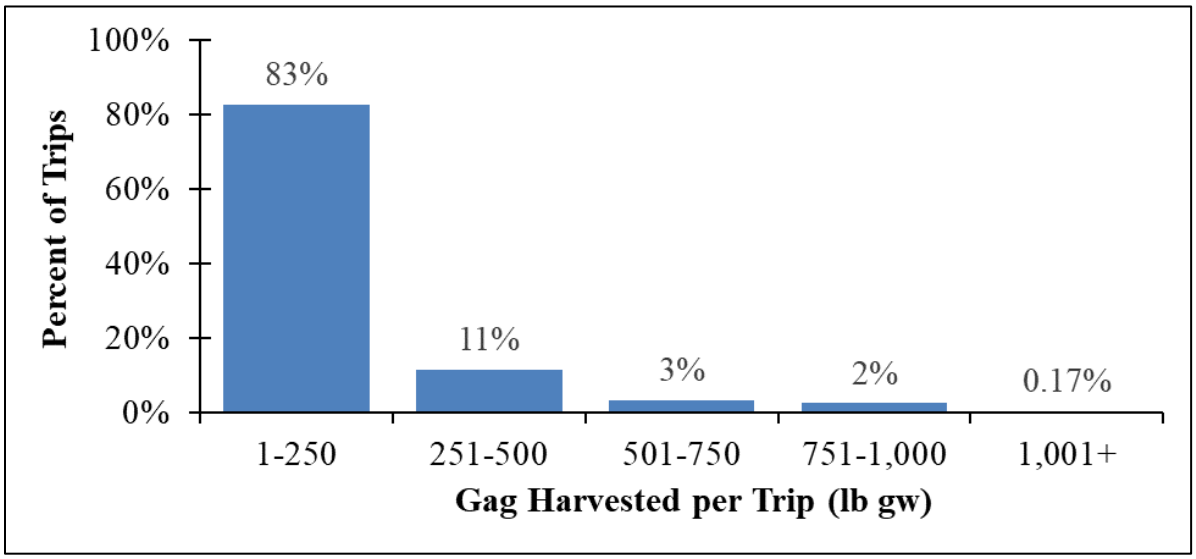

Figure 7. The percent of commercial trips (n=8,607) harvesting gag by bin from 2017 through 2019. Source: SEFSC commercial logbook (May 6, 2021).

Table 12. The predicted percent change in landings per trip from the current 1,000 lbs gw trip limit.

Current Trip Limit (lbs gw)*	Potential Trip Limit (lbs gw)	Predicted Change in Landings
1,000	500	-8%
1,000	400	-13%
1,000	300	-20%
1,000	200	-32%

* current trip limit includes a step down to 500 lbs gw when 75% of the commercial ACL is met.

Snapper Grouper AP Feedback (April 2022):

- Both a 300 lbs (**Alternative 3**) and 400 lbs (**Alternative 4**) were noted as the AP's preferred alternatives for this action.
- An AP member noted that a smaller trip limit should be put in place if spearfishing is allowed during the rebuilding.
- The AP also noted that the commercial sector would like to see a longer commercial season versus a larger trip limit.

Committee Action:

- CONSIDER SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE AND SELECT PREFERRED, IF APPROPRIATE

4.2 Sub-action 4b. Modify the commercial spawning season closure for gag

Purpose of Sub-action

The Council is considering modifying the commercial spawning season closure to allow for an increased opportunity for gag spawning before being harvested.

Alternative 1 (No Action). The annual commercial gag spawning season closure is from January 1 through April 30.

Alternative 2. Extend the annual commercial gag spawning season closure to January 1 through May 31.

Alternative 3. Extend the annual commercial gag spawning season closure to December 1 – April 30.

Alternative 4. Extend the annual commercial gag spawning season closure to December 1 – May 31.

Table 13. A summary of alternatives for **Action 4**, **Sub-action 4b**.

Alternatives	Spawning Season Closure
Alternative 1 (no change)	January 1 - April 30
Alternative 2	One additional spring month (May)
Alternative 3	One additional winter month (December)
Alternative 4	One additional winter month (December) and one additional spring month (May)

Discussion:

- The gag spawning season closure was established through Amendment 16 to the FMP (2009) to protect gag grouper, and other shallow water groupers, spawning aggregations (Coleman *et al.* 2000). Spawning aggregations are particularly vulnerable to fishing gear due to aggression during these events (Thompson and Munro 1974; Gilmore and Jones 1992).

- In 2020, through Regulatory Amendment 30 to the FMP, the red grouper spawning season closure was extended from January 1 – April 30 to January 1 – May 31 in federal waters off of North Carolina and South Carolina only. Many fishermen noted observing spawning aggregations in May which led to concerns over the efficacy of the spawning season closure. The spawning season closure was extended to provide red grouper additional spawning opportunities.

Preliminary Analysis:

- When examining the seasonality of the commercial fishery, historical and projected landings are highest May through July, leveling out from September through December (**Figure 7**).

- See Appendix C for full analysis.

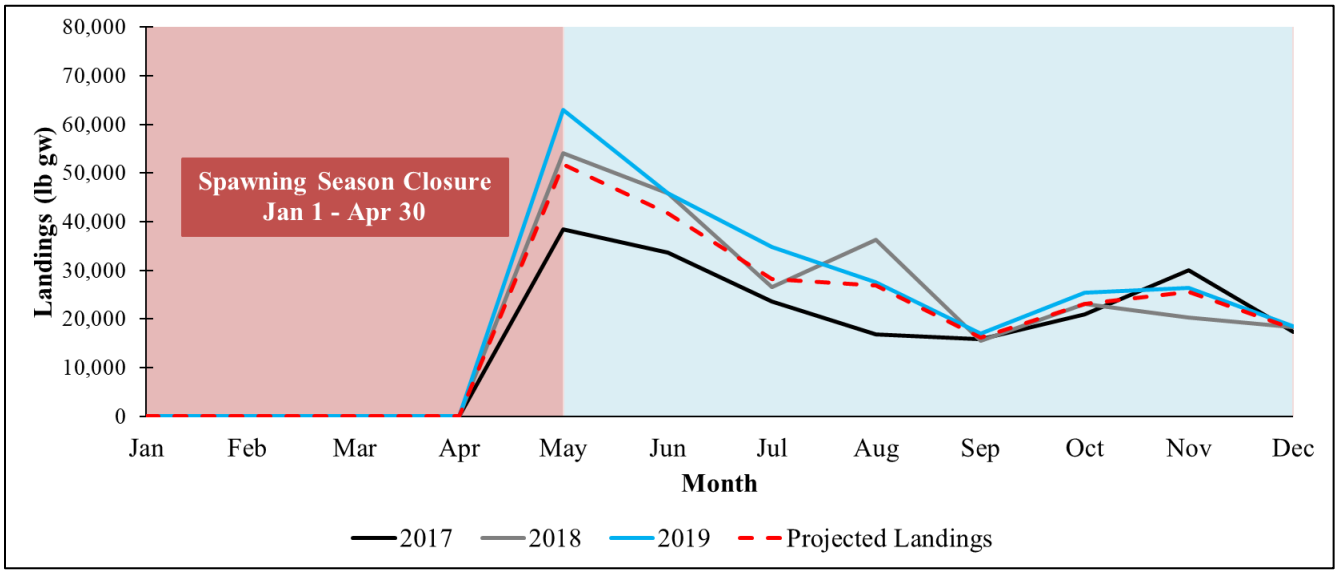

Figure 8. South Atlantic gag commercial landings by month from 2017-2019 and predicted 2023 landings. All of the landing projections assume no landings between January and April 30 for the spawning season closure.

Snapper Grouper AP Feedback (April 2022):

- Some AP members noted that an additional spring month added to the spawning season closure would be optimal

Committee Action:

- REVIEW SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE AND SELECT PREFERRED, IF APPROPRIATE

Action 5. Modify the recreational management measures for gag

5.1 Sub-action 5a. Establish a recreational vessel limit for gag

Purpose of Sub-action

The Council is considering establishing a recreational vessel limit to achieve the reduction in harvest needed to constrain catch to the updated recreational ACLs, while maintaining recreational access.

Alternative 1 (No Action). The recreational gag bag limit is 1 fish per person per day within the 3 shallow water grouper aggregate (no more than 1 grouper may be gag or black grouper). There is no vessel limit for gag.

Alternative 2. Establish the recreational gag vessel limit of 2 fish per vessel per day, not to exceed the daily bag limit, whichever is more restrictive, for all recreational vessels[2].

Alternative 3. Establish the recreational gag vessel limit of 4 fish per vessel per day, not to exceed the daily bag limit, whichever is more restrictive, for all recreational vessels.

