Regulatory Amendment 35

Red Snapper Catch Levels and Snapper Grouper Release Mortality Reduction

Options Paper

September 2022

Background

Red snapper have been in a rebuilding plan since 2011, with the stock expected to be rebuilt by 2044. The most recent stock assessment for South Atlantic red snapper, SEDAR 73 (2021) with data through 2019, determined the stock to still be overfished and undergoing overfishing, but rebuilding (**Figure 1**). The National Marine Fisheries Service (NMFS) notified the South Atlantic Fishery Management Council (Council) of the stock status on July 23, 2021. Stock assessment summary information, a history of management, and the most recent fishery performance report for red snapper can be found in its Fishery Overview.

Directed red snapper fishing is limited to a few days of recreational harvest allowed annually and a low annual catch limit (ACL) for the commercial sector with a season beginning each year in July until the ACL is met. These measures, combined with growing fishing effort in the South Atlantic snapper grouper fishery, particularly from the recreational sector, have led to a drastic increase in the number of red snapper that must be released after being caught while fishing for other snapper grouper species. The increase in releases has, in turn, led to an increase in the number of fish that die after being caught and released, despite efforts from management and fishermen to improve survival after release through best practices and the use of descending devices. The number of dead red snapper releases far outnumbers fish removed from the population by harvest. Large numbers of releases limit the Council's ability to prevent overfishing and reduce the number of fish that can be landed by the fishery.

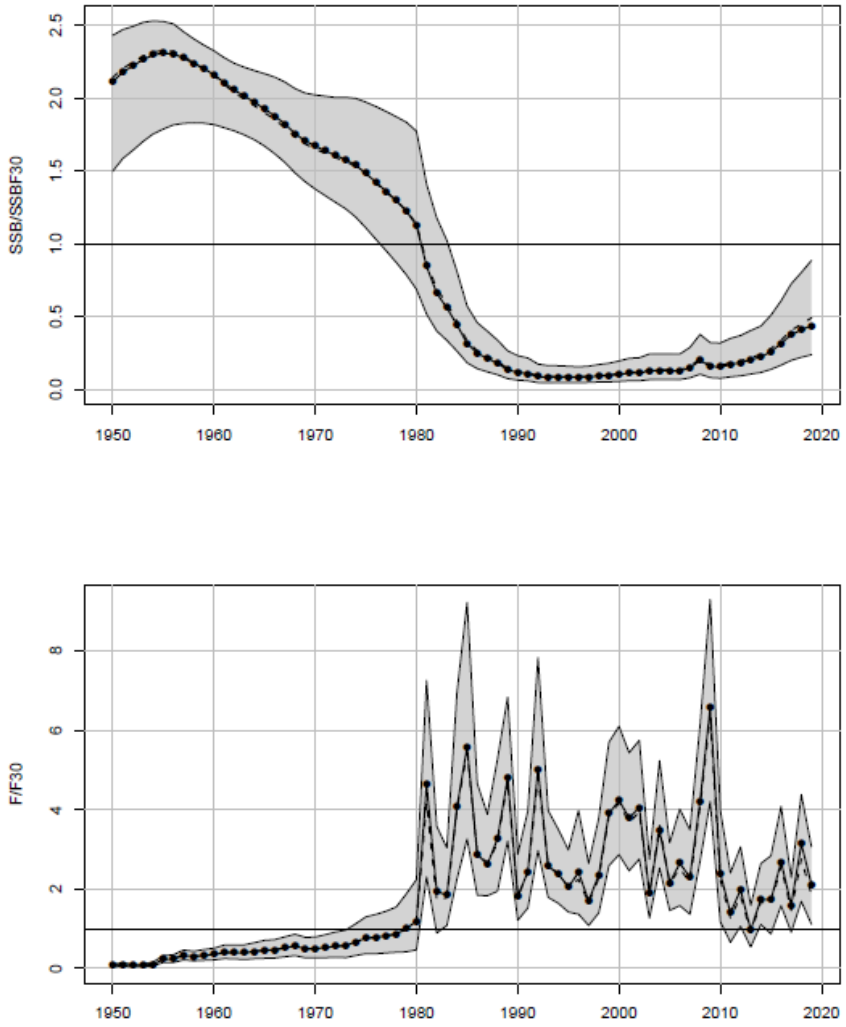

Figure 1. Estimated time series of spawning stock biomass (SSB) and fishing mortality (F) relative to benchmarks. Solid line indicates estimates from base run of the Beaufort Assessment Model; dashed lines represent median values; gray error bands indicate 5th and 95th percentiles of the ensemble modeling. Top panel: SSB relative to $SSB_{F30\%}$; if less than 1, stock is overfished. Bottom panel: F relative to $F_{30\%}$; if > 1 stock is undergoing overfishing. *Source: SEDAR 73 (2021).*

