

# Amendment 51 to the Snapper Grouper Fishery Management Plan of the South Atlantic Region

## Catch Level Adjustments and Allocations for Snowy Grouper



Discussion Document  
Snapper Grouper Advisory Panel  
April 2022

## Background

Assessment Link: [http://sedarweb.org/docs/suar/2020\\_SEDAR36U\\_SAR\\_November2020.pdf](http://sedarweb.org/docs/suar/2020_SEDAR36U_SAR_November2020.pdf)

Fishery Overview: [https://safmc-shinyapps.shinyapps.io/SA\\_FisheryDataSnowyGrouper/](https://safmc-shinyapps.shinyapps.io/SA_FisheryDataSnowyGrouper/)

## 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 Council questions for specific actions

## 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
<b>March 2022</b>	<b>Review scoping comments and make needed modifications</b>
April 2022	Obtain input from AP
June 2022	Review modifications to the amendment, AP comments, select preferred alternatives, and approve for public hearings
July/August 2022	Conduct public hearings
September 2022	Review public hearing comments and approve all actions
December 2022	Review final draft amendment and consider approval for formal review

# Proposed Actions

## 1. Revise the acceptable biological catch, total annual catch limit, and annual optimum yield for snowy grouper

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

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

**Table 2.** The total ACL for snowy grouper under **Alternative 1 (No Action) – 5** in gutted weight

Alternative	Pounds Gutted Weight			
	2023	2024	2025	2026*
Alternative 1 (No Action)**	185,464	185,464	185,464	185,464
<b>Alternative 2***</b>	<b>119,954</b>	<b>121,272</b>	<b>122,889</b>	<b>122,889</b>
Alternative 3***	113,956	115,208	116,745	116,745
Alternative 4***	107,959	109,145	110,600	110,600

\*The 2026 ACL will remain in place until modified.

\*\*Current ABC=ACL and this represents CHTS estimates where appropriate for recreational data.

\*\*\*Represents FES estimates where appropriate for recreational data.

- Based on Preferred **Alternative 2** (ABC=ACL=OY), the following decreases from the current total ACL may be observed under proposed catch levels (**Table 3**).

**Table 3.** The difference and percent difference from the current total ACL based on **Action 1, Preferred Alternative 2**. Current total ACL is 185,464 lbs gw.

Year	Total ACL (currently 185,464 lbs gw)*		
	Updated Total ACL (lbs gw)	Difference from current ACL (lbs gw)	Percent Difference from current ACL
2023	119,954	-65,510	-42.9%
2024	121,272	-64,192	-41.9%
2025	122,889	-62,575	-40.6%
2026+	122,889	-62,575	-40.6%

\*The current ACL was determined using MRIP CHTS recreational landings.

**AP ACTION NEEDED:** Provide additional input for the Council’s consideration.

## 2. Revise sector allocations and sector annual catch limits for snowy grouper

**Table 4.** Allocation alternatives for proposed **Action 2**.

Alternatives	Commercial/recreational allocation	Basis for allocation
<b>Alternative 1 (No change)</b>	83%/17%	Average landings from 1986-2005 used in Reg. Amendment 20
<b>Preferred Alternative 2</b>	<b>87.55%/12.45%</b>	<b>Updated Average landings from 1986-2005</b>
<b>Alternative 3</b>	73.36%/26.64%	Allocation formula

**Note:** all alternatives applied to the revised total ACL from previous action.

- Percentages under **Alternative 2** are based on average landings from 1986 to 2005 using a revised dataset that is inclusive of MRIP FES estimates.
- Allocation under **Alternative 3** is based on applying the formula of sector annual catch limit =  $((\text{mean landings } 2006\text{-}2008) * 0.5) + ((\text{mean landings } 1986\text{-}2008) * 0.5)$  to a revised dataset that is inclusive of Marine Recreational Information Program Fishing Effort Survey estimates.
- For **Alternative 2** and **3**, the total ACL listed in the tables is representative of Preferred Alternative 2 (ACL=ABC) for Action 1. The revised total annual catch limit includes recreational landings based on the MRIP FES method and reflects stock assessment results of SEDAR 36 Update.
- The commercial snowy grouper ACL is currently allocated between two seasons with 70% of the commercial ACL allocated to season 1 (Jan-Jun) and 30% to season 2 (Jul-Dec).

**Table 5.** The commercial and recreational sector allocations for snowy grouper based on the revised total ACL=ABC from Preferred Alternative 2 of Action 1. Recreational allocations were determined using an average weight from 2016-2018 from SEDAR 36 Update (8.93 lbs gw). The commercial season is split into two seasons. Season 1 is from January 1 – June 31 and it receives 70% of the total commercial ACL. Season 2 is from July 1 – December 31 and it receives 30% of the total commercial ACL.

\*The 2026 ACL would remain in place until modified.