Alternative 4. Establish the recreational gag vessel limit of 6 fish per vessel per day, not to exceed the daily bag limit, whichever is more restrictive, for all recreational vessels.

Table 14. A summary of alternatives under **Action 5**, **Sub-action 5a**.

Alternatives	Vessel Limit*
Alternative 1 (No Action)	1 fish per person per day, no vessel limit
Alternative 2	2 fish per vessel per day
Alternative 3	4 fish per vessel per day
Alternative 4	6 fish per vessel per day

*vessel limit not to exceed the 1 per person per day bag limit.

Discussion:

- The proposed reduction in the recreational ACL will result in an approximately 70% reduction in harvest from 2019 catch levels to the updated catch levels for 2023. To maintain recreational access, a vessel limit would help to constrain catch to the updated catch levels. Catch levels would increase in subsequent years.

- The current gag bag limit is tied to the grouper aggregate and specifies one gag OR one black grouper. The current alternatives do not modify the bag limit for black grouper, which would remain as 1 black grouper per person per day within the grouper aggregate.

[2] All recreational vessels refers to private, for-hire, and charter vessels

Preliminary Analysis:

- See Appendix C for full analysis.

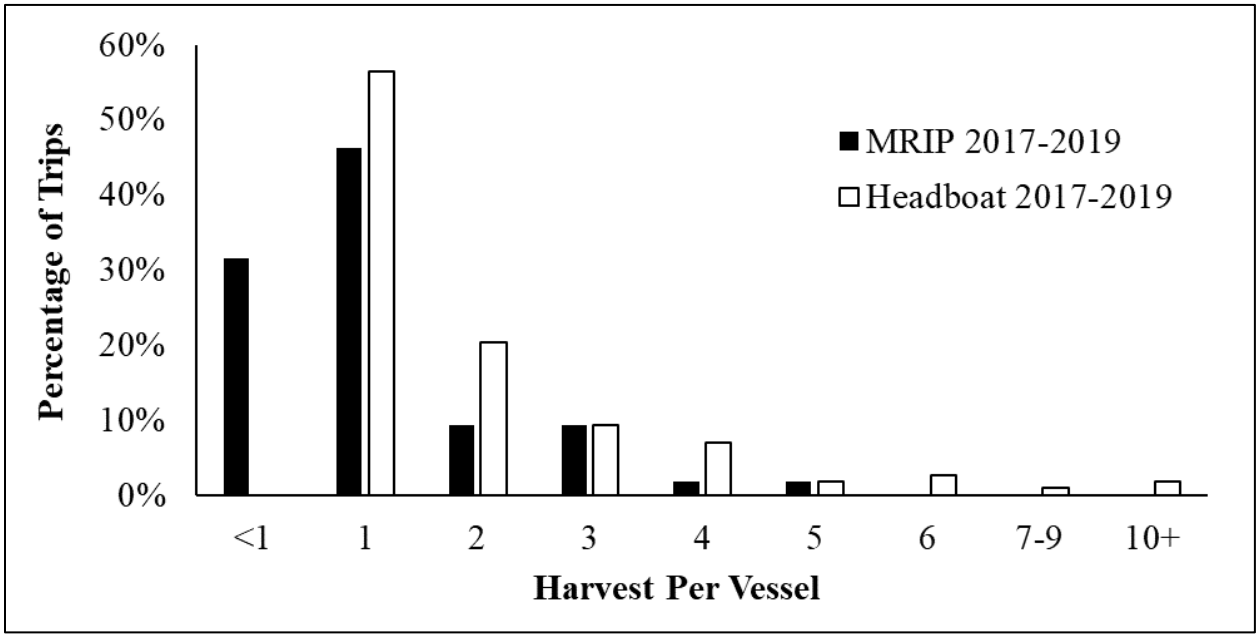

Figure 9. Distribution of South Atlantic gag harvested per vessel trip from the two recreational datasets: MRIP FES (n = 54 trips), and headboat (n= 897 trips).

Table 15. The predicted percent change in landings per recreational trip (MRIP and Southeast Region Headboat Survey) from the current 1 fish per person per day limit.

Current Vessel Limit (# of fish)	Potential Vessel Limit (# of fish)	MRIP Predicted Change in Landings	SRHS Predicted Change in Landings
1 pp/day	6 per vessel	0%	-5%
1 pp/day	4 per vessel	-1%	-11%
1 pp/day	2 per vessel	-16%	-30%

IPT Recommendation:

- The current per person bag limit is specified for both gag and black grouper. Consider how modifying the gag bag limit would affect the black grouper. Bag limits were combined due to concerns over identification issues between the two species.

50 CFR 622.187(b)(2)(i): "No more than one fish may be gag or black grouper, combined;"

Snapper Grouper AP Feedback (April 2022):

- The AP recommends a vessel limit of 4 or 6 fish per vessel (**Alternative 3** or **4**).

Committee Action:

- REVIEW SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE AND SELECT PREFERRED, IF APPROPRIATE

5.2 Sub-action 5b. Modify the recreational spawning season closure for gag

Purpose of Sub-action

The Council is considering modifying the recreational spawning season closure to allow for an increased opportunity for gag spawning before being persecuted by the fishery.

Alternative 1 (No Action). The gag annual recreational spawning season closure is from January 1 through April 30.

Alternative 2. Extend the annual recreational gag spawning season closure to January 1 – May 31.

Alternative 3. Extend the annual recreational gag spawning season closure to December 1 – April 30.

Alternative 4. Extend the annual recreational gag spawning season closure to December 1 – May 31.

Table 16. A summary of alternatives for Action 5, Sub-Action 5b.

Alternatives	Spawning Season Closure
Alternative 1 (No Action)	January 1 - April 30
Alternative 2	One additional month in the spring (May)
Alternative 3	One additional month in the winter (December)
Alternative 4	One additional month in the winter (December) and one additional month in the spring (May)

Discussion:

- The gag spawning season closure was established through Amendment 16 to the FMP (2009) to protect gag grouper, and other shallow water groupers, spawning aggregations (Coleman *et al.* 2000). Spawning aggregations are particularly vulnerable to fishing gear due to aggression during these events (Thompson and Munro 1974; Gilmore and Jones 1992).

- In 2020, through Regulatory Amendment 30 to the FMP, the red grouper spawning season closure was extended from January 1 – April 30 to January 1 – May 31 in federal waters off of North Carolina and South Carolina only. Many fishermen noted observing spawning aggregations in May which led to concerns over the efficacy of the spawning season closure.

The spawning season closure was extended to provide red grouper additional spawning opportunities.

Preliminary Analysis:

- The seasonality of recreational landings of gag is variable; however, landings were highest historically for 2019 and are projected to be highest in May through July. During the 2018 season landings were highest in the fall.

- See Appendix C for full analysis.

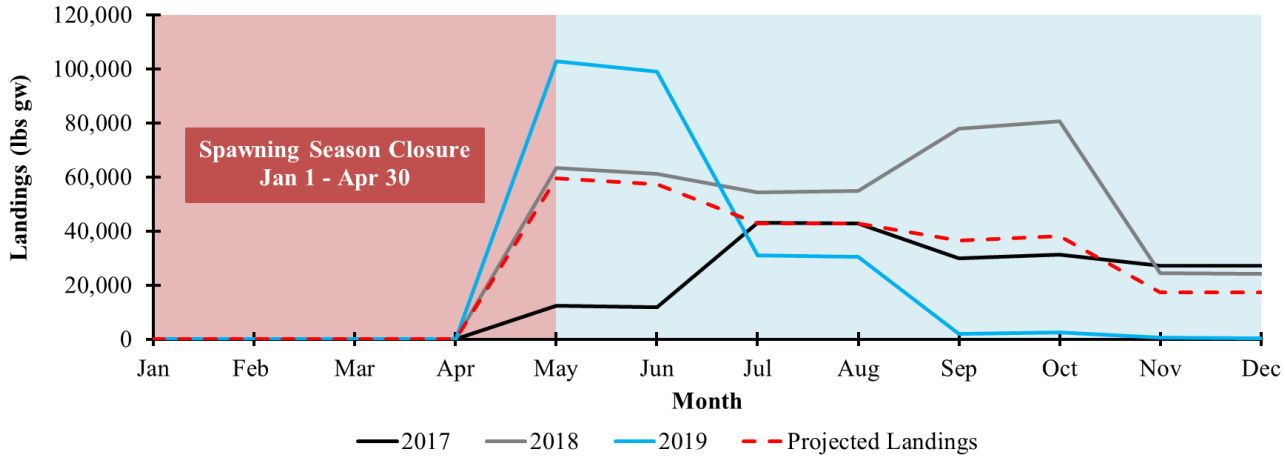

Figure 10. South Atlantic gag recreational landings by month from 2017-2019 and predicted 2023 landings. All of the landing projections assume no landings between January 1 and April 30 for the spawning season closure.