In September 2021, the Council's (SSC) recommended new acceptable biological catch (ABC) levels for red snapper based on the results of SEDAR 73 (2021). Implementation of the recommended ABCs would initially entail an approximate one-half reduction from the current ABC (50,000 fish), further limiting the fishery and not addressing the primary source of mortality for the stock. A reduction in the current OFL (53,000 fish) is also needed. Therefore, in March 2022, the Council initiated a regulatory amendment that would: 1) adjust red snapper catch levels to be based on the most recent stock assessment and SSC recommendation, and 2) end overfishing of red snapper through management measures aimed at reducing releases and release mortality of snapper grouper species.

In June 2022, the Council directed that, in addition to including consideration of new catch levels for red snapper, the amendment include actions to prohibit the use of automatic rod and reel (expanded from the Council's original language of "electric reel" to encompass both electric and hydraulic automatic reels, as well as clarify "rod and reel" as the gear rather than other forms of reels as defined by NMFS) and more than one hook per line for the recreational sector while snapper grouper fishing. The Council also directed that overfishing of red snapper be addressed through expanded outreach and education on best fishing practices. Finally, the Council requested information to consider whether time or area closures for snapper grouper fishing should be considered in Regulatory Amendment 35.

The Southeast Fisheries Science Center has conducted analyses estimating the reduction in dead discards that would reduce the fishing mortality rate below the overfishing threshold. A report detailing these results is part of the September 2022 Council Meeting Briefing Book.

Proposed management changes in this amendment

- Adjust catch levels for red snapper in the South Atlantic based on latest stock assessment (SEDAR 73, 2021).
- Prohibit the use of automatic rod and reel for the recreational sector of the snapper grouper fishery.
- Prohibit the use of more than one hook per line for the recreational sector of the snapper grouper fishery
- Others?

Objectives for this meeting

- Review draft Purpose & Need statement, modify as appropriate, and provide rationale.
- Review options for actions and alternatives and modify as appropriate.

Potential amendment timing

September 2022	**Review options paper and provide guidance to staff**
December 2022	Review draft actions and alternatives and approve for scoping
January-February 2023	Conduct scoping hearings
March 2023	Review scoping comments, preliminary analyses, and drafted alternatives and provide guidance to staff
June 2023	Review modifications to the amendment, select preferred alternatives, and approve for public hearings
Summer 2023	Conduct public hearings
September 2023	Review public comment and approve all actions
December 2023	Review final draft amendment and consider approval for formal review
Mid-2024	Regulations effective

Note: Given the controversial nature of seasonal/area closures, if the Council were to include such consideration in Regulatory Amendment 35, this tentative timeline would likely be extended.

DRAFT Purpose and Need Statements

Purpose: The *purpose* of this amendment is to revise the overfishing limit, acceptable biological catch, and annual catch limits for red snapper in the South Atlantic based on the results of the latest stock assessment; and implement management measures to reduce dead releases for the South Atlantic snapper grouper fishery.

Need: The *need* for this amendment is to ensure catch limits are based on the best scientific information available and to end overfishing of the South Atlantic red snapper stock, while minimizing negative social and economic effects to the extent practicable, consistent with the Magnuson Stevens Fishery Conservation and Management Act and its National Standards.

Acceptable Biological Catch and Overfishing Limit

The SSC reviewed the South Atlantic red snapper stock assessment (SEDAR 73 2021) at their April 2021 and July 2021 meetings. The SSC found that the assessment addressed the terms of reference appropriately, was conducted using the best scientific information available, was

adequate for determining stock status and supporting fishing level recommendations, and addressed uncertainty consistent with expectations and available information.