Year	Recreational Allocation of the Total ACL	Recreational ACL (numbers of fish)	Commercial Allocation of the Total ACL	Commercial ACL (lbs gw)	Commercial Season 1 (lbs gw) 70%	Commercial Season 2 (lbs gw) 30%
<b>Alternative 1 (No Action)</b>						
2023	17%	2,284	83%	99,562	69,693	29,869
2024		2,309		100,656	70,459	30,197
2025		2,339		101,998	71,399	30,599
2026*		2,339		101,998	71,399	30,599
<b>Preferred Alternative 2</b>						
<b>2023</b>	<b>12.45%</b>	<b>1,679</b>	<b>87.55%</b>	<b>109,038</b>	<b>76,327</b>	<b>32,711</b>
<b>2024</b>		<b>1,698</b>		<b>110,236</b>	<b>77,165</b>	<b>33,071</b>
<b>2025</b>		<b>1,720</b>		<b>111,706</b>	<b>78,194</b>	<b>33,512</b>
<b>2026*</b>		<b>1,720</b>		<b>111,706</b>	<b>78,194</b>	<b>33,512</b>
<b>Alternative 3</b>						
2023	26.64%	3,573	73.36%	88,046	61,632	26,414
2024		3,612		89,014	62,310	26,704
2025		3,661		90,201	63,141	27,060
2026*		3,661		90,201	63,141	27,060

**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 1. The revised total annual catch limit includes recreational landings from the MRIP FES method where appropriate, as well as updates to commercial and headboat landings used in the latest assessment (SEDAR 36 update).

## Background:

- Commercial landings of snowy grouper in the South Atlantic averaged 106.6% of the commercial ACL from 2015 through 2020. Commercial closures have occurred each year from 2015-2020 (Table 5). The commercial split season, which allows for the incidental harvest of snowy grouper when targeting blueline tilefish, allocates 70% of the commercial ACL to January-June and 30% of the commercial ACL to July-December. Any underage of the sector ACL in Season 1 automatically rolls over into Season 2. This split season went into effect February 2020 through Regulatory Amendment 27.

**Table 6.** Commercial landings (lbs gw) and the percentage of the commercial ACL landed each year from 2015-2020.

Note: The commercial split season was first effective in 2020.

Year	Season(s) and Closures	ACL (lbs gw)	% ACL
2020	Jan 1 - Jun 30, Jul 1 - Dec 31 (closure 12/12/20)	153,935	100.5
2019	Jan 1 - Dec 31 (closure: 8/3/19)	144,315	105.2
2018	Jan 1 - Dec 31 (closure: 7/24/18)	144,315	101.8
2017	Jan 1 - Dec 31 (closure: 6/22/17)	135,380	100.3
2016	Jan 1 - Dec 31 (closure: 6/14/16)	125,760	118.8
2015	Jan 1 - Dec 31 (closure: 7/6/2015, re-opened 8/20/2015, 9/22/15)	115,451	112.7

Source: [http://sero.nmfs.noaa.gov/sustainable\\_fisheries/acl\\_monitoring/index.html](http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/index.html)

- Recreational landings of snowy grouper in the South Atlantic averaged 68.8% of the recreational ACL from 2015 through 2020 based on CHTS (i.e. not FES) landings (Table 7). The snowy grouper recreational bag limit was reduced to 1 fish per vessel per day in October 2006 (Amendment 13C) to constrain harvest below the ACL.

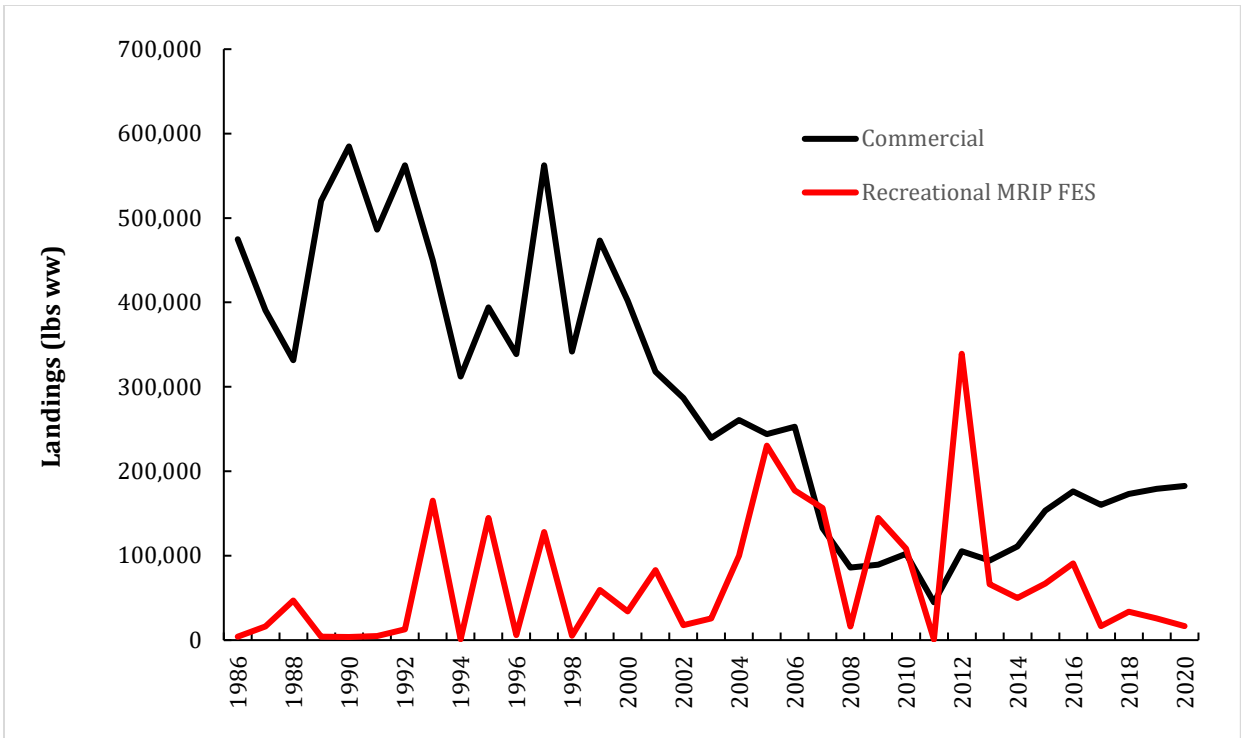
**Table 7.** Recreational landings (numbers) and the percentage of the recreational ACL landed each year from 2015-2020.