Snapper Grouper AP Feedback (April 2022):

- Some AP members noted that an additional spring month added to the spawning season closure would be optimal, however it was also noted that it is crucial for the charter sector to open May 1.

Committee Action:

- REVIEW SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE AND SELECT PREFERRED, IF APPROPRIATE

Action 6. Revise the gag commercial accountability measures

Purpose of Action

Modifications to gag commercial accountability measures are being considered to prevent commercial landings from exceeding the commercial ACL and correct for overages if they occur.

Alternative 1 (No Action). If commercial landings reach or are projected to reach the commercial annual catch limit, commercial harvest of gag is closed for the remainder of the fishing year, regardless of stock status, unless National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If commercial landings exceed the commercial annual catch limit, then during the following fishing year commercial landings will be monitored for a persistence in increased landings. If the total annual catch limit is exceeded and gag are overfished, the length of the commercial fishing season and the commercial annual catch limit are reduced by the amount of the commercial annual catch limit overage.

Alternative 2. The commercial gag season will start annually on (DATE SPAWNING SEASON ENDS). National Marine Fisheries Service will annually announce the commercial fishing season end dates in the Federal Register and by other methods, as deemed appropriate. The fishing season will end on the date National Marine Fisheries Service projects the commercial annual catch limit will be met.

Alternative 3. Remove the current in-season accountability measures. If commercial landings exceed the commercial annual catch limit, reduce the length of the following year's commercial fishing season by the amount necessary to prevent the commercial annual catch limit from being exceeded in the following year. However, the length of the commercial season will not be reduced if the Regional Administrator determines, using the best scientific information available, that it is not necessary.

Alternative 4. Retain the current in-season accountability measures. If commercial landings exceed the commercial annual catch limit, reduce the length of the following year's commercial fishing season by the amount necessary to prevent the commercial annual catch limit from being exceeded in the following year. However, the length of the commercial season will not be reduced if the Regional Administrator determines, using the best scientific information available, that it is not necessary.

Alternative 5. Remove the current in-season accountability measures. If commercial landings exceed the commercial annual catch limit OR landings exceed the total annual catch limit, reduce the length of the following year's commercial fishing season by the amount necessary to prevent the commercial sector's annual catch limit from being exceeded in the following year. However, the length of the commercial season will not be reduced if the Regional Administrator determines, using the best scientific information available, that it is not necessary.

Table 17. Summary of commercial accountability measure alternatives for **Action 6**.

	In-Season AM		Post-Season AM	
	Triggers	**AM**	**Triggers**	**AM**
Alternative 1 (no change)	Commercial landings exceed/expected to exceed sector ACL	Current commercial season closes	• Commercial landings exceed/expected to exceed the commercial ACL • Total ACL exceeded • Stock is overfished ***All triggers mustbe present for AM to occur**	Commercial landings are monitored during the following year and if necessary: • Commercial ACL for the following year reduced by the overage • Commercial season for the following year is reduced to ensure the commercial ACL is not exceeded
Alternative 2	NMFS will annually announce the commercial fishing season end date			
Alternative 3	NONE		Commercial landings exceed commercial ACL ***No longer tied to stock status or total ACL**	Commercial season for The following year is reduced by the amount necessary to prevent the commercial ACL from being exceeded
Alternative 4	Commercial landings exceed/expected to exceed sector ACL	Current commercial season closes	Commercial landings exceed commercial ACL ***No longer tied to stock status or total ACL**	Commercial season for the following year is reduced by the amount necessary to prevent the commercial ACL from being exceeded
Alternative 5	NONE		Commercial landings exceed commercial ACL **OR** total ACL is exceeded ***No longer tied to stock status**	Commercial season for the following year is reduced by the amount necessary to prevent the commercial ACL from being exceeded

IPT Recommendation:

- The IPT recommends the Council consider the merits of modifying the commercial accountability measures. If the commercial accountability measures are modified, the IPT recommends removing the stock status trigger from the post season accountability measure only.
- In addition, the IPT recommends removing **Alternative 5** noting the following concerns: There may be a situation where the total ACL is exceeded, the post season AM is triggered and the sector that did not exceed their ACL experiences a reduced season.

Discussion:

- Effective and timely accountability measures are important for the gag fishery, particularly considering the reduction in catch during the rebuilding plan.

- **Alternative 2** would operate similar to the season announcement for black sea bass except that NMFS would only be announcing the end of the season. Commercial harvest would be allowed after the end of the spawning season closure (Sub-action 4b).

Committee Action:

- REVIEW SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE AND SELECT PREFERRED, IF APPROPRIATE

Action 7. Revise the gag recreational accountability measures

Purpose of Action

Modifications to gag recreational accountability measures are being considered to prevent recreational landings from exceeding the recreational ACL and correct for overages if they occur.

Alternative 1 (No Action). If recreational landings reach or are projected to reach the recreational annual catch limit, recreational harvest of gag is closed for the remainder of the fishing year, regardless of stock status, unless National Marine Fisheries Service determines that no closure is necessary based on the best scientific information available. If recreational landings exceed the recreational annual catch limit, then during the following fishing year recreational landings will be monitored for a persistence in increased landings. If the total annual catch limit is exceeded and gag are overfished, the length of the recreational fishing season and the recreational annual catch limit are reduced by the amount of the recreational annual catch limit overage.

Alternative 2. The recreational gag season will start annually on (DATE SPAWNING SEASON ENDS). The National Marine Fisheries Service will annually announce the recreational fishing season end dates in the Federal Register and by other methods, as deemed appropriate. The fishing season will end on the date National Marine Fisheries Service projects the commercial annual catch limit will be met.

Alternative 3. Remove the current recreational in-season accountability measures. If recreational landings exceed the recreational annual catch limit, reduce the length of the following year's recreational fishing season by the amount necessary to prevent the recreational annual catch limit from being exceeded in the following year. However, the length of the recreational season will not be reduced if the Regional Administrator determines, using the best scientific information available, that it is not necessary.

Alternative 4. Retain the current recreational in-season accountability measures. If recreational landings exceed the recreational annual catch limit, reduce the length of the following year's recreational fishing season by the amount necessary to prevent the recreational annual catch limit from being exceeded in the following year. However, the length of the recreational season will not be reduced if the Regional Administrator determines, using the best scientific information available, that it is not necessary.

Alternative 5. Remove the current recreational in-season accountability measures. If recreational landings exceed the recreational annual catch limit OR landings exceed the total annual catch limit, reduce the length of the following year's recreational fishing season by the amount necessary to prevent the recreational sector's annual catch limit from being exceeded in the following year. However, the length of the recreational season will not be reduced if the Regional Administrator determines, using the best scientific information available, that it is not necessary.

Table 18. Summary of recreational accountability measure alternatives for **Action 7**.

	In-Season AM		Post-Season AM	
	Triggers	**AM**	**Triggers**	**AM**
Alternative 1 (no change)	Recreational landings exceed/expected to exceed sector ACL	Current recreational season closes	• Recreational landings exceed/expected to exceed the recreational ACL • Total ACL exceeded • Stock is overfished ***All triggers mustbe present for AM to occur**	• Recreational landings are monitored during the following year and if necessary: • Recreational ACL for the following year reduced by the overage • Recreational season for the following year is reduced to ensure the recreational ACL is not exceeded
Alternative 2	NMFS will annually announce the recreational fishing season end date			
Alternative 3	NONE		Recreational landings exceed recreational ACL ***No longer tied to stock status or total ACL**	Recreational season for the following year is reduced by the amount necessary to prevent the recreational ACL from being exceeded
Alternative 4	Recreational landings exceed/expected to exceed sector ACL	Current recreational season closes	Recreational landings exceed recreational ACL ***No longer tied to stock status or total ACL**	Recreational season for the following year is reduced by the amount necessary to prevent the recreational ACL from being exceeded
Alternative 5	NONE		Recreational landings exceed recreational ACL **OR** total ACL is exceeded ***No longer tied to stock status**	Recreational season for the following year is reduced by the amount necessary to prevent the recreational ACL from being exceeded

IPT Recommendation:

- The IPT recommends considering both consistency across other snapper grouper species and the need for in-season AMs when modifying the recreational AMs. Recreational AM modifications are being considered in the following amendments:
  - **Amendment 50 (red porgy):** Removed the in-season AM, post-season AM triggered only by sector ACL (amendment in formal review).
  - **Amendment 52 (blueline tilefish):** Proposes: 1) no change, 2) NMFS announces the season length, and 3) removal of in-season AM with the post-season AM triggered by landings exceeding only the recreational ACL.
- In addition, IPT recommends removing Alternative 5 from consideration noting that there may be a situation where the total ACL is exceeded, the post season AM is triggered, and the sector that did not exceed their ACL experiences a reduced season.