The SSC reviewed projections depicting a variety of recruitment, fishing mortality, and discard mortality scenarios. The SSC recommended the overfishing limit (OFL) be based on results of a projection that included recent (last 10 years) average recruitment, a discard mortality rate that accounts for descending device usage based on current and predicted levels of use, a fishing mortality rate of F30% (the fishing mortality rate when the spawning potential ratio equals 30%; a proxy for F_{MSY}), and no reallocation of fishing mortality from discards to landings. This projection was run out through 2044 to determine if the stock would rebuild within the rebuilding timeframe. The projections indicated the stock would rebuild within the rebuilding timeframe. Recommended landings and projected discard levels are provided for the next 5 years (**Table 1**).

The current OFL for red snapper is 53,000 fish, and the current ABC is 50,000 fish, based on the SSC's recommendation following the SEDAR 41 stock assessment (2017). The total ACL is 42,510 fish (Amendment 43, SAFMC 2017).

Table 1. Overfishing limit (OFL) and acceptable biological catch (ABC) levels (the SSC recommended ABC equal OFL) recommended for South Atlantic red snapper by the SSC, based on projections from SEDAR 73 (2021). Discard pounds and numbers are those of dead discards.

Year	Landings (lbs ww)	Discards (lbs ww)	Landings (numbers of fish)	Discards (numbers of fish)	Percent Landed Number Reduction from Current ACL
*2022**	*284,000*	*983,000*	*25,000*	*195,000*	--
2023	327,000	1,036,000	28,000	202,000	34.13%
2024	368,000	1,076,000	31,000	207,000	27.08%
2025	408,000	1,104,000	33,000	210,000	22.37%
2026	446,000	1,122,000	35,000	211,000	17.67%

**Given the timing of this amendment, the earliest that revised ABCs could be implemented is 2023.*

Options for Proposed Actions

1. Revise the South Atlantic red snapper overfishing limit, acceptable biological catch, total annual catch limit, and annual optimum yield

- The current red snapper OFL (53,000 fish) and ABC (50,000 fish) are the summed values of projected landings and dead discards recommended for the 2017 OFL and ABC by the SSC in 2016, based on results of SEDAR 41 (2016) (May 2016 SSC Report).
    - The OFL and ABC were specified in the NMFS rulemaking to implement Amendment 43.
    - In Amendment 43 (2017), the Council was concerned that uncertainty in recreational landings and discards inhibited the ability to set a red snapper ABC that could be effectively monitored.
        - The Council chose to wait to make additional changes to the ABC in Snapper Grouper Amendment 46.
        - Amendment 46 was paused before its completion. The SEDAR 73 stock assessment was completed before development of Amendment 46 resumed. Therefore, OFL and ABC recommendations based on SEDAR 73 are now being incorporated into the management plan through Regulatory Amendment 35, and Amendment 46 no longer includes actions addressing the red snapper ABC.

- The current total ACL is 42,510 fish.
    - Council rationale for setting this total ACL through Snapper Grouper Amendment 43 (2017) included:
        - Information from the Southeast Reef Fish Survey chevron trap monitoring program indicated that the red snapper stock was recovering, particularly substantial increasing abundance trends from 2014-2016.
        - Abundance increases occurred despite landings during short open seasons in 2012-2014 and discard mortality from 2012-2016.
        - The Council's preferred alternative set the total ACL equal to the landings during the 2014 season (42,510 fish). This was the highest annual landings amount during the mini-seasons in 2012-2014. The Council determined that the increased abundance following the 2014 harvest indicated that level of harvest would be unlikely to result in overfishing or prevent red snapper from rebuilding within the rebuilding timeframe.
    - Discarding of red snapper while targeting co-occurring species was noted in Amendment 43 (2017) as a serious conservation and management problem that was increasingly frustrating fishermen at that time.

- Based on the SEDAR 73 assessment (2021), South Atlantic red snapper remain overfished and overfishing is occurring. However, the estimated red snapper abundance has increased substantially in recent years and is highest at the end of the time series (2019). Despite overfishing, this increase in abundance has been stimulated by higher than average recruitment.

- New ACLs are needed since the SSC recommended new OFL and ABC values based on the SEDAR 73 assessment (**Table 1**).

