Regulatory Amendment 30

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

Rebuilding schedule, seasonal prohibition, and commercial trip limit for red grouper

Environmental Assessment **Regulatory Impact Review** **Initial Regulatory Flexibility Analysis**

September 9, 2019

A publication of the South Atlantic Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number FNA15NMF4410010

Abbreviations and Acronyms Used in the document

ABC	acceptable biological catch
ACL	annual catch limits
ACT	annual catch target
AM	accountability measures
AP	Advisory Panel
APA	administrative procedure act
APAIS	Access-Point Angler Intercept Survey
B	a measure of stock biomass in either weight or other appropriate unit
BCURR	the current stock biomass
BMSY	the stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
BOY	the stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
BPA	Byatch Practability Analysis
CPUE	catch per unit effort
CRP	Cooperative Research Programs
CS	consumer surplus
CZMA	Coastal Zone Management Act
DEIS	draft environmental impact statement
DPS	distinct population segments
EA	environmental assessment
EBFM	ecosystem based fishery management
EEZ	exclusive economic zone
EFH	essential fish habitat
ESA	Endandered Species Act
EO	Executive Order
F	a measure of the instantaneous rate of fishing mortality
F30%SPR	fishing mortality that will produce a static SPR = 30%
FCURR	the current instantaneous rate of fishing mortality
FEP	fishery ecosystem plan
FES	Fishing Effort Survey
FMP	fishery management plan
FMSY	the rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
FMU	fishery management unit
FOY	the rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
HAPC	Habitat Area of Particular Concern
IQA	Information Quality Act
IRFA	Initial Regulatory Flexibility Analysis
LBS GW	pounds gutted weight
LBS WW	pounds whole weight
LOF	List of Fisheries
M	natural mortality rate
MARMAP	Marine Resources Monitoring Assessment and Prediction Program

MFMT	maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	minimum stock size threshold
MSY	maximum sustainable yield
NARW	North Atlantic Right whale
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
NOR	net operating revenue
NS	National Standard
OFL	overfishing limit
OMB	Office of Management and Budget
OY	optimum yield
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFMC	South Atlantic Fishery Management Council
SBA	Small Business Act
SDDP	Supplementary Discard Data Program
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SIA	social impact assessment
SPR	spawning potential ratio
SRHS	Southeast Headboat Survey
SSB	spawning stock biomass
SSC	Scientific and Statistical Committee
TL	total length
2016 Opinion	2016 Biological Opinion of the Snapper Grouper Fishery

Regulatory Amendment 30 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Proposed actions:	Revision to rebuilding schedule for red grouper, modification to the seasonal prohibition on recreational and commercial harvest off North and South Carolina, and establishment of a commercial trip limit.

Responsible Agencies and Contact Persons

South Atlantic Fishery Management Council
4055 Faber Place, Suite 201
North Charleston, South Carolina 29405
IPT lead: John Hadley
john.hadley@safmc.net

843-571-4366
843-769-4520 (fax)
www.safmc.net

National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
IPT lead: Mary Vara
mary.vara@noaa.gov

727-824-5305
727-824-5308 (fax)
https://www.fisheries.noaa.gov/region/southeast

Table of Contents

Abbreviations and Acronyms Used in the document I
Table of Contents iv
List of Figures vii
List of Tables ix
Chapter 1. Introduction 12
1.1 What Actions Are Being Proposed? 12
1.2 Who is Proposing the Actions? 12
1.3 Where is Red Grouper Managed? 13
1.4 Why is the South Atlantic Council Considering Action (Purpose and Need)? 14
1.5 What is a Rebuilding Plan? 15
1.6 What is the History of Management for Red Grouper? 16
1.7 Why are recreational data reported in Marine Recreational Fisheries Statistics Survey (MRFSS) and Marine Recreational Information Program (MRIP) in different sections of Regulatory Amendment 30? 18
Chapter 2. Proposed Actions and Alternatives 19
2.1 Action 1: Revise the Rebuilding Schedule for Red Grouper 19
2.1.1 Comparison of Alternatives 20
2.2 Action 2: Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina 22
2.2.1 Comparison of Alternatives 23
2.3 Action 3: Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina 25
2.3.1 Comparison of Alternatives 26
2.4 Action 4: Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone. 28
2.4.1 Comparison of Alternatives 28
Chapter 3. Affected Environment 30
3.1 Habitat Environment 30
3.1.1 Inshore/Estuarine Habitat 30
3.1.2 Offshore Habitat 30
3.1.3 Essential Fish Habitat 32
3.1.4 Habitat Areas of Particular Concern 32
3.2 Biological and Ecological Environment 33
3.2.1 Fish Populations Affected by this Regulatory Amendment 34
3.2.2 Red Grouper (*Epinephelus morio*) 35
3.2.3 Stock Status of Red Grouper 39
3.2.4 Other Fish Species Affected 40
3.2.5 Protected Species 41
3.3 Economic Environment 43
3.3.1 Economic Description of the Commercial Sector 43
3.3.2 Economic Description of the Recreational Sector 49
3.4 Social Environment 53
3.5 Administrative Environment 64