Discussion:

- Recreational AMs for other snapper grouper species with short recreational seasons, such as red porgy (Amendment 50), have proposed removing the in-season closure and "un-coupling" the post-season AM trigger from the total ACL and stock status.

- **Alternative 2** would operate similar to the season announcement for black sea bass except that NMFS would only be announcing the end of the season. Commercial harvest would be allowed after the end of the spawning season closure (Sub-action 4b).

Committee Action:

- REVIEW SNAPPER GROUPER AP FEEDBACK
- REVIEW ALTERNATIVE LANGUAGE AND SELECT PREFERRED, IF APPROPRIATE

Appendices

Appendix A. Management History

Table A-1. Summary of gag management history.

Year	Amendment	Management Measure Change
1992	Amendment 4	20-inch TL minimum size, 5 gag bag limit
1999	Amendment 9	24-inch TL minimum size, 2 gag bag limit
2009	Amendment 16	shallow water grouper spawning season closure, established a directed commercial quota, allocations, reduced bag limit to 1 gag
2010	Amendment 17A	non-stainless steel circle hooks required for natural baits north of 28 degrees N. Latitude
2011	Amendment 17B	established aggregate ACLs and AMs
2012	Amendment 24	Removed aggregate ACLs
2013	Regulatory Amendment 15	Reduced commercial quota, changed post-season AM for SWG to remove gag
2015	Regulatory Amendment 22	Revised ACLs
2016	Amendment 34	Modified AMs for snapper grouper species, including gag

Table A-2. The previous management measures and catch levels for South Atlantic gag. Note that for the commercial trip limit is 1,000 pounds gutted weight until75% of the commercial ACL is met, then the trip limit is reduced to 500 pounds gutted weight.

Management Measures	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
ABC (lbs gw)	805,000	805,000	805,000	666,000	671,000	713,000	748,000	773,000	773,000	773,000	773,000	TBD
Total ACL (lbs gw)	693,000	666,782	666,782	632,700	677,350	710,060	734,350	734,350	734,350	734,350	734,350	TBD
Total Landings (lbs gw)	532,699	459,110	505,701	342,888	386,453	310,924	369,165	352,985	307,195	TBD	TBD	TBD
Total ACL Overage/Underage	76.9%	68.9%	75.8%	54.2%	57.1%	43.8%	50.3%	48.1%	41.8%	TBD	TBD	TBD
Directed Commercial Quota (lbs gw)	352,940	326,722	326,722	295,459*	297,882*	318,231*	335,188*	347,301*	347,301*	347,301*	347,301*	TBD
Com. Landings (lbs gw)	355,602	380,638	336,254	284,540	234,997	196,807	239,810	258,591	257,071	TBD	TBD	TBD
Com. % ACL	100.8%	116.5%	102.9%	96.3%	78.9%	61.8%	71.5%	74.5%	74.0%	TBD	TBD	TBD
Rec. ACL (lbs gw)	340,060	340,060	340,060	310,023	312,351	331,902	348,194	348,194	348,194	348,194	TBD	TBD
Rec. Landings, "Old" MRIP (lbs gw)	177,097	78,472	169,447	58,348	151,456	114,117	129,355	94,394	50,124	NA	NA	NA
Rec. % of ACL	52.1%	23.1%	49.8%	18.8%	48.5%	34.4%	37.2%	27.1%	14.4%	TBD	TBD	TBD
Rec. Bag Limit (person/day)	1	1	1	1	1	1	1	1	1	1	1	TBD
Rec. Size Limit (inches TL)	24	24	24	24	24	24	24	24	24	24	24	TBD
Rec. Season	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	TBD
Rec Allocation	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%	TBD
Com. Trip Limit (lbs gw)	1000/500(75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	1000/500 (75% ACL)	TBD
Com. Size Limit (inches TL)	24	24	24	24	24	24	24	24	24	24	24	TBD
Com. Season	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	May-Dec	TBD
Com. Allocation	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	TBD

* Directed Commercial Quota is equal to the commercial ACL – the estimated Post-Quota Bycatch Mortality (27,218 lbs gw

Appendix B. Accountability Measures

The accountability measures as listed in the Code of Federal Regulations.

- Commercial
  - If commercial landings for gag, as estimated by the SRD, reach or are projected to reach the commercial quota specified in § 622.190(a)(7), the AA will file a notification with theOffice of the Federal Register to close the commercial sector for gag for the remainder ofthe fishing year. Applicable restrictions after a commercial quota closure are specified in § 622.190(c).

  - If the commercial landings for gag, as estimated by the SRD, exceed the commercial ACL specified in § 622.193(c)(1)(iii), and the combined commercial and recreational ACL specified in § 622.193(c)(1)(iv), is exceeded during the same fishing year, and gagare overfished based on the most recent Status of U.S. Fisheries Report to Congress, theAA will file a notification with the Office of the Federal Register to reduce the commercial ACL for that following fishing year by the amount of the commercial ACLoverage in the prior fishing year.

- Recreational
  - If recreational landings for gag, as estimated by the SRD, reach or are projected to reach the recreational ACL, the AA will file a notification with the Office of the Federal Register to close the recreational sector for the remainder of the fishing year regardless ifthe stock is overfished, unless NMFS determines that no closure is necessary based on the best scientific information available. On and after the effective date of such notification, the bag and possession limits for gag in or from the South Atlantic EEZ are zero.

  - If recreational landings for gag, as estimated by the SRD, exceed the recreational ACL, then during the following fishing year recreational landings will be monitored for a persistence in increased landings, and if necessary, the AA will file a notification with theOffice of the Federal Register to reduce the length of the recreational fishing season and the recreational ACL by the amount of the recreational ACL overage, if the species is overfished based on the most recent Status of U.S. Fisheries Report to Congress, and if the combined commercial and recreational ACL specified in § 622.193(c)(1)(iv) is exceeded during the same fishing year. NMFS will use the best scientific informationavailable to determine if reducing the length of the recreational fishing season and recreational ACL is necessary. When the recreational sector is closed as a result of NMFS reducing the length of the recreational fishing season and ACL, the bag and possession limits for gag in or from the South Atlantic EEZ are zero.

Appendix C. Analysis

Modeling the Seasonal Closures for the South Atlantic Gag Recreational and Commercial Sectors

LAPP/DM Branch
NOAA Fisheries Service
Southeast Regional Office
May 2022

Introduction

Gag (*Mycteroperca microlepis*) are one of 55 species in the South Atlantic Snapper-Grouper Fishery Management Plan (FMP). The FMP provides management for snapper and grouper species in the federal waters of the South Atlantic.

In 2021, a stock assessment was conducted for the South Atlantic gag (SEDAR 71). Results from the assessment showed the gag stock is overfished and experiencing overfishing. An amendment to the Snapper-Grouper FMP is currently being drafted and its purpose is to establish management measures that will rebuild the stock. The current management measures of the recreational sector include a spawning season closure from January 1 – April 30, a minimum size of 24 inches total length, and a recreational bag limit of 1 fish per person per day. The current management measures of the commercial sector include a spawning season closure from January 1 – April 30, a minimum size of 24 inches total length, and a commercial trip limit of 1,000 pounds gutted weight (lbs gw) until 75% of the annual catch limit (ACL) is met or is projected to be met, at which point a 500 lbs gw trip limit would apply. The FMP amendment proposes to establish a rebuilding plan, set an acceptable biological catch, consider adjusting sector allocations, spawning season closures, recreational bag limits and commercial trip limits, and finally, setting new ACLs that incorporate the updated Marine Recreational Information Program (MRIP) Fishing Effort Survey (FES) data for the South Atlantic gag fishery.

Data Sources

Commercial landings data for South Atlantic gag were obtained from the Southeast Fisheries Science Center (SEFSC) on April 5, 2022. The SEFSC commercial logbook data (5/6/21) was also obtained for trip level data.

Recreational landings data for South Atlantic gag were obtained from the Southeast Fisheries Science Center (SEFSC) on March 17, 2022. This data set includes landings from the Southeast Region Headboat Survey (SRHS), the Texas Parks and Wildlife Department (TPWD) Creel survey, the Louisiana Creel survey (LA Creel) and the Marine Recreational Information Program (MRIP) Access Point Angler Intercept Survey (APAIS) and Fishing Effort Survey (FES). The current recreational survey has been the MRIP FES since 2015 when the MRIP Coastal

Household Telephone Survey (CHTS) was discontinued. Conversion factors were used on the MRIP FES data to provide the MRIP CHTS survey equivalent landings to match the landings that were used to set the current ACL and ACT for South Atlantic gag. The MRIP survey file also included imputed MRIP catch estimates for 2020 to account for disruptions in dockside sampling due to COVID. MRIP, TPWD, and LA Creel conduct dockside intercepts to collect information on the size and number of gag caught by mode (charter, private, shore). SRHS surveys collect size and number of gag through logbooks completed by headboat operators.