- OFL and ABC recommendations are for landings; discards were accounted for in the assessment model and not included in the recommended OFLs and ABCs.

- **Does the Council want to set the optimum yield (OY) separately from the ACL?** The Council has specified OY=ACL for most snapper grouper species. National Standard 1 guidelines state that although a Council can establish an annual OY, it must establish a long-term OY.

- The Council discussed sector allocation for red snapper at their June 2022 meeting and noted that they do not feel the need to consider changes to allocation at this time because unlike many other species, the primary recreational data source (Florida State Reef Fish Survey) was not changed by the Marine Recreational Information Program's (MRIP) transition from the Coastal Household Telephone Survey to the mail-based Fishing Effort Survey in 2018. Additionally, the Council intends to consider larger-scale changes to the snapper grouper fishery in a future amendment. This future amendment could consider changes to sector allocations if necessary at that time.

- Current ACL units and allocation method (Amendment 43, 2017)
    - **Total ACL is 42,510 fish.**
    - The commercial ACL is 28.07% of the total ACL poundage, and the recreational ACL is 71.93% of the total ACL.
    - **Commercial ACL is 124,815 pounds whole weight (lbs ww).**
        - To calculate the commercial ACL, the total ACL in numbers of fish is converted to weight using the projected average weight for 2018 (10.46 lbs ww) from SEDAR 41 (2017).
    - **Recreational ACL is 29,656 fish.**
        - To calculate the recreational ACL, the commercial ACL in lbs ww is converted to numbers of fish using the average weight of commercially caught red snapper from 2012 to 2014 (9.71 lbs ww) (SEDAR 41, 2017).
        - The recreational ACL is the difference between the total ACL in numbers of fish and the commercial ACL in numbers of fish.

- Options for developing a range of alternatives:

Option 1 (No Action). The overfishing limit for South Atlantic red snapper is 53,000 fish. The acceptable biological catch is 50,000 fish. The total annual catch limit is 42,510 fish.

Option 2. Revise the overfishing limit and acceptable biological catch and set them equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for red snapper and set them equal to the **recommended** acceptable biological catch. The 2027 total annual catch limit and annual optimum yield would remain in place until modified.

Fishing Year	Overfishing Limit (numbers of fish)	Acceptable Biological Catch (numbers of fish)	Annual Optimum Yield (numbers of fish)	Total Annual Catch Limit (numbers of fish)
2023	28,000	28,000	28,000	28,000
2024	31,000	31,000	31,000	31,000
2025	33,000	33,000	33,000	33,000
2026	35,000	35,000	35,000	35,000
2027	36,000	36,000	36,000	36,000

Option 3. Revise the overfishing limit and acceptable biological catch and set them equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for red snapper and set them equal to 95% of the **recommended** acceptable biological catch. The 2027 total annual catch limit and annual optimum yield would remain in place until modified.

Fishing Year	Overfishing Limit (numbers of fish)	Acceptable Biological Catch (numbers of fish)	Annual Optimum Yield (numbers of fish)	Total Annual Catch Limit (numbers of fish)
2023	28,000	28,000	26,600	26,600
2024	31,000	31,000	29,450	29,450
2025	33,000	33,000	31,350	31,350
2026	35,000	35,000	33,250	33,250
2027	36,000	36,000	34,200	34,200

Option 4. Revise the overfishing limit and acceptable biological catch and set them equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and annual optimum yield for red snapper and set them equal to 90% of the **recommended** acceptable biological catch. The 2027 total annual catch limit and annual optimum yield would remain in place until modified.

Fishing Year	Overfishing Limit (numbers of fish)	Acceptable Biological Catch (numbers of fish)	Annual Optimum Yield (numbers of fish)	Total Annual Catch Limit (numbers of fish)
2023	28,000	28,000	25,200	25,200
2024	31,000	31,000	27,900	27,900
2025	33,000	33,000	29,700	29,700
2026	35,000	35,000	31,500	31,500
2027	36,000	36,000	32,400	32,400

Committee Action:

Provide guidance on range of options to develop for red snapper catch levels.

2. Prohibit the use of automatic rod and reel for the snapper grouper recreational sector

- In an effort to reduce the number of encounters with snapper grouper species that cannot be retained, the Council directed consideration of disallowing the use of automatic reels for the recreational sector of the snapper grouper fishery.