3.5.1 Federal Fishery Management 64
3.5.2 State Fishery Management 64
3.5.3 Enforcement 65
Chapter 4. Environmental Effects and Comparison of Alternatives 66
4.1. Action 1. Revise the Rebuilding Schedule for Red Grouper. 66
4.1.1 Biological and Ecological Effects 66
4.1.2 Economic Effects 68
4.1.3 Social Effects 68
4.1.4 Administrative Effects 69
4.2 Action 2. Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina. 70
4.2.1 Biological and Ecological Effects 70
4.2.2 Economic Effects 74
4.2.3 Social Effects 75
4.2.4. Administrative Effects 76
4.3 Action 3. Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina. 77
4.3.1 Biological and Ecological Effects 77
4.3.2 Economic Effects 80
4.3.3 Social Effects 82
4.3.4. Administrative Effects 82
4.4 Action 4. Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone. 84
4.4.1 Biological and Ecological Effects 84
4.4.2 Economic Effects 86
4.4.3 Social Effects 88
4.4.4. Administrative Effects 88
Chapter 5. South Atlantic Council's Choice for the Preferred Alternatives 90
5.1 Action 1. Revise the Rebuilding Schedule for Red Grouper 90
5.1.1 Snapper Grouper Advisory Panel (AP) Comments and Recommendations 90
5.1.2 Law Enforcement AP Comments and Recommendations 90
5.1.3 Scientific and Statistical Committee (SSC) Comments and Recommendations 90
5.1.4 Public Comments and Recommendations 90
5.1.5 South Atlantic Council's Conclusions 91
5.1.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery? .. 91
5.2 Action 2. Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina 92
5.2.1 Snapper Grouper AP Comments and Recommendations 92
5.2.2 Law Enforcement AP Comments and Recommendations 92
5.2.3 SSC Comments and Recommendations 92
5.2.4 Public Comments and Recommendations 93
5.2.5 South Atlantic Council's Conclusions 93
5.2.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery? .. 94
5.3 Action 3. Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina 95
5.3.1 Snapper Grouper AP Comments and Recommendations 95

5.3.2 Law Enforcement AP Comments and Recommendations 95
5.3.3 SSC Comments and Recommendations 95
5.3.4 Public Comments and Recommendations 96
5.3.5 South Atlantic Council's Conclusions 96
5.3.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery? .. 97
5.4 Action 4. Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone 99
5.4.1 Snapper Grouper AP Comments and Recommendations 99
5.4.2 Law Enforcement AP Comments and Recommendations 99
5.4.3 SSC Comments and Recommendations 99
5.4.4 Public Comments and Recommendations 99
5.4.5 South Atlantic Council's Conclusions 100
5.4.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery? 100
Chapter 6. Cumulative Effects 101
6.1 Affected Area 101
6.2 Past, Present, and Reasonably Foreseeable Actions Impacting the Affected Area 101
6.3 Consideration of Climate Change and Other Non-Fishery Related Issues 105
6.4 Overall Impacts Expected from Past, Present, and Future Actions 107
6.5 Monitoring and Mitigation 107
Chapter 7. List of Interdisciplinary Plan Team (IPT) Members 108
Chapter 8. Agencies and Persons Consulted 109
Chapter 9. References 110
Appendix A. Glossary A-1
Appendix B. Letter from NMFS SERO to SAFMC B-1
Appendix C. Red Grouper Projections C-1
Appendix D. History of Management D-1
Appendix E. Regulatory Impact Review (RIR) E-1
Appendix F. Initial Regulatory Flexibility Analysis (IRFA) F-1
Appendix G. Other Applicable Laws G-1
Appendix H. Data Analysis H-1
1.1 Recreational Data Analyses of Action 2 (Recreational Seasonal Prohibition) Analysis H-1
1.2 Commercial Data Analyses of Action 3 (Commercial Seasonal Prohibition) and Action 4 (Commercial Trip Limit) H-4
1.2.1 Action 3: Commercial Seasonal Prohibition Analysis H-4
1.2.2 Action 4: Commercial Trip Limit Analysis H-7
1.2.3 Actions 3 and 4 combined: Commercial Seasonal Prohibition and Commercial Trip Analysis H-8
Appendix I. Bycatch Practicability Analysis I-1
Appendix J. Essential Fish Habitat and Ecosystem Based Fishery Management J-1