Methods

Reductions in landings are necessary to achieve the FMP amendment's need to end overfishing of South Atlantic gag, rebuild the stock, and achieve optimum yield while minimizing, to the extent practicable, adverse social and economic effects. Several management measures were explored as tools to reduce harvest. Such measures included investigating different spawning season closures, reducing recreational vessel limits and commercial trip limits, and considering various rebuilding plans with reduced ACLs set using the updated MRIP FES. All calculations were done using SAS (SAS Institute, Cary, NC).

Predicted Future Landings

The FMP amendment will impose new and reduced ACLs for both the recreational and commercial sectors and use updated MRIP FES data for the recreational sector. Monthly predicted landings are required to explore how the reduced ACLs and spawning season closure options will impact the fishing season length. Predicted landings are estimated by taking a three-year monthly average of the three most recent years of complete data, as those are believed to be the best approximation of future harvest patterns. Since 2020 and 2021 landings data are not considered representative landings due to the global pandemic, years 2017-2019 were used to estimate predicted landings. Commercial landings data are provided as monthly estimates. For recreational landings, the SRHS provides monthly landings estimates, however, MRIP data is provided in two-month waves (e.g., January and February = wave 1, March and April = wave 2, etc.). To estimate monthly recreational landings, MRIP waves were first used to generate monthly landings by assuming equal daily catch rates for months within a wave, and then monthly SRHS landings were added back in. Predicted landings, and the landings used to generate those predicted landings, are shown in **Figures C-1 and C-2**.

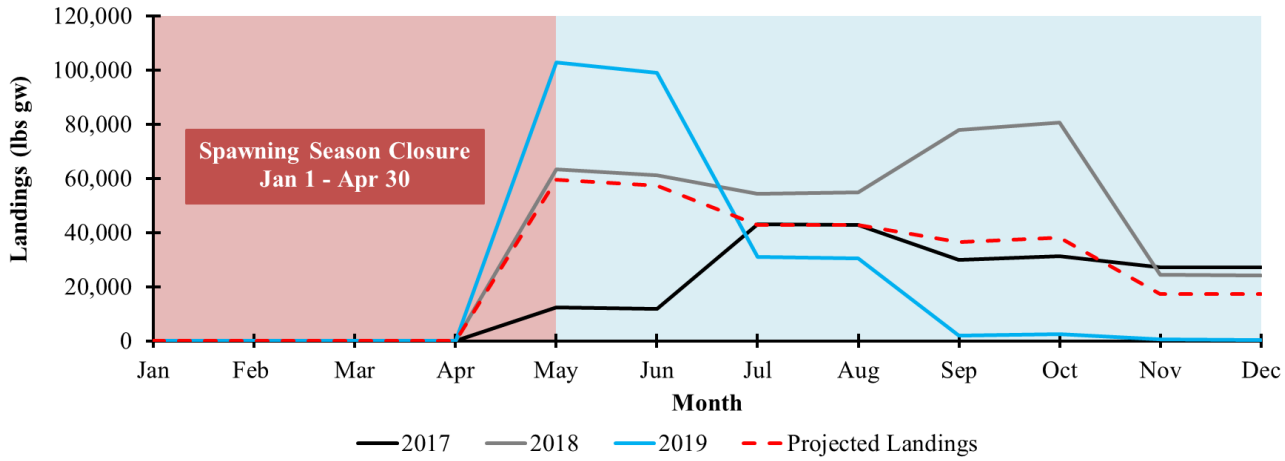

Figure C-1. South Atlantic gag recreational landings by month from 2017-2019 and predicted 2023 landings. All of the landing projections assume no landings between January 1 and April 30 for the spawning season closure.

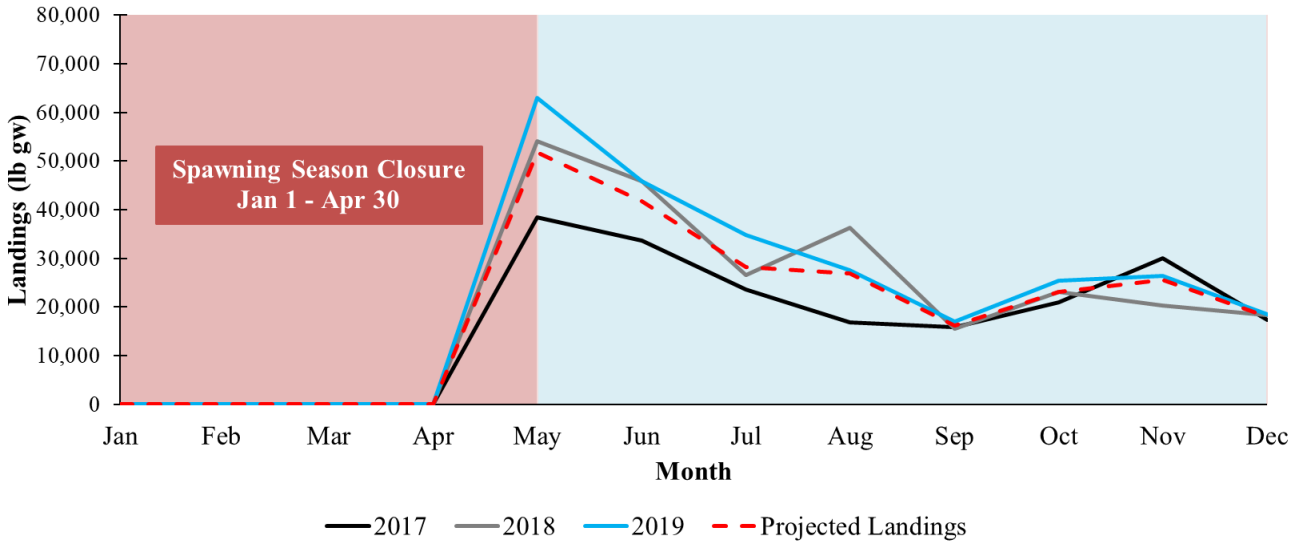

Figure C-2. South Atlantic gag commercial landings by month from 2017-2019 and predicted 2023 landings. All of the landing projections assume no landings between January and April 30 for the spawning season closure.

Season Projections with Reduced Annual Catch Limits

All predicted landings were used to produce daily recreational and commercial landing estimates by assuming equal landing rates for each day within a month. Cumulative daily landings for the fishing year were compared against a range of the ACLs proposed in the FMP amendment to project closure dates. The proposed ACLs compared against predicted landings assume the preferred rebuilding plan of a maximum of 10 years. The proposed recreational ACL for Action

2, Alternative 1 uses MRIP CHTS data since that is what the fishery is currently managed under. All other proposed recreational ACLs incorporate the updated MRIP FES data.

Closed Season Analyses

The majority of landings of South Atlantic gag occur at the start of the fishing season in May, and typically decline through the remainder of the year. The amendment to the FMP includes options to adjust the spawning season closure for both the recreational and commercial sectors to reduce harvest. The impact of a seasonal closure was modeled by converting the number of days closed into a percentage of days closed for a given month. The projected landings during that month were then reduced by the percentage of the month that was closed.

Commercial Trip Limit Analysis

The SEFSC commercial logbook data (5/6/21) were used to examine trip limits in the South Atlantic gag commercial fishery. Currently, the fishery has a 1,000 lbs gw trip limit that is reduced to 500 lbs gw when 75% of the ACL is met or projected to be met. From 2017 through 2019, the commercial logbook had 8,607 trips recorded that harvested gag in the South Atlantic. A majority (78%) of trips harvesting gag landed less than 200 lbs gw, and most landed less than 500 (94%; **Figure C-3**). Landing reductions for each trip limit option were estimated by normalizing all trips that harvested greater than the allowable limit to the maximum allowable landings. For example, to determine the percent reduction in landings if a 200 lbs gw trip limit were imposed, trips estimated to have harvested greater than 200 lbs gw were normalized to have harvested only 200 lbs gw and new total landings was calculated to compare with landings under current limits. Estimated reductions from projected landings for potential trip limits are shown in **Table C-1**.