Note: Since the ACLs through 2020 were established using CHTS data, CHTS landings were used to determine the % ACL used each year from 2015-2020.

Year	Season and Closures	ACL (numbers of fish; MRIP CHTS)	% ACL
2020	May 1 – Aug 31	5,315	25.0
2019	May 1 – Aug 31	5,315	37.0
2018	May 1 – Aug 31	4,983	56.0
2017	May 1 – Aug 31	4,819	38.1
2016	May 1 – Aug 31	4,483	217.4
2015	May 1 – Aug 31 (closure: 9/1/15)	4,152	39.0

Source: [http://sero.nmfs.noaa.gov/sustainable\\_fisheries/acl\\_monitoring/index.html](http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/index.html)

- Figure 1 shows snowy grouper commercial and recreational landings (lbs ww) by year from 1986 through 2020. In 2011, the 240 ft deepwater closure was put into place through Amendment 17B for six species, including snowy grouper, but was then removed later in 2011 through Regulatory Amendment 10.



**Figure 1.** Snowy grouper commercial and recreational landings (lbs ww) by year from 1986 through 2020. Commercial landings are in black. Recreational MRIP FES estimates are in red. Sources: SEFSC Commercial ACL Datasets (Commercial ACL File October 9, 2020 and the ACL file provided April 5, 2021 for landings from 2014-2020); SEFSC Recreational MRIP FES ACL file (May 11, 2021).

**AP ACTION NEEDED:** Provide additional input for the Council’s consideration.



### 3. Reduce the snowy grouper commercial trip limit

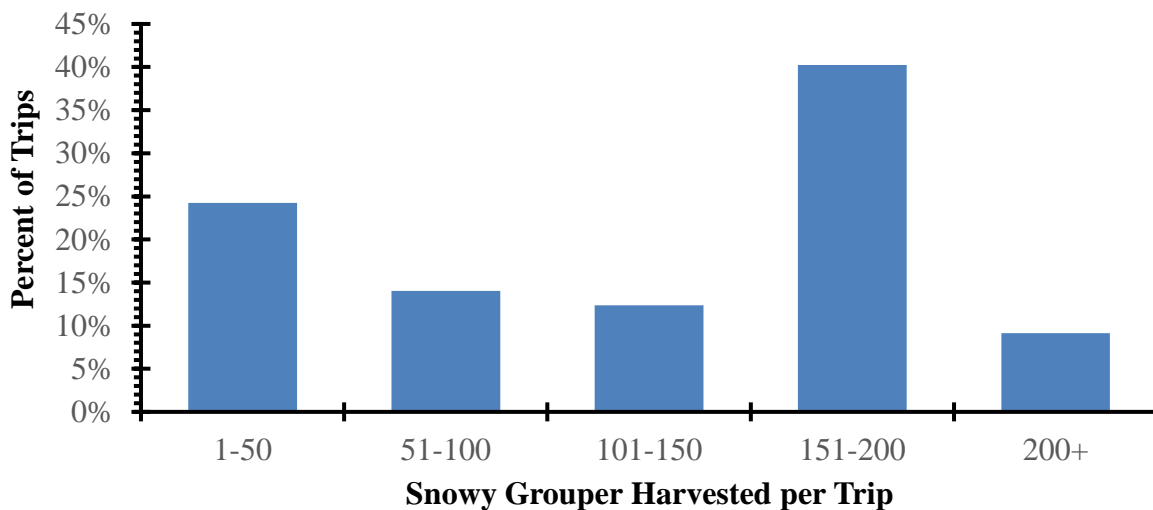
**Table 10.** A summary of alternatives for Action 3.