List of Figures

Figure 1.3.1. Jurisdictional boundaries of the South Atlantic Council. 13
Figure 2.2.1. South Atlantic red grouper spawning season, and Action 2 proposed spawning season alternatives..... 22
Figure 2.3.1. South Atlantic red grouper spawning season, and Action 3 proposed spawning season alternatives..... 25
Figure 3.2.1. Two components of the biological environment described in this document..... 33
Figure 3.2.2. South Atlantic red grouper estimated annual spawning stock biomass (metric tons), 1976-2014. SEDAR 53 2017..... 36
Figure 3.2.3. South Atlantic red grouper commercial landings (lbs ww) by year for 2012-2017..... 38
Figure 3.4.1. Snapper grouper Unlimited and 225-pound trip limit permits 1999-2016. 53
Figure 3.4.2. Snapper grouper unlimited (SG1) and limited (SG2) permits by owner's zip code..... 54
Figure.3.4.3. Red grouper community RQ for pounds from 2010 to 2016 ranked initially by 2016 top fifteen..... 55
Figure.3.4.4. Top 20 commercial fishing communities as measured by overall commercial fishing engagement..... 56
Figure.3.4.5. Social vulnerability indicators for selected NC/SC snapper grouper fishing communities. 57
Figure.3.4.6. Social vulnerability indicators for selected Northern Florida snapper grouper fishing communities. 57
Figure.3.4.7. Social vulnerability indicators for selected Southern Florida snapper grouper fishing communities. 58
Figure 3.4.8. Recreational fishing communities' engagement and reliance..... 59
Figure 3.4.9. Number of federal for-hire permits for South Atlantic snapper grouper by community. 60
Figure 3.4.10. Social vulnerability indices for top recreational communities..... 63
Figure 4.2.1.1. Percent and cumulative percent of red grouper landings by wave for the South Atlantic recreational sector (charter boat, headboat, and private vessels) from 2015 to 2017..... 72
Figure 4.2.1.2. Projected cumulative recreational red grouper landings (lbs ww) under the proposed alternatives and sub-alternatives and the proposed recreational red grouper ACL from 2018, 2019, and 2020 and beyond..... 73
Figure 4.3.1.1. South Atlantic red grouper commercial landings (lb ww) by month for 2015-2017. 79
Figure 4.3.1.2. Predicted South Atlantic red grouper commercial landings (lbs ww) by month with the commercial ACLs implemented through Abbreviated Framework Amendment 1 to predict South Atlantic red grouper commercial closure dates..... 80
Figure 4.4.1.1. Distribution of South Atlantic red grouper commercial trips within each landing bin. Predicted commercial landings came from the average 2015-2017 commercial landings. 85
Figure C-1. Scenario 1 projection results with F=0 starting in 2020 and long-term average recruitment..... C-2
Figure C-2. Scenario 2 projection results with F=REBUILD starting in 2020, long-term average recruitment, and stock recovery (0.5 probability) occurring in 2027..... C-2
Figure C-3. Scenario 3 projection results with F=REBUILD starting in 2020, long-term average recruitment, and stock recovery (0.5 probability) occurring in 2029..... C-3