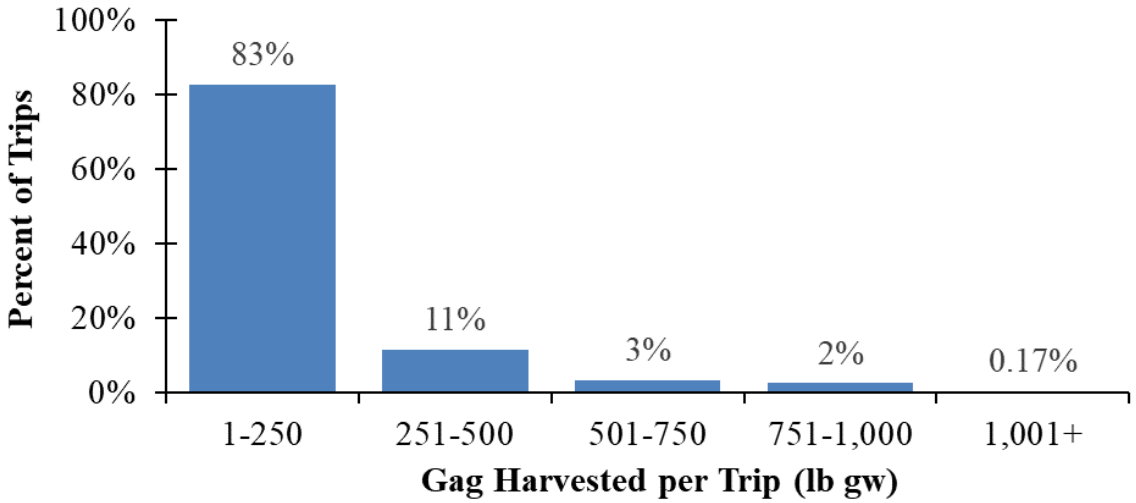

Figure C-3. The percent of commercial trips (n=8,607) harvesting gag by bin from 2017 through 2019. Source: SEFSC commercial logbook (May 6, 2021).

Table C-1. The predicted percent change in landings per trip from the current 1,000 lbs gw trip limit.

Current Trip Limit (lbs gw)	Potential Trip Limit (lbs gw)	Predicted Change in Landings
1,000	500	-8%
1,000	400	-13%
1,000	300	-20%
1,000	200	-32%

Recreational Vessel Limit Analysis

Recent recreational catch-effort data from the MRIP FES and the SRHS were used to examine vessel limits in the South Atlantic gag recreational fishery. Currently, the fishery has a 1 fish per person per day limit. From 2017 through 2019, there were 54 trips in the MRIP FES and 897 trips in the SRHS that reported harvesting gag in the South Atlantic. All trips reported landing one gag or fewer per person per day. Additionally, a majority of trips (78%) in the MRIP FES and over half (57%) in the SRHS reported harvesting one gag or fewer per trip (**Figure C-4**). Landing reductions for each vessel limit option were estimated by normalizing all trips that harvested greater than the allowable limit to the maximum allowable landings. For example, to determine the percent reduction in landings if a 2 fish vessel limit were imposed, trips estimated to have harvested greater than 2 fish per vessel were normalized to have harvested only 2 fish and new total landings was calculated to compare with landings under current limits. Estimated reductions from projected landings for potential trip limits are shown in **Table C-2**.

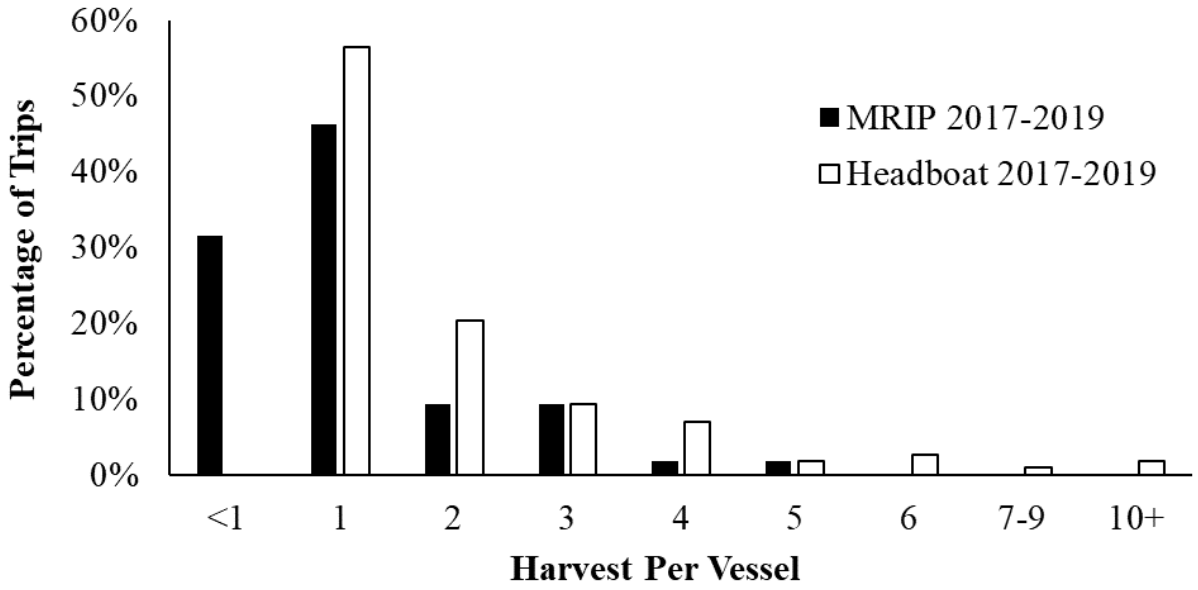

Figure C-4. Distribution of South Atlantic gag harvested per vessel trip from the two recreational datasets: MRIP FES (n = 54 trips), and headboat (n= 897 trips).

Table C-2. The predicted percent change in landings per trip from the current 1 fish per person per day limit.

Current Vessel Limit (# of fish)	Potential Vessel Limit (# of fish)	MRIP Predicted Change in Landings	SRHS Predicted Change in Landings
1 pp/day	6 per vessel	0%	-5%
1 pp/day	4 per vessel	-1%	-11%
1 pp/day	2 per vessel	-16%	-30%

Decision Tool

Two separate decision tools were developed to explore all management options being considered in Amendment 53 to the Snapper-Grouper FMP. A recreational decision tool (RDT) was developed to explore recreational sector specific management options, and a commercial decision tool (CDT) to explore commercial sector specific management options.

Percent reductions calculated from changes in spawning season closures were applied to predicted future landings to determine how much harvest would be reduced and incorporated into both decision tools. If month (*m*) was 100% closed, landings were set to zero pounds for all sectors. If a month was partially or fully open, the predicted monthly landings were computed as follows:

$$L_{sector,m} = PL_{sector,m} * O_m$$

where PL is the projected future landings and O is the percent of month open to fishing. Percent reductions calculated from changes in recreational vessel limits were applied to future projected recreational landings to determine how much recreational harvest could be further impacted. These reductions were incorporated into the RDT. The impacts of a recreational vessel limit on predicted monthly landings were computed as follows:

$$L_{sector,m} = PL_{sector,m} * VLR_m$$

where PL is the projected future landings and VLR is the percent reduction expected based on the recreational vessel limit option being considered.

Percent reductions calculated from changes in commercial trip limits were applied to future projected commercial landings to determine how much commercial harvest could be further impacted. These reductions were incorporated into the CDT. The impacts of a commercial trip limit on predicted monthly landings were computed as follows:

$$L_{sector,m} = PL_{sector,m} * CTR_m$$

where PL is the projected future landings and CTR is the percent reduction expected based on the commercial trip limit option being considered.

Both the RDT and CDT were implemented in Microsoft Excel using drop-down menus for inputting desired management measures and exploring different combinations of management options (**Figures C-5 and C-6**). Excel was chosen because it is widely available for constituent use.