Alternatives	Trip Limit
Alternative 1 (No Action)	200 lbs gw
Alternative 2	150 lbs gw
Alternative 3	100 lbs gw

**Note:** Trip limit alternatives would apply to both season 1 and 2.

#### Background:

- Approximately 40% of the trips harvesting snowy grouper are estimated to have landed between 151 and 200 lbs gw (**Figure 3**; also see **Appendix I**). Trips estimated to have harvested greater than 200 lbs gw were normalized to 200 lbs gw when estimating potential reductions from lowering trip limit trip limit reductions (**Table 9**).



**Figure 3.** The percent of commercial trips (n=3,249) harvesting snowy grouper by bin from 2016 through 2019. Source: SEFSC commercial logbook [May 6, 2021].

**Table 9.** The predicted percent change in snowy grouper commercial landings per trip from reductions in the current 200-lb gw trip limit.

Current Trip Limit (lbs gw)	Potential Trip Limit (lbs gw)	Predicted Change in Landings
200-lb	150-lb	-16%
200-lb	100-lb	-38%

## **Previous Snapper Grouper AP Comments/Recommendations :**

### **Feedback:**

- More recreational effort noticed in certain areas.
- Cryptic population on snowy wrecks needs to be examined.
- Trip limits need enforcement to be effective.

### **AP Recommendations:**

- The AP would like to try to keep fishery open as long as possible, modify trip limits to reduce effort.
  - There was concern that a trip limit reduction may not make the trip to snowy depths worth it.
- The AP prefers the 200 lbs trip limit.

## Preliminary Analysis:

**Table 10.** The projected closure dates in 2023 with each commercial ACL alternative for snowy grouper by season with different trip limit alternatives and 95% confidence interval (CI). Note that 70% of the ACL is allocated to the January through June season and 30% to the July through December season and the ACL will increase from 2023 through 2026 when it will remain the same.

<b>Action 2 Sector ACL Alternative 1: Commercial ACL= 99,562 lbs gw (83% of total ACL)</b>				
Season	ACL (lbs gw)	Trip Limit (lbs gw)	Closure Date	Season Length (95% CI)
January 1 – June 30	69,693	200	April 15	Apr 2 – May 1
January 1 – June 30	69,693	150	April 29	Apr 15 – May 20
January 1 – June 30	69,693	100	June 3	May 14 – No Closure
July 1 – December 31	29,869	200	August 20	Aug 8 – Sep 29
July 1 – December 31	29,869	150	September 3	Aug 16 – Dec 2
July 1 – December 31	29,869	100	October 8	Sep 4 – No Closure
<b>Action 2 Sector ACL Alternative 2: Commercial ACL= 109,038 lbs gw (87.55% of total ACL)</b>				
Season	ACL (lbs gw)	Trip Limit (lbs gw)	Closure Date	Season Length (95% CI)
<b>January 1 – June 30</b>	<b>76,327</b>	<b>200</b>	<b>April 22</b>	<b>Apr 8 – May 11</b>
January 1 – June 30	76,327	150	May 8	Apr 23 – May 31
January 1 – June 30	76,327	100	June 16	May 25 – No Closure
<b>July 1 – December 31</b>	<b>32,711</b>	<b>200</b>	<b>August 27</b>	<b>Aug 12 – Oct 17</b>
July 1 – December 31	32,711	150	September 11	Aug 21 – No Closure
July 1 – December 31	32,711	100	October 24	Sep 13 – No Closure
<b>Action 2 Sector ACL Alternative 3: Commercial ACL= 88,046 lbs gw (73.36% of total ACL)</b>				
Season	ACL (lbs gw)	Trip Limit (lbs gw)	Closure Date	Season Length (95% CI)
January 1 – June 30	61,632	200	April 6	Mar 23 – Apr 21
January 1 – June 30	61,632	150	April 19	Apr 5 – May 6
January 1 – June 30	61,632	100	May 18	May 1 – Jun 12
July 1 – December 31	26,414	200	August 12	Aug 3 – Sep 14
July 1 – December 31	26,414	150	August 24	Aug 10 – Oct 8
July 1 – December 31	26,414	100	September 21	Aug 26 – No Closure

## AP ACTION NEEDED:

- Review alternatives and recommend a preferred.
- Consider the following questions:
  - Consider the preferred alternative. Does the AP still prefer this alternatives?
  - What are the pros/cons of a higher trip limit?
  - Is there seasonality to the snowy grouper catch where you fish? What time of the year is most important in your area for targeting snowy?