Figure H-1. Percent and cumulative percent of red grouper landings by wave for the South Atlantic recreational sector (charter boat, headboat, and private vessels) from 2015 to 2017. ..... H-3
Figure H-2. Projected cumulative recreational red grouper landings (lbs ww) under the proposed alternatives and sub-alternatives and the proposed recreational red grouper ACL from 2018, 2019, and 2020 and beyond. H-4
Figure H-3. South Atlantic red grouper commercial landings (lb ww) by month for 2015-2017. .. H-6
Figure H-4. Predicted South Atlantic red grouper commercial landings (lbs ww) by month with the commercial ACLs stated in the Abbreviated Framework Amendment 1 to predict South Atlantic red grouper commercial closure dates. H-7
Figure H-5. Distribution of South Atlantic red grouper commercial trips within each landing bin. Predicted commercial landings came from the average 2015-2017 commercial landings. H-8

List of Tables

Table 1.5.1. History of management for red grouper in the South Atlantic Region from 1983-2017. 17
Table 3.2.1. Timing of spawning (gray shading) and peak spawning (black shading) for exploited Atlantic Ocean reef fish stocks off the southeastern United States. Months in bold denote core SERFS core fishery-independent sampling months. 34
Table 3.2.2. South Atlantic red grouper landings and ACLs in lbs ww, 2012-2017. 37
Table 3.2.3. The mean number of South Atlantic red grouper discarded annually from 2015-2017 for each sector of the commercial and recreational fisheries in numbers of fish. Commercial discards are from self-reported logbook information and unexpanded. Discards were aggregated across years due to confidentiality concerns. 39
Table 3.2.4. Red grouper OFLs, ABCs, and ACLs beginning in 2018 in lbs ww based on recommendations from the South Atlantic Council's SSC implemented through Abbreviated Framework Amendment 1. Sector allocations are 56% recreational and 44% commercial. Amendment 24 set the total ACL equal to the ABC (SAFMC 2011b). 40
Table 3.4.1. Recreational red grouper landings (ww) by species and by state for 2016 and 2017**.** ... 58
Table 3.4.2. Top ranking communities based on the number of federal for-hire permits for South Atlantic snapper grouper, in descending order**.** 60
Table 3.4.3. Top homeports based on number of red grouper landed by headboats included in the SRHS**.** 61
Table 4.2.1.1. Recreational red grouper ACL in pounds whole weight (lbs ww) recently implemented through Abbreviated Framework Amendment 1 to the Snapper Grouper FMP. ... 71
Table 4.2.1.2. Projected recreational red grouper landings (lbs ww) that would have occurred 2015 - 2017 under the proposed alternatives and sub-alternatives by modifying the recreational seasonal prohibition for red grouper. 72
Table 4.2.2.1. Estimated change in consumer surplus for **Preferred Alternative 2** of **Action 2** in comparison to status quo (**Alternative 1**(**No Action**)) (2017 dollars). Preferred sub-alternative is indicated in bold. 74
Table 4.3.1.1. Commercial red grouper ACL in pounds lbs ww recently implemented through Abbreviated Framework Amendment 1 to the Snapper Grouper FMP. 78
Table 4.3.1.2. Projected South Atlantic red grouper commercial landings for each **Action 3** alternatives. Landings were estimated from the average 2015-2017 commercial landings. Preferred alternative indicated in bold. 79
Table 4.3.2.1. Estimated change in commercial landings, gross revenue, net cash flow, and net revenue for Alternative 2 of Action 3 in comparison to status quo (Alternative 1(No Action)) (2017 dollars). Preferred sub-alternative is indicated in bold. 81
Table 4.4.1.1. Projected South Atlantic red grouper commercial landings for each Action 4 Alternatives. Landings were estimated from the average 2015-2017 commercial landings. 85
Table 4.4.1.2. Projected South Atlantic red grouper commercial landings combined with a January through May closed season for North Carolina and South Carolina (Action 3, Preferred Sub-alternative 2a) for each trip limit alternative (Action 4). 86
Table 4.4.2.1. Estimated change in commercial landings, gross revenue, net cash flow, and net revenue for **Alternative 2** of **Action 4** *without* a change to the spawning season closure ((Action