- Options for developing a range of alternatives:

Option 1 (No Action). Automatic rod and reel may be used by the recreational sector to fish for snapper grouper species.

Option 2. Automatic rod and reel may not be used by the recreational sector to fish for snapper grouper species, except by individuals with physical disabilities that would necessitate their use.

Additional Options?

Would the Council like to add options that disallow automatic reels for the recreational sector of the snapper grouper fishery only for specific situations (e.g. area/depth, deepwater species, time of year, etc.)?

Comments from IPT Meeting:

- Concern about disabilities that would qualify for exemption, as well as documentation. Exceptions for disability were noted by an IPT member as atypical for Southeast Regional Office regulations and would require much clarification to implement.
- Concern about evaluating level of current automatic reel use to determine contributions to reducing catch and dead releases
    - Currently no systematic information collection about frequency of use or catch associated with use.
    - Little scientific information estimating effects of the action (frequency of usage or differences in efficiency of automatic reel versus non-automatic).
    - Although information to fully evaluate effects of this action is limited, the need to reduce catches of out-of-season snapper grouper species (especially red snapper) may necessitate decisions to be made with incomplete information.
- This action could be considered in an area based on depth-based fashion (e.g., allowed only beyond a line associated with 300 feet of depth)
    - Intent to exclude deep water species that are not commonly caught with red snapper
- South of Melbourne/Cape Canaveral, recreational use is prevalent and important to the fishery. Action could be considered in a latitudinal fashion to target areas with more frequent catches of red snapper.
- Due to importance of automatic reel use to some parts of the fishery, consideration of a sunset provision may be useful.
- SSC should review and evaluate scientific validity of estimated contributions of this action toward ending overfishing of red snapper.

Committee Action:

Provide guidance on range of options to develop for automatic rod and reel regulations.

3. Prohibit the use of more than one hook per line for the snapper grouper recreational sector

- In an effort to reduce the number of encounters with snapper grouper species that cannot be retained, the Council directed consideration of prohibiting the use of rigs with multiple hooks for the recreational sector of the snapper grouper fishery.

- Options for developing a range of alternatives:

Option 1 (No Action). More than one hook per line may be used by the recreational sector while fishing for snapper grouper species.

Option 2. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species.

Additional Options?

Would the Council like to add options that prohibit using more than one hook per line for the recreational sector of the snapper grouper fishery only for specific situations (e.g. area, species, time of year, etc.)?

- Council staff is conducting a study comparing catch rates between single hook and double hook rigs. FWC also has single-hook/double-hook data that will be investigated to determine how these datasets can be used together to characterize efficiency differences between single and double-hook rigs.

Comments from IPT Meeting:

- Concern about evaluating level of current multi-hook use to determine contributions to reducing catch and dead releases.
    - Currently no systematic information collection about frequency of use or catch associated with use.
    - Little scientific information estimating effects of the action (frequency of usage or differences in efficiency of single-hook versus multi-hook rigs).
    - Although information to fully evaluate effects of this action is limited, the need to reduce catches of out-of-season snapper grouper species (especially red snapper) may necessitate decisions to be made with incomplete information.
- This action could be considered in an area based on depth-based fashion (e.g. allowed only beyond a line associated with 300 feet of depth)
    - Intent to exclude deep-water species that are not commonly caught with red snapper
- Action could be considered in a latitudinal fashion to target areas with more frequent catches of red snapper.
- Due to importance of multi-hook rig use to some parts of the fishery, consideration of a sunset provision may be useful.

- SSC should review and evaluate scientific validity of estimated contributions of this action toward ending overfishing of red snapper.

Committee Action:

Provide guidance on range of options to develop for number of hooks regulations.

Additional Items

1. Expand outreach and education efforts to promote best fishing practices that reduce dead releases in the snapper grouper fishery

This effort will not require a formal action in this amendment. However, expanded outreach/education efforts are expected to contribute to Regulatory Amendment 35's goals of reducing dead releases and ending overfishing of red snapper.