## 4. Modify the recreational season

**Table 11.** A summary of the alternatives for Action 4.

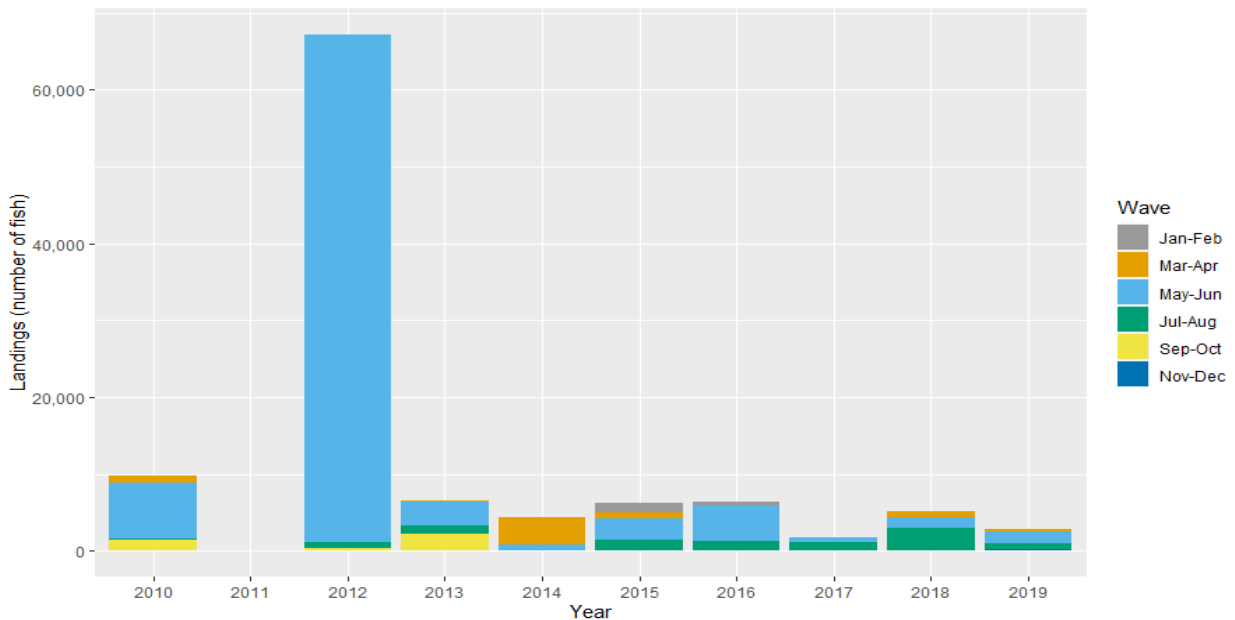
Alternative	Season Waves	Season Dates
Alternative 1 (no change)	waves 3 and 4	May 1 - August 31
Alternative 2	wave 3 only	May 1 - June 30
Alternative	wave 4 only	July 1 - August 31

### Background:

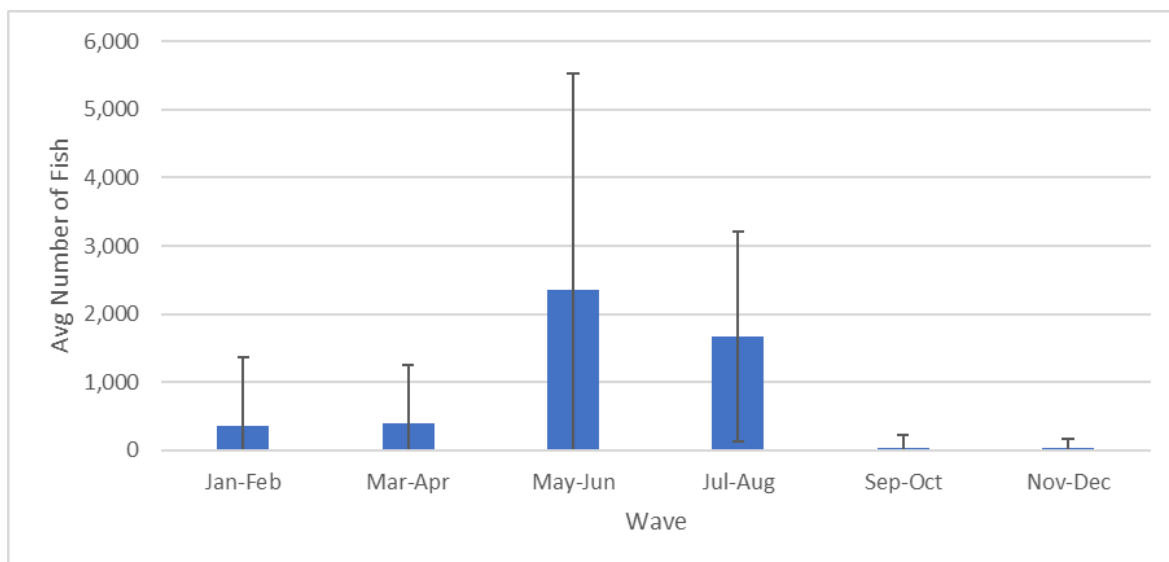
- The current recreational season for snowy grouper is May 1<sup>st</sup> through August 31<sup>st</sup> and recreational harvest is limited to one snowy grouper per vessel per day.
- The annual recreational landings of snowy grouper have been less than 10,000 fish every year from 2010 to 2019 except 2012 when landings were over 60,000 fish<sup>1</sup>.
  - Charter and private recreational trips (estimated through MRIP) averaged 89% of the total recreational landings over the ten-year timeframe.
  - Recreational landings of snowy grouper from 2010 to 2019 tended to be highest in May - June (wave 3) or July - August (wave 4) (**Figure 5**, 2011 included a deepwater closure for part of the year).
  - From 2015 to 2019, the average landings were highest during the snowy grouper recreational fishing season May through August (**Figure 6, Table 12**).
  - Landings were reported in January through April and most of these landings (55%) occurred in 2015, prior to the season being enacted.