3, Alterative 1(No Action)) in comparison to status quo (**Alternative 1**(**No Action**)) (2017 dollars). Preferred sub-alternative is indicated in bold. 87
Table 4.4.2.2. Estimated change in commercial landings, gross revenue, net cash flow, and net revenue for **Alternative 2** of **Action 4** *with* a change to the spawning season closure ((Action 3, Pref. Sub-alternative 2a) in comparison to status quo (**Alternative 1**(**No Action**)) (2017 dollars). Preferred sub-alternative is indicated in bold. 87
Table 7.1. List of interdisciplinary plan team members for the document 108
Table D-1. History of Management for the Snapper Grouper Fishery of the South Atlantic Region. D-1
Table H-1. Annual recreational red grouper annual catch limit (ACL) in lbs ww recommended in Abbreviated Framework Amendment 1 to the Snapper Grouper FMP. H-1
Table H-2. Recreational red grouper landings in the South Atlantic Region, 2015 to 2017. H-1
Table H-3. Projected recreational red grouper landings (lbs ww) that would have occurred 2015 - 2017 under the proposed alternatives and sub-alternatives by modifying the recreational seasonal prohibition for red grouper. H-3
Table H-4. South Atlantic red grouper commercial season prohibition alternatives stated in Action 3 of Regulatory Amendment 30. Preferred Alternatives are indicated in bold. H-5
Table H-5. Commercial red grouper landings in the South Atlantic Region, 2015 to 2017. H-5
Source: SEFSC Commercial ACL Database [October 23, 2018] H-5
Table H-6. Projected South Atlantic red grouper commercial landings for each Action 3 Alternative. Landings were estimated from the average 2015-2017 commercial landings. Preferred alternatives are indicated in bold. H-7
Table H-7. South Atlantic red grouper commercial trip limit alternatives stated in Action 4 of Regulatory Amendment 30. H-7
Table H-8. Projected South Atlantic red grouper commercial landings for each Action 4 Alternatives. Landings were estimated from the average 2015-2017 commercial landings. Note: Alternatives do not assume Action 3 alternatives are included. H-8
Table H-9. Projected South Atlantic red grouper commercial landings combined with a January through May closed season for North Carolina and South Carolina (Action 3, preferred Sub-Alternative 2a) for each Action 4 Alternative. Landings were estimated from the average 2015-2017 commercial landings. I-9
Table I-1. Mean annual South Atlantic commercial landings and estimates of discards for red grouper from 2015 through 2017. Mean commercial landings are in pounds (lbs) whole weight (ww). Discards represent numbers of fish (N). I-3
Table I-2. The number of commercial trips with discards reported to the Supplemental Discard Logbook in the South Atlantic from 2015 through 2017 and percentage of unexpanded discards for each discard reason out of the total number of self-reported discards. I-3
Table I-3. Mean annual South Atlantic recreational landings and discards for red grouper from 2015 through 2017. Headboat and MRIP (charter and private) landings and discards are in numbers of fish. I-4
Table I-4. The number of commercial trips where at least one pound of red grouper was landed, and the top three species caught on the same trips in the South Atlantic for all gear types from 2015 through 2017, including the percentage of trip co-occurrence for species one through three. I-4
Table I-5. The species of interest, the number of private angling intercepts where at least one species of interest as captured, and the top three species caught on the same private angling intercepts in

the South Atlantic from 2013 through 2017 including the percentage of intercept co-occurrence for species one through three.....I-5
Table I-6. The species of interest, the number of charter intercepts where at least one species of interest as captured, and the top three species caught on the same charter intercepts in the South Atlantic from 2013 through 2017 including the percentage of intercept co-occurrence for species one through three.....I-5
Table I-7. The number of headboat trips where at least one pound of red grouper was landed, and the top three species caught on the same trips in the South Atlantic for all gear types from 2015 through 2017, including the percentage of trip co-occurrence for species one through three. I-6

Chapter 1. Introduction

1.1 What Actions Are Being Proposed?

Fishery managers are proposing changes to South Atlantic red grouper regulations through Regulatory Amendment 30 (Regulatory Amendment 30) to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP). Regulatory Amendment 30 would revise the rebuilding schedule for red grouper based on the most recent stock assessment. Regulatory Amendment 30 also includes actions to modify the spawning season closure of red grouper for the commercial and recreational sectors in the exclusive economic zone (EEZ) off North Carolina and South Carolina, and establish a commercial trip limit for red grouper harvested in the South Atlantic EEZ.