- **What changes is the Council considering?**
    - Expanded outreach on non-descending-device BFPs
        - While descending device use should continue to be encouraged when appropriate, other BFPs can also contribute to reducing dead releases by reducing catch of species that cannot be retained.
        - BFPs other than descending device use can also improve survival of released fish in situations when descending devices are not needed, such as during shallow water fishing when there are no physical signs of barotrauma.
        - Council outreach staff can help develop some language describing potential areas and methods for expansion.
    - Education could occur through an online video training requirement to obtain state recreational fishing permits (particularly Florida). If a federal recreational permit is developed through Snapper Grouper Amendment 46, a similar training should be required to obtain this permit.

- **Council Notes from June 2022**
    - Outreach efforts have gone on for several years
    - Most education campaigns have cumulative benefit
    - Descending device use is already incorporated into assessment, but release information can be improved through ongoing data collection, such as through the SAFMC Release application.
    - COVID effect – While the Council has been conducting outreach efforts for years, in-person contact has been limited over the last two years due to COVID-19. As in-person contact continues to increase, outreach efforts could become more effective.

Summary of Best Fishing Practices Outreach Efforts

Overall Goals and Objectives

- Increase awareness, knowledge and use of fishing methods that will improve survivorship of released fish.
    - Understanding of barotrauma and mitigation strategies, specifically descending devices.
        - Signs of barotrauma, types of descending devices, proper use, and how to create your own if desired.

    - Knowledge of Council regulations related to best fishing practices, including descending devices and circle hooks.
    - Proper fish handling techniques and avoidance of non-target species.
- Increase knowledge of and participation in Council activities.
    - Citizen Science Program including SAFMC Release application.
    - Opportunities to serve on advisory panels or make public comment.
- Build and maintain relationships with fishing communities.
    - Periodic contact both in-person and via email.
    - Redistribution of best fishing practices and Citizen Science outreach materials.

Outreach Strategies:

- Tackle Shop Tours
    - Traveling to tackle shops, marinas, and fishing clubs to chat with stakeholders and distribute educational materials.
    - Developing a tackle shop database to help guide outreach efforts (which tackle shops cater to offshore anglers, have descending devices in stock, etc.)
- Fishing Seminars
    - Working with fishing community leaders and local businesses to hold seminars where staff can demonstrate best fishing practices and provide information on the Citizen Science Program.
- Charter Trips
    - Take charter trips with outdoor writers and social media influencers in the South Atlantic region to demonstrate best fishing practices and citizen science efforts and share how stakeholders can participate and use science in their decision-making.
- Industry Events
    - Attending various fishing industry events, such as ICAST, with our best fishing practices display to spread awareness of best fishing practices, Citizen Science, and the Council.

Activities Completed This Year:

- Tackle shops in the following areas were visited:
    - Outer Banks North Carolina (Hatteras, Manteo, Kitty Hawk)
    - Northern South Carolina (Myrtle Beach, Murrells Inlet, Georgetown)
    - Central South Carolina (Charleston)
    - Southern South Carolina (Beaufort, Hilton Head)
    - Northern Georgia (Savannah)
    - Southern Georgia (Darien, Brunswick)
    - Florida Keys (Miami, Key Largo, Marathon, Key West)
- "Responsible and Effective Bottom Fishing" seminar with local charter captains, Mark Phelps and Chuck Griffin, at Haddrell's Point in Mt. Pleasant, South Carolina
    - Approximately fifty people in attendance, asked great questions and seemed interested in best fishing practices and SAFMC Release.
- Outreach at the Governor's Cup tournament in Georgetown, South Carolina.
    - Web analytics showed a large spike in traffic to the Council's best fishing practices webpage during this outreach effort.

- Attended ICAST 2022
    - Fantastic opportunity to talk with leaders in the industry, make contacts, and encourage people to carry descending devices and Council informational materials in their store.
- Charter trip with Good Times Sportfishing and local writers in Hatteras, North Carolina.