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<sup>1</sup> Note that the SERO ACL Monitoring webpage does not include snowy grouper landings from Monroe County, FL which were included in the landings stream as part of SEDAR 36 (2013) and SEDAR 36 Update (2020).



**Figure 5.** Recreational landings of snowy grouper (number of fish) by year and wave from 2010 to 2019 for the South Atlantic region. Landings include trips reported from Key West, FL up to the Virginia/North Carolina border.



**Figure 6.** Average number of snowy grouper landed in recreational sector by wave from the South Atlantic from 2015 to 2019. The landings included trips reported from Monroe County, FL. Blue bars represent the average landings and lines represent the 95% confidence interval.

### Preliminary Analysis:

- An analysis of the recreational season was conducted to predict the season length for each allocation scenario. The average number of snowy grouper landed from 2015-2019 per

wave was used to compare to the new recreational ACL. For Action 2, Alternative 1 the season was predicted to last approximately 1 wave (currently the season lasts two waves). For Action 2 Alternative 2 the season was predicted to last less than one wave and for Action 2 Alternative 3 the season was predicted to last slightly less than 2 waves.

**Table 12.** Average number of snowy grouper landed by the recreational sector by wave from the South Atlantic from 2015 to 2019. The landings included trips reported from Monroe County, FL. The confidence interval was developed based on the standard deviation of the five years.

Wave	Average	Confidence Interval	Average Number Per Month
Jan-Feb	351	0 - 1,372	175.5
Mar-Apr	395	0 - 1,256	197.5
<b>May-Jun</b>	<b>2,354</b>	<b>0 - 5,520</b>	<b>1,177.0</b>
<b>Jul-Aug</b>	<b>1,674</b>	<b>138 - 3,210</b>	<b>837.0</b>
Sep-Oct	45	0 - 230	22.5
Nov-Dec	30	0 - 163	15.0

- Based on the landings in **Table 11**, the following recreational season lengths would be predicted under the proposed reduced recreational ACL:

**Table 13.** The predicted recreational season length based on landings from 2015-2019 for each potential allocation scenario and the current recreational season of May 1<sup>st</sup> – August 31<sup>st</sup>.

Allocations percentages applied to total ACL=ABC (Alternative 2 in Action 1).

Note: the current recreational season is shown as 2 waves in table 12.

Year	Recreational Allocation	Recreational ACL (numbers of fish)	Predicted Season Length*
<b>Action 2 Sector ACL Alternative 1 (No Action)</b>			
<b>2023</b>	17%	2,284	~ 1 wave
<b>2024</b>		2,309	~ 1 wave
<b>2025</b>		2,339	~ 1 wave
<b>2026</b>		2,339	~ 1 wave
<b>Action 2 Sector ACL Alternative 2</b>			
<b>2023</b>	12.45%	1,679	< 1 wave
<b>2024</b>		1,698	< 1 wave
<b>2025</b>		1,720	< 1 wave
<b>2026</b>		1,720	< 1 wave
<b>Action 2 Sector ACL Alternative 3</b>			
<b>2023</b>	26.64%	3,573	< 2 waves
<b>2024</b>		3,612	< 2 waves
<b>2025</b>		3,661	< 2 waves
<b>2026</b>		3,661	< 2 waves

- Currently:
  - The season occurs during peak spawning months (May through August).
  - The current season was established through Regulatory Amendment 20 (2015). It was noted in this amendment that most recreational landings, particularly Monroe County landings occurred in May or June.
  - This season was established mainly to reduce the recreational harvest below the ACL since years leading up to this amendment exceeded this level.
  - Aimed to account for the targeting of co-occurring species (mainly blueline tilefish) during a recreational closure.
  
- Changing the snowy grouper recreational fishing may affect the recreational blueline tilefish season. The current blueline tilefish season is May 1 – August 31 which was established during Amendment 32 (2015). Blueline tilefish are one of the most commonly caught species when catching (**Table 13**), discarding (**Table 14**), and harvesting (**Table 15**) snowy grouper.

**Table 14.** Top ten species caught on recreational trips that caught snowy grouper in the South Atlantic region from 2015 to 2019. This data came from MRIP which recorded 57 trips that caught snowy grouper. This includes both discard and harvest snowy grouper trips.