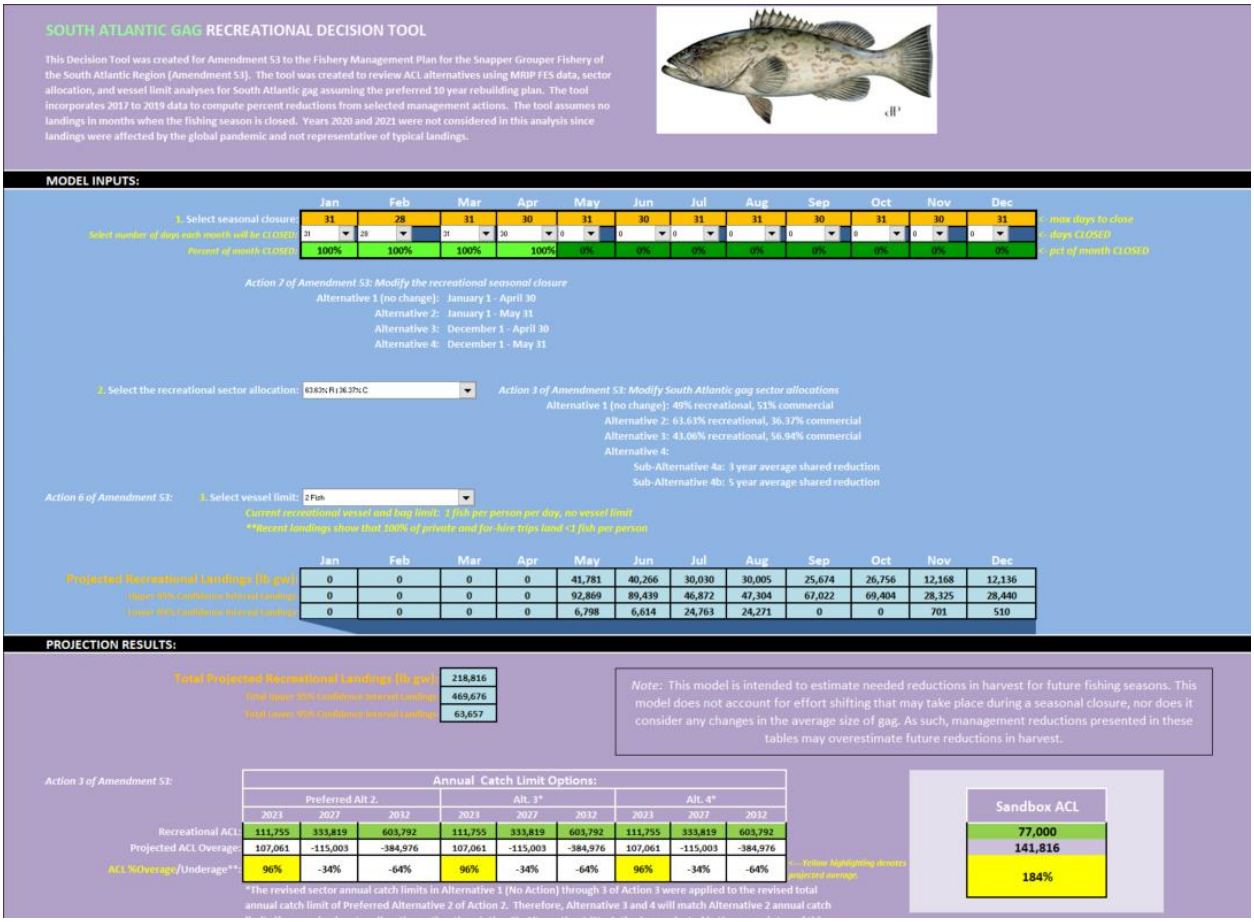

Figure C-5. Screenshot for the recreational decision tool.

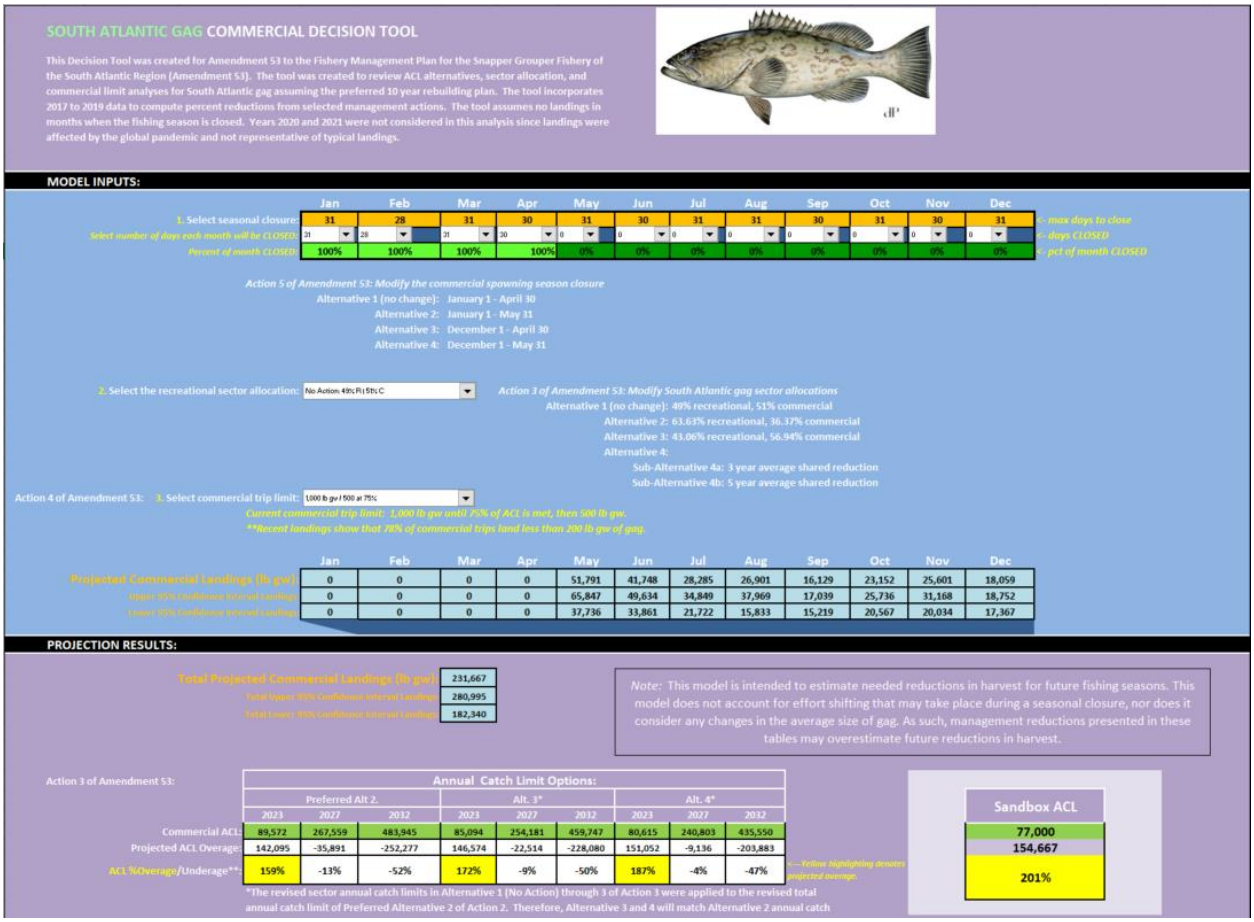

Figure C-6. Screenshot for the commercial decision tool.

Results

Projected recreational and commercial landings and days open in the season if Alternative 1 of Action 2 were selected are presented in **Table C-3**. This alternative maintains current management regulations and sets the total ACL and annual optimum yield for gag equal to 95% of the current acceptable biological catch (ABC; 734,350 pounds gutted weight). The current ABC level is inclusive of recreational estimates from the MRIP CHTS. Projected recreational and commercial landings and days open in the season for all management alternatives in Action 2 (**Table C-4)** and all management alternatives in Action 3 (**Table C-5**) are also presented. All alternatives in **Tables C-4 and C-5** are inclusive of the MRIP FES and may be explored in the RDT and CDT.

The RDT and CDT allow a range of closed seasons, and respectively, vessel and trip limits. Each management option selected within the decision tool (or combination thereof) produces predicted landings that can be compared to several of the proposed ACLs. Selecting various combinations of the management options can further impact the predicted landings and influence whether the ACL is reached or expected to be reached. Finally, the decision tools also provide a Sandbox ACL in which any ACL can be supplied to have the decision tool generate an expected

closure date and days open in the season. All results assume no effort shifting and that no landings occur during spawning season closures.

Table C-3. The projected South Atlantic gag commercial and recreational landings (lbs gw) and closure dates expected if Alternative 1 of Action 2 is selected, which maintains current management regulations.

Action 2, Alternative 1 (No Action): 734,350 lbs gw combined ACL			
Sector	ACL (lbs gw)	Closure Date	Days Open
Recreational	359,832*	None (80,532 lbs gw)	245
Commercial	374,519	None (231,667 lbs gw)	245

* The ACL for Alternative 1 is inclusive of recreational landings tracked using the MRIP Coastal Household Telephone Survey.

Table C-4. The projected South Atlantic gag commercial and recreational landings (lbs gw) and closure dates expected with each proposed annual catch limit alternative for Alternatives 2 through 4 of Action 2.

Action 2, Preferred Alternative 2: Recommended ABC								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	86,060	311,339	**Jun 14**	44	89,572	231,667	**Jun 28**	58
2027	257,066		**Oct 15**	167	267,559		None	245
2032	464,966		None	245	483,945		None	245
Action 2, Alternative 3: 95% of the recommended ABC								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	81,757	311,339	**Jun 12**	42	85,094	231,667	**Jun 24**	54
2027	244,213		**Oct 5**	157	254,181		None	245
2032	441,718		None	245	459,747		None	245
Action 2, Alternative 4: 90% of the recommended ABC								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	77,454	311,339	**Jun 10**	40	80,615	231,667	**Jun 21**	51
2027	231,360		**Sep 24**	146	240,803		None	245
2032	418,470		None	245	435,550		None	245

Note: All alternatives to Action 2 assume current sector allocations of 49% recreational and 51% commercial. All ACLs and projected landings are in pounds gutted weight.
*The recreational ACLs presented are inclusive of recreational landings tracked using the MRIP Fishing Effort Survey.