1.2 Who is Proposing the Actions?

The South Atlantic Fishery Management Council (South Atlantic Council) is responsible for managing fish stocks in the South Atlantic Region. The South Atlantic Council develops the framework amendment and sends it to the National Marine Fisheries Service (NMFS) who publishes a rule to implement the framework amendment on behalf of the Secretary of Commerce. NMFS is an agency of the National Oceanic and Atmospheric Administration within the Department of Commerce. Guided by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the South Atlantic Council works with NMFS, other partners, and stakeholders to assess the status of fish stocks, specify annual catch limits (ACL), reduce bycatch, and ensure compliance with fisheries regulations.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks by developing fishery management plans and amendments under the Magnuson-Stevens Act and recommends actions to NMFS for implementation.
- Management area is from 3 to 200 miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida through Key West.
- Consists of 13 voting members: 8 appointed by the Secretary of Commerce, 1 representative from each of the 4 South Atlantic states, the Southeast Regional Director of NMFS; and 4 non-voting members.

Visit the Council website at http://safmc.net/

The South Atlantic Council and NMFS are also responsible for making Regulatory Amendment 30 available for public comment. The draft environmental assessment (EA) has been made available to the public during the scoping process, public hearings, and in South Atlantic Council meeting briefing books. The final EA/framework amendment will be made available for public comment during the proposed rule stage of the rulemaking process. The final EA/framework amendment may be found online at: https://www.fisheries.noaa.gov/action/regulatory-amendment-30-red-grouper-rebuilding-plan and on the South Atlantic Council's website at http://www.safmc.net.

1.3 Where is Red Grouper Managed?

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. EEZ is conducted under the Snapper Grouper FMP (SAFMC 1983) (**Figure 1.3.1**). Red grouper is one of the 55 species managed by the South Atlantic Council under the Snapper Grouper FMP.

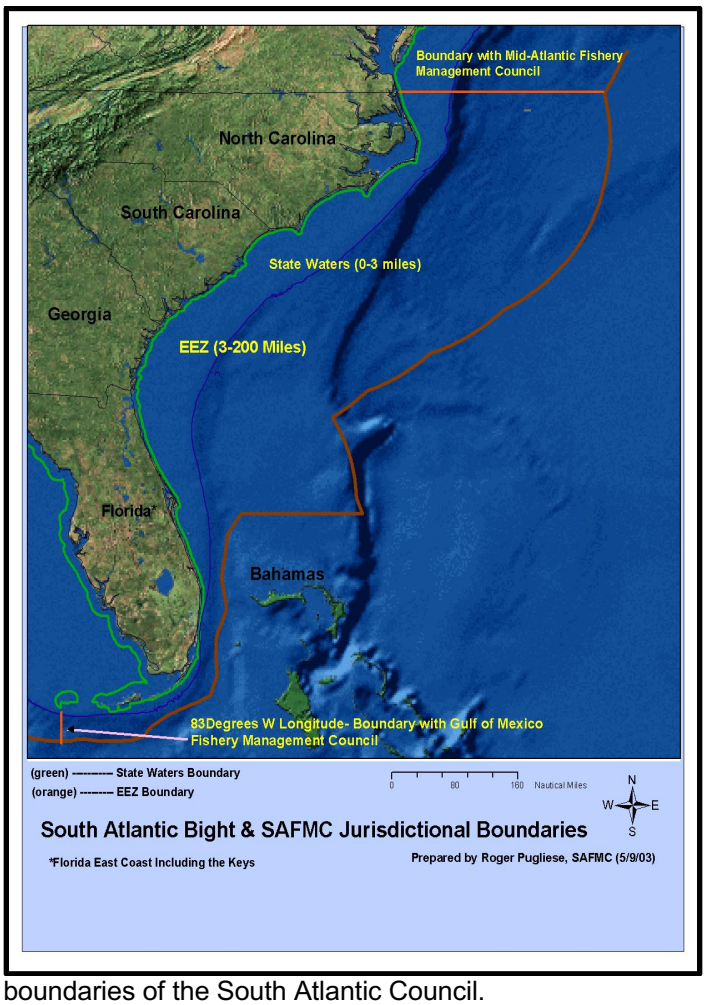

Figure 1.3.1. Jurisdictional boundaries of the South Atlantic Council.

1.4 Why is the South Atlantic Council Considering Action (Purpose and Need)?

Purpose for Action

The *purpose* of this framework amendment is to modify the rebuilding schedule for red grouper based on the results of the most recent stock assessment and extend protection for red grouper during the spawning season.

Need for Action

The *need* of this framework amendment is to rebuild the red grouper stock; and achieve optimum yield while minimizing, to the extent practicable, adverse social and economic effects.