Species	Number of Trips
Dolphin	26
Blueline Tilefish	19
Black Sea Bass	10
Greater Amberjack	10
Blackfin Tuna	7
Gray Triggerfish	7
Almaco Jack	6
Wahoo	6
Yellowedge Grouper	6
Blackbelly Rosefish	5

**Table 15.** Top five species caught on recreational trips that discarded snowy grouper in the South Atlantic region from 2015 to 2019. This data came from MRIP which recorded 10 trips that discarded snowy grouper.

Species	Number of Trips
Yellowedge Grouper	1
Red Snapper	1
Black Sea Bass	1
Unidentified Shark	1
Bluefish	1

**Table 16.** Top ten species caught on recreational trips that harvested snowy grouper in the South Atlantic region from 2015 to 2019. This data came from MRIP which recorded 47 trips that released snowy grouper.

<b>Species</b>	<b>Number of Trips</b>
Dolphin	26
Blueline Tilefish	19
Black Sea Bass	10
Greater Amberjack	9
Blackfin Tuna	7
Gray Triggerfish	7
Almaco Jack	6
Wahoo	6
Yellowedge Grouper	5
Blackbelly Rosefish	5

### **Previous Snapper Grouper AP Comments/Recommendations :**

#### **Feedback:**

- The AP noted there is a state snowy fishery off South Florida.
  - Very accessible in FL due to technology and distance offshore.
- Recreational effort increasing as technology advances.
- Citizen science could help provide data on participation.
- Recreational season is when charter parties are interested in fishing due to good weather.
- The current charter reporting data needs to be examined if need be.
- Discard mortality is a concern for this species. Bag limit controls trip length.
  - Day saver species

#### **AP Recommendations:**

- Stamp/permit needed (private recreational only).
- Snowy grouper needs a census due to low intercepts.
- Modify recreational season so it does not coincide with peak spawning.

### **AP ACTION NEEDED:**

- Review action and alternatives
- Consider the following questions:
  - What recreational season does the AP think would be most appropriate?
  - Do you have any suggestions for how to address regional differences in recreational access to snowy?



## 5. Modify snowy grouper recreational accountability measures

**Table 16.** A summary of accountability measures within each alternative for Action 6

	In-Season AM		Post Season AM	
	Triggers	AM	Triggers	AM
<b>Alternative 1 (No Action)</b>	Recreational landings reach/projected to reach recreational ACL	Current recreational season closes	<ul style="list-style-type: none"> <li>• Recreational landings exceed recreational ACL</li> <li>• Total ACL exceeded</li> <li>• Stock is overfished</li> </ul> <p><i>*All 3 must occur for AM to take effect</i></p>	<ul style="list-style-type: none"> <li>• Recreational ACL for the following year reduced by the recreational overage</li> <li>• Recreational season for the following year is reduced by the amount of the recreational overage</li> </ul>
<b>Alternative 2</b>	NMFS will annually announce the recreational fishing season start and end dates			
<b>Alternative 3</b>	NONE		Recreational landings exceed recreational ACL	Recreational season for the following year is reduced by the amount necessary to prevent the recreational ACL from being exceeded

### Background:

- Modifications to the recreational accountability measures could be considered to separate commercial and recreational accountability measure triggers and establish a viable accountability measure for the recreational sector.
- Snowy grouper currently has a recreational in-season accountability measure; however, this is not effective for constraining recreational landings to the ACL due to the relatively short season length and the timeliness of recreational data availability.

### Previous Snapper Grouper AP Comments/Recommendations :

#### Feedback:

- Commercial also has reporting accountability tied to the permit. Both sectors should have functioning in-season closures.

#### AP Recommendations

- The AP would like to keep the current triggers for the AM in place due to small recreational landings.
- Possibly reallocate recreational underage to the commercial sector in the following year, looking for equity between the sectors.
- Adding additional recreational AM restrictions is not advised by the AP.

**AP ACTION NEEDED:** Review action and alternatives

## Literature Cited

Heyman, W. D., Grüss, A., Biggs, C. R., Kobara, S., Farmer, N. A., Karnauskas, M., Lowerre-Barbieri, S., & Erisman, B. (2019). Cooperative Monitoring, assessment, and management of fish spawning aggregations and associated fisheries in the U.S. Gulf of Mexico. *Marine Policy*, *109*, 103689. <https://doi.org/10.1016/j.marpol.2019.103689>

Kolmos, K., Wyanski, D., White, B., & Mikell, P. P. (2019). Temporal changes in the life history of Snowy Grouper (*Hyporthodus niveatus*) off North and South Carolina, and factors that influence spawning dynamics. *Fishery Bulletin*, *117*(4), 308–321. <https://doi.org/10.7755/fb.117.4.4> Appendix

# Appendices

## A. Acceptable Biological Catch and Overfishing Limit

The SSC reviewed the snowy grouper stock assessment (SEDAR 36 Update 2020) at their January 2021 meeting. The SSC determined 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 SSC applied the ABC Control Rule and recommended an ABC and OFL for snowy grouper as total removals (including discards). These recommendations are expressed as landings in Table 1. **ABC/OFL recommendations in pounds whole weight are converted to pounds gutted weight using a 1.18 NMFS conversion factor. According to SEDAR 36 Update, 95.4% of total removals of snowy grouper are landings and 4.6% are dead discards.** Landings recommendations have been calculated to account for dead discards.