Upcoming Outreach Activities:

- Tackle shop outreach in southern North Carolina (Wilmington)
- Tentative seminar in southern South Carolina (Beaufort)
- Charter trip with Miss Judy Charters and local writers in Savannah, Georgia.
- Content creation trip to gather photo and video footage of descending devices and SAFMC Release for use in outreach materials.
- Charter Guide Summit with SCDNR (Charleston, Murrells Inlet, Lemon Island, SC)

Important Note: This level of outreach would *not* be possible without the help of our stakeholders and government partners. The South Atlantic Sea Grant offices involved in the multi-year, multi state reef fish extension grant are collaborating with the Council to provide a South Atlantic Reef Fish Extension/Communication Fellow (Ashley Oliver) to address the communication and outreach needs of the snapper grouper fishery and best fishing practices. While housed at the Council office, the fellow is financially supported through Sea Grant. Additionally, state agencies, local community leaders, and advisory panel members have been instrumental in helping staff find opportunities to share best fishing practices information.

Comments from IPT Meeting:

- How much does this effort contribute to ending overfishing?
- Concerns about linking predicted changes in behavior to outreach campaigns.
- Some studies on effectiveness of outreach campaigns: Responsive Management/Nature Conservancy study on descending devices; Sea Grant may have reports as well
- Example of outreach and education contribution to ending overfishing: Highly Migratory Species Amendment 5b (dusky shark; Outreach Plan)
    - Dusky shark harvest is prohibited; education efforts were aimed toward avoiding dusky shark and releasing in ways that would maximize their survival.
- This could pair well with a private recreational permit being considered through Snapper Grouper Amendment 46

2. Time/Area Closures

In June 2022. the Council directed Council, SEFSC, and SERO staffs to develop analyses to inform further discussion and consideration of time/area closures of the snapper grouper fishery during the September 2022 Council Meeting.

- Consider alternative timing of the red snapper recreational season.
- Consider a season with a recreational maximum depth limit.
- Consider wave closures of private recreational bottom fishing
    - Possibly for hot spot area(s) only
    - Would need alternatives for which wave(s) and area(s)

- Consider closure to align with Shallow Water Grouper Closure (Jan-Apr; Waves 1 and 2)

- List of Requested Analyses:
  1. Commercial discards (numbers) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL (Cape Canaveral north), central FL (Cape Canaveral to Jupiter), and south FL (south of Jupiter), 2005-2021.
  2. Private recreational discards (numbers) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  3. Recreational charter discards (numbers) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  4. Head boat discards (numbers) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  5. Commercial landings (numbers and pounds) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  6. Private recreational landings (numbers and pounds) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  7. Recreational charter landings (numbers and pounds) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  8. Head boat landings (numbers and pounds) for all stocks in the snapper grouper complex by wave for NC, SC, GA, north FL, central FL, and south FL, 2005-2021.
  9. A discard-only projection ($F_{landed}=0$) and ABC recommendation for red snapper. This projection would assume no landings occur and would give perspective on the minimum number of red snapper removals (in this case, all removals would be dead discards) that must be reduced to end overfishing.
  10. Analysis of discard hot spots as described by the SEFSC.
  11. FWC State Reef Fish Survey discard estimates to compare with MRIP discard estimates.
  12. Analyses and discussion of expected economic and social impacts resulting from reduced effort and catch of snapper grouper species.
  13. Discussion of stock assessment results and sensitivity runs.

SEFSC, SERO, and Council staff compiled information in response to this request, which is included in the Data Report attachment for Regulatory Amendment 35 in the September 2022 Council meeting Briefing Book (Snapper Grouper Attachment 2b).

3. Ongoing/upcoming projects potentially affecting red snapper information

Table 2. Summary of known ongoing and upcoming projects that could affect information on red snapper or measures considered in Regulatory Amendment 35.

Project	Description	Potential Date Available for Use
Catch Efficiency for Single and Double Hook Rigs (Council Staff, FWC, SCDNR)	Evaluate catch efficiency differences between single and double-hook rigs. If possible, intend to combine data from ongoing field sampling by Council staff (in collaboration with SCDNR) with FWC data collected during testing of their Fishery-Independent Monitoring program hooked gear.	End of 2022; SSC discussion in October 2022
SEFSC Management Effects in Multispecies Fishery (Crosson et al.)	Evaluate biological and economic effects of management measures that increase retention in a multispecies fishery. Being set up initially to evaluate effects on a single species (red snapper), then later to evaluate tradeoffs and commensurate benefits among multiple species.	Single species component: End of 2022 Multi-species component: ~2025
NC State and SEFSC Fishery-Independent Spatial Abundance (Cao et al.)	Multispecies model that uses Southeast Reef Fish Survey video data to estimate spatial distributions of relative abundance for a group of snapper grouper species (includes red snapper); can inform hot spots for location of fish abundance (NOTE: Not location of fishing activities such as discarding) within the sampling area.	Early 2023
Snapper Grouper Management Strategy Evaluation (Council Staff)	Determination of management objectives for the snapper grouper fishery and evaluation of how different management procedures can achieve those objectives.	End of 2024
South Atlantic Red Snapper Abundance Estimation (Patterson et al.)	Estimation of red snapper distribution, population density, population size, and age information.	End of 2025
SEDAR Stock Assessment	Research track assessment followed by operational assessment	Research track: End of 2025 Operational: Mid-2026