Table C-5. The projected South Atlantic gag commercial and recreational landings (lbs gw) and closure dates expected with each proposed annual catch limit alternative for Action 3. Alternative 1 (No Action) of Action 3 is omitted since it is identical to Action 2 Alternatives.

Action 3, Alternative 2: 63.63% recreational and 36.37% commercial								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	111,755	311,339	**Jun 28**	58	63,877	231,667	**Jun 9**	39
2027	333,819		None	245	190,806		**Nov 4**	187
2032	603,792		None	245	345,119		None	245
Action 3, Alternative 3: 43.06% recreational and 56.94% commercial								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	100,005	311,339	**Jun 22**	52	75,627	231,667	**Jun 18**	48
2027	298,721		**Dec 9**	222	225,904		**Dec 22**	235
2032	540,310		None	245	408,601		None	245
Action 3, Alternative 4a: 3-year average shared reduction								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	107,350	311,339	**Jun 26**	56	68,281	231,667	**Jun 12**	42
2027	281,847		**Nov 9**	192	242,778		None	245
2032	493,990		None	245	454,921		None	245
Action 3, Alternative 4b: 5-year average shared reduction								
Year	Rec. ACL*	Predicted Rec. Landings	Rec. Closure Date	Days Open in Rec. Season	Comm. ACL	Predicted Comm. Landings	Comm. Closure Date	Days Open in Comm. Season
2023	90,306	311,339	**Jun 17**	47	85,327	231,667	**Jun 25**	55
2027	264,802		**Oct 22**	174	259,823		None	245
2032	476,945		None	245	471,966		None	245

Note: All sector allocation options considered in alternatives 2-3 were applied to the revised total ACL of preferred Alternative 2 of Action 2. All ACLs and projected landings are in pounds gutted weight.
*The recreational ACLs presented are inclusive of recreational landings tracked using the MRIP Fishing Effort Survey.

Discussion

As with most projection models, the reliability of either of the RDT or CDT results are dependent upon the accuracy of the underlying data and input assumptions. We have attempted to create a realistic baseline as a foundation for comparisons, under the assumption that projected future landings will accurately reflect actual future landings. These closure dates are our best estimate, but uncertainty still exists as economic conditions, weather events, changes in catch-per-unit effort, fisher response to management regulations, and a variety of other factors may cause departures from any assumption.

The RDT and CDT also do not incorporate any changes in the average size of South Atlantic gag during rebuilding. As the stock rebuilds, it is likely that the average size will increase. An increased average size would lead to fishermen capturing their quota more rapidly relative to previous years under similar effort levels. All of these factors would result in more pessimistic projections. As such, management reductions may be overestimates, and caution should be taken in their interpretation and use. By contrast, continued adverse economic conditions and rising fuel prices may reduce effort, which would counter these other trends.

References

SEDAR. 2021. SEDAR 71 South Atlantic Gag Stock Assessment Report. SEDAR, North Charleston SC. 164 pp. available online at: http://sedarweb.org/sedar-71

Decision Tool Roadmap

To streamline review of the decision tool, a roadmap was created to summarize predicted season lengths for several different action and alternative combinations. For the allocation Alternatives 4a and 4b*, three scenarios were run through the decision tool:

1. **Most conservative**: Longest spawning season closure, lowest trip limit (commercial), lowest vessel limit (recreational)
2. **Less conservative**: Additional spawning month in May, highest trip limit (commercial), highest vessel limit (recreational)
3. **Least conservative**: No management changes, only allocations

*Note: all options are based on the total ACL from Preferred Alternative 2 of Action 2.

Table C-6. A summary of predicted commercial and recreational season lengths under different actions and alternatives determined using the decision tool.

	Commercial				Recreational			
	Spawning Season Closure	**Allocation**	**Trip Limit (lbs gw)**	**First Year w/o predicted closure**	**Spawning Season Closure**	**Allocation**	**Vessel Limit**	**First Year w/o predicted closure**
MOST CONSERVATIVE SITUATION	Dec 1 - May 31	Alt 4a (3yr basis)	200	2024	Dec 1 - May 31	Alt 4a (3yr basis)	2 fish/vessel	2025
	Dec 1 - May 31	Alt 4b (5yr basis)	200	2024	Dec 1 - May 31	Alt 4b (5yr basis)	2 fish/vessel	2025
SLIGHTLY CONSERVATIVE	Jan 1 - May 31	Alt 4a (3yr basis)	500	2026	Jan 1 - May 31	Alt 4a (3yr basis)	6 fish/vessel	2027
	Jan 1 - May 31	Alt 4b (5yr basis)	500	2025	Jan 1 - May 31	Alt 4b (5yr basis)	6 fish/vessel	2027
LEAST CONSERVATION, ONLY ALTERING ALLOCATIONS	Jan 1 - May 1	Alt 4a (3yr basis)	1000*	2027	Jan 1 - May 1	Alt 4a (3yr basis)	none	2028
	Jan 1 - May 1	Alt 4b (5yr basis)	1000*	2027	Jan 1 - May 1	Alt 4b (5yr basis)	none	2028

* 1,000 lbs gw until 75% of the commercial ACL is met then 500 lbs gw

Table C-7. A summary of predicted commercial season lengths and closure dates under different actions and alternatives determined using the decision tool.

Commercial

Spawning Season Closure	Allocation	Trip Limit	Year	Predicted Season length	Predicted Closure date
Dec 1 - May 31	Alt 4a (3yr basis)	200 lbs gw	2023	67 days	Sep 7th
			2024	183 days	none
Dec 1 - May 31	Alt 4b (5yr basis)	200 lbs gw	2023	107 days	Oct 17th
			2024	183 days	none
Jan 1 - May 31	Alt 4a (3yr basis)	500 lbs gw	2023	65 days	Aug 5th
			2024	132 days	Nov 11th
			2025	193 days	Dec 11th
			2026	214 days	none
Jan 1 - May 31	Alt 4b (5yr basis)	500 lbs gw	2023	87 days	Aug 27th
			2024	156 days	Nov 4th
			2025	214 days	none
Jan 1 - May 1	Alt 4a (3yr basis)	1000 lbs gw*	2023	42 days	Jun 12th
			2024	80 days	Jul 20th
			2025	134 days	Sep 12th
			2026	195 days	Nov 12th
			2027	245 days	none
Jan 1 - May 1	Alt 4b (5yr basis)	1000 lbs gw*	2023	55 days	Jun 25th
			2024	99 days	Aug 8th
			2025	162 days	Oct 10th
			2026	216 days	Dec 3rd
			2027	245 days	none

*1,000 lbs gw util 75% of the commercial ACL is met then 500 lbs gw

Table C-8. A summary of predicted recreational season lengths and closure dates under different actions and alternatives determined using the decision tool.

Recreational

Spawning Season Closure	Allocation	Vessel Limit	Year	Predicted Season length	Predicted Closure date
Dec 1 - May 31	Alt 4a (3yr basis)	2 fish/vessel	2023	69 days	Sep 9th
			2024	118 days	Oct 28th
			2025	183 days	none
Dec 1 - May 31	Alt 4b (5yr basis)	2 fish/vessel	2023	50 days	Aug 8th
			2024	99 days	Oct 9th
			2025	183 days	none
Jan 1 - May 31	Alt 4a (3yr basis)	6 fish/vessel	2023	70 days	Aug 10th
			2024	104 days	Sep 13th
			2025	141 days	Oct 20th
			2026	209 days	Dec 27th*
			2027	214	none
Jan 1 - May 31	Alt 4b (5yr basis)	6 fish/vessel	2023	57 days	Jul 28th
			2024	89 days	Aug 29th
			2025	127 days	Oct 6th
			2026	177 days	Nov 25th
			2027	214 days	none
Jan 1 - May 1	Alt 4a (3yr basis)	none	2023	56 days	Jun 26th
			2024	85 days	Jul 25th
			2025	116 days	Aug 25th
			2026	151 days	Sep 29th
			2027	192 days	Nov 9th
			2028	245 days	none
Jan 1 - May 1	Alt 4b (5yr basis)	none	2023	47 days	Jun 17th
			2024	72 days	Jul 12th
			2025	104 days	Aug 13th
			2026	137 days	Sep 15th
			2027	174 days	Oct 22nd
			2028	245 days	none

*closure occurs very close to the end of the calendar year

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