**Table A-1.** South Atlantic Snowy grouper OFL and ABC recommendations (landings) in pounds gutted weight (lbs gw) and numbers of fish.

OFL RECOMMENDATIONS					
Year	Removals (lbs ww)	Removals (lbs gw)	Removals (numbers of fish)	Landings (lbs gw)	Landings (numbers of fish)
2023	194,000	164,407	21,000	156,844	20,034
2024	193,000	163,559	20,000	156,035	19,080
2025	192,000	162,712	20,000	155,227	19,080
2026	188,000	159,322	20,000	151,993	19,080
ABC RECOMMENDATIONS					
Year	Removals (lbs ww)	Removals (lbs gw)	Removals (numbers of fish)	Landings (lbs gw)	Landings (numbers of fish)
2023	148,000	125,424	16,000	119,954	15,624
2024	150,000	127,119	16,000	121,272	15,624
2025	152,000	128,814	16,000	122,889	15,624
2026	152,000	128,814	16,000	122,889	15,624

The current ABC and the total ACL for snowy grouper is 218,848 pounds (lbs) whole weight (ww) (185,464 lbs gw) (Regulatory Amendment 20, SAFMC 2015). Commercial and recreational sector ACLs are currently monitored using different units. The commercial sector ACL is monitored using gutted weight and the recreational sector ACL is monitored using numbers of fish. Few snowy grouper are observed in the recreational fishery and the low sample size can cause annual variation in the estimated average weight for snowy grouper. The Council will continue to track the recreational ACL in numbers of fish. The recreational ACL was converted to numbers of fish using projected annual average weights. Though the ABC in

numbers of fish is consistent throughout the projection timeframe, average weight as well as ABCs and ACLs measured by weight are expected to increase as the stock rebuilds.

## B. Management History

**Table B-1.** The previous management measures and catch levels for South Atlantic snowy grouper.

Management Measures	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
ABC (lbs gw)	87,254	87,254	87,254	139,098	151,518	163,109	173,873	185,464	185,464	185,464	185,464	
Total ACL (lbs gw)	87,254	87,254	87,254	139,098	151,518	163,109	173,873	185,464	185,464	185,464	185,464	
Total Landings (lbs gw)										TBD	TBD	
Total ACL Overage/Underage				134%	149%	92%	101%	94%	91%	TBD	TBD	
Com. ACL (lbs gw)	82,900	82,900	82,900	115,451	125,760	135,380	144,315	153,935	153,935 (107,754/ 46,181)	153,935 (107,754/ 46,181)	TBD	
Com. Landings (lbs gw)	89,148	79,829	94,031	130,088	149,385	135,825	146,874	151,889	154,753	(91,092/ TBD)	TBD	
Com. Overage/Underage (%)	107.5%	96.3%	113.4%	112.7%	118.8%	100.3%	101.8%	105.2%	100.5%	TBD	TBD	
Rec. ACL (lbs gw)				23,647	25,758	27,729	29,558	31,529	31,529	31,529	31,529	
Rec. ACL (numbers of fish)	523	523	523	4,152	4,483	4,819	4,983	4,983	4,983	5,315	5,315	
Rec. Landings, "Old" MRIP (numbers of fish)	2,065	2,048	1,214	1,621	9,746	1,834	2,766	1,946	1,309	770	TBD	
Rec. Overage/Underage	395%	392%	232%	39%	217%	38%	56%	39%	26%	14%	TBD	
Rec. Bag Limit	1/person/d ay	1/person/d ay	1/person/d ay	1/vessel/ day	1/vessel/ day	1/vessel/ day	1/vessel/ day	1/vessel/ day	1/vessel/ day	1/vessel/ day	TBD	TBD
Rec. Season	calendar year	calendar year	calendar year	May - Aug	May - Aug	May - Aug	May - Aug	May - Aug	May - Aug	May - Aug	TBD	TBD
Rec Allocation	5%	5%	5%	17%	17%	17%	17%	17%	17%	17%	TBD	TBD
Com. Trip Limit (lbs gw)	100	100	100	200	200	200	200	200	200	200	TBD	TBD

<b>Com. Season</b>	calendar year	calendar year	calendar year	calendar year	calendar year	calendar year	calendar year	calendar year	calendar year (season 1/season 2)	TBD	TBD
<b>Com. Allocations</b>	95%	95%	95%	83%	83%	83%	83%	83%	83%	TBD	TBD