The South Atlantic Council is considering action to modify the rebuilding schedule[1] for red grouper based on the results of a Southeast Data, Assessment, and Review stock assessment (SEDAR; SEDAR 53 2017). In 2010, a SEDAR benchmark assessment (SEDAR 19 2010) was completed for South Atlantic red grouper. Based on the results of SEDAR 19, NMFS determined that red grouper was undergoing overfishing (fish are being removed too quickly from the population) and was overfished (the number of fish in the water is too low). In response, the South Atlantic Council developed, and NMFS implemented, management measures to end overfishing of red grouper through Amendment 24 to the Snapper Grouper FMP (Amendment 24; SAFMC 2011b). Amendment 24 also established a 10-year rebuilding plan that began in 2011, with a projected end date of 2020. In addition, Amendment 24 set the total ACL equal to the acceptable biological catch (ABC) recommended by the South Atlantic Council's Scientific and Statistical Committee (SSC) and set the sector ACLs per the sector allocations.

The stock assessment of red grouper in the South Atlantic was updated in February 2017 using data through 2015 (SEDAR 53 2017). SEDAR 53 (2017) indicated the stock was overfished and undergoing overfishing. The results of SEDAR 53 (2017) showed that rebuilding would not be possible by 2020, which is the terminal year of the current rebuilding plan. Even in the absence of any red grouper mortalties as a result of fishing activities (where fishing mortality rate (F)=0), it would likely take until at least 2030 to rebuild the stock. The South Atlantic Council's SSC reviewed SEDAR 53 (2017) at their April 2017 meeting and stated that the assessment is based on the best scientific information available. On September 27, 2017, the South Atlantic Council received a letter from NMFS stating that the red grouper stock was overfished, undergoing overfishing, and not making adequate rebuilding progress (**Appendix B**). The red grouper stock has seen low recruitment in recent years and that the lack of stock rebuilding may largely be due to ecosystem-related factors, as evidenced by the most recent stock assessment (SEDAR 53 2017). Refer to **Chapter 3** (**Section 3.2.3)** for more information on the red grouper stock status. The letter specified that the Magnuson-Stevens Act requires the implementation of management measures to end overfishing immediately and revise or implement a rebuilding plan within two years of notification.

[1] Refer to **Appendix C (Red Grouper Projections)**, which includes revised red grouper rebuilding projections provided by the Southeast Fisheries Science Center (SEFSC) to the South Atlantic Council in November 2018 and used in the analyses for Action 1 in Regulatory Amendment 30. Refer to **Section 3.2.3** for more information.

The South Atlantic Council developed Abbreviated Framework Amendment 1 to the Snapper Grouper FMP (Abbreviated Framework Amendment 1; SAFMC 2017) to immediately end overfishing of red grouper. The final rule to implement Abbreviated Framework Amendment 1 was effective August 27, 2018 (83 FR 35437; July 26, 2018). Abbreviated Framework Amendment 1 reduced the total, commercial, and recreational ACLs based on the ABC recommendation from the South Atlantic Council's SSC. Based on SEDAR 53 (2017), continued harvest at the levels established in Abbreviated Framework Amendment 1 is expected to allow for rebuilding the stock within 10 years. However, because the stock is not projected to rebuild by 2020, the South Atlantic Council must revise the current rebuilding plan for the red grouper stock so that the stock rebuilds in the timeframe mandated by the Magnuson-Stevens Act. Therefore, **Action 1** of Regulatory Amendment 30 includes alternatives for a South Atlantic red grouper rebuilding plan, which must be in place by September 27, 2019 (**Appendix B**).

In addition to revising the rebuilding plan, Regulatory Amendment 30 would revise management measures for the red grouper portion of the snapper grouper fishery[2]. **Actions 2** and **3** would modify the spawning season closure of red grouper in the EEZ off North Carolina and South Carolina for the recreational and commercial sectors, respectively. These actions were originally being developed in the Vision Blueprint Amendments (Recreational Regulatory Amendment 26 to the Snapper Grouper FMP and Commercial Regulatory Amendment 27 to the Snapper Grouper FMP) to respond to stakeholder concerns that red grouper are often found in spawning condition past the January through April, (May in particular), shallow-water grouper spawning season closure, particularly off North and South Carolina. There was stakeholder feedback that red grouper spawn earlier in the year in the southern part of the South Atlantic Council's jurisdiction; therefore, Georgia and Florida were not included in alternatives for the action to extend the spawning season closure.