4. SSC-Recommended SEDAR 73 Red Snapper Catch Projections

Table 3. Scenario 13 projection results with F= F30 starting in 2022 and recent average recruitment. Benchmarks are based on Block 3 and discard mortality on Block 4 with no reallocation of F toward landings. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (1e8 eggs), L = landings expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), D = dead discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), and pr.reb = proportion of stochastic projection replicates with SSB ≥ SSB_{F30}. The extension "b" indicates expected values (deterministic) from the base run; the extension "m" indicates median values from the stochastic projections.

year	R.b	R.m	F.b	F.m	S.b	S.m	L.b(n)	L.m(n)	L.b(w)	L.m(w)	D.b(n)	D.m(n)	D.b(w)	D.m(w)	pr.reb
2020	718	628	0.39	0.34	307585	325212	40	39	416	409	443	407	2019	1910	0.053
2021	718	629	0.35	0.31	347034	372325	39	38	420	413	332	288	1626	1473	0.117
2022	718	629	0.21	0.21	401322	430186	25	28	284	319	195	189	983	996	0.206
2023	718	629	0.21	0.21	465178	491225	28	31	327	363	202	191	1036	1016	0.307
2024	718	629	0.21	0.21	529917	551037	31	33	368	403	207	194	1076	1034	0.415
2025	718	630	0.21	0.21	593360	608291	33	35	408	441	210	196	1104	1050	0.526
2026	718	623	0.21	0.21	653509	662653	35	36	446	475	211	196	1122	1062	0.637
2027	718	630	0.21	0.21	710246	712268	36	38	480	506	212	197	1133	1067	0.733
2028	718	629	0.21	0.21	762093	757711	38	39	511	533	212	197	1138	1072	0.81
2029	718	630	0.21	0.21	809274	799286	39	40	538	559	212	197	1143	1076	0.871
2030	718	624	0.21	0.21	851779	835646	40	41	562	581	212	198	1146	1080	0.915
2031	718	625	0.21	0.21	889553	868429	41	42	584	602	212	198	1148	1083	0.946
2032	718	628	0.21	0.21	923163	896936	42	43	603	619	213	198	1151	1086	0.968
2033	718	627	0.21	0.21	952682	921751	42	44	620	635	213	198	1153	1092	0.98
2034	718	631	0.21	0.21	978473	944097	43	44	634	649	213	199	1154	1093	0.988
2035	718	629	0.21	0.21	1001094	963960	44	45	647	662	213	199	1156	1096	0.993
2036	718	626	0.21	0.21	1020799	981064	44	45	658	673	213	199	1157	1097	0.996
2037	718	630	0.21	0.21	1037826	995602	44	45	668	683	213	199	1158	1099	0.998
2038	718	629	0.21	0.21	1052612	1008953	45	46	676	692	213	199	1159	1103	0.999
2039	718	629	0.21	0.21	1065380	1019871	45	46	683	698	213	199	1160	1103	0.999
2040	718	630	0.21	0.21	1076422	1030010	45	46	689	704	213	198	1161	1102	1
2041	718	634	0.21	0.21	1085957	1038653	45	47	695	710	213	199	1161	1105	1
2042	718	627	0.21	0.21	1094186	1046759	46	47	699	715	213	199	1162	1102	1
2043	718	631	0.21	0.21	1101288	1053572	46	47	703	719	213	199	1162	1103	1
2044	718	627	0.21	0.21	1107417	1059173	46	47	707	722	213	199	1163	1104	1