Action 4 would establish a commercial trip limit for red grouper harvested in the South Atlantic EEZ. The South Atlantic Council is considering a trip limit to help rebuild the red grouper stock and to discourage direct fishing for the species, while minimizing adverse socio-economic effects. At their April 2018 meeting, the Snapper Grouper Advisory Panel (AP) made a motion to recommend that the South Atlantic Council consider a 'bycatch' commercial trip limit for red grouper. The AP reasoned that a trip limit would discourage a directed fishery while still allowing fishermen to retain red grouper caught incidentally when fishing for other snapper grouper species. Based on analyses of spawning information and landings data (included in **Chapters 3** and **4** of this document), in addition to public input, the South Atlantic Council is proposing a trip limit that would constrain harvest to help rebuild the stock, but be large enough to allow fishemen for whom red grouper are an important species (such as in South Florida and the Florida Keys) to maintain some trip profitability.

1.5 What is a Rebuilding Plan?

When a stock is undergoing overfishing, the Magnuson-Stevens Act requires that measures be implemented to end overfishing. A *rebuilding plan* is required when NMFS determines that a stock is overfished. A stock is overfished when the biomass is below an identified minimum stock size threshold. The South Atlantic Council must specify a rebuilding plan since red grouper is overfished as determined by the most recent stock assessment (SEDAR 53 2017). One component of the rebuilding plan is a

[2] While reviewing the options paper to discuss the red grouper rebuilding schedule at the June 2018 meeting, the South Atlantic Council made a motion to consider a commercial trip limit for red grouper during the open season. Since the actions to modify the red grouper rebuilding schedule, commercial and recreational spawning season closure, and establish a commercial trip limit were being developed in three different amendments, the South Atlantic Council made a motion to consolidate all actions to address red grouper into one red grouper framework amendment.

determination of the number of years it would take for the stock to rebuild, called a *rebuilding schedule*. The Magnuson-Stevens Act states that the rebuilding plan shall be as short as possible and shall not exceed 10 years (T_{max}) except in cases where the biology of the stock of fish or other environmental conditions dictate otherwise. The minimum time for rebuilding a stock (T_{min}) is the amount of time the stock or stock complex is expected to take to rebuild to its maximum sustainable yield (MSY) biomass level in the absence of any fishing mortality. The National Standard 1 Guidelines specify, that if the stock cannot be rebuilt in 10 years, then the maximum allowable rebuilding time (T_{max}) is 10 years plus one generation time (based on a biological formula that incorporates a species' age and age at maturity), the amount of time the stock or stock complex is expected to take to rebuild to the biomass at MSY if fished at 75 percent of maximum fishing mortality threshold, or T_{min}, multiplied by two. Through Regulatory Amendment 30, the South Atlantic Council is considering a range of 5-10 years to rebuild the red grouper stock, where 5 years is T_{min} and 10 years is T_{max}. Another component of the rebuilding plan is the *rebuilding strategy*, which defines the maximum fishing mortality (F) throughout the rebuilding timeframe.

1.6 What is the History of Management for Red Grouper?

The South Atlantic Council and NMFS first implemented regulations affecting red grouper in the South Atlantic Region in 1983 (**Table 1.6.1)**. Refer to **Appendix D** for a detailed history of management of the Snapper Grouper FMP.

Table 1.5.1. History of management for red grouper in the South Atlantic Region from 1983-2017.

Description of Action	FMP/Amendment	Effective Date
Establish a 12" total length (TL) minimum size limit for red grouper; Established a 4" trawl mesh size.	Original Snapper Grouper FMP	8/31/83
Prohibit fish traps, entanglement nets and longlines within 50 fathoms; defined overfishing/overfished and established rebuilding timeframe: groupers ≤ 15 years (year 1 = 1991); aggregate bag limit of 5 groupers per person per day excluding Nassau and goliath grouper; red grouper 20" TL commercial and recreational minimum size limit.	Amendment 4 (SAFMC 1991)	1/1/92
Within the 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination); black grouper (recreational and commercial): no harvest or possession > bag limit, and no purchase or sale during March and April; vessels with longlines may only possess deepwater species. Specified 20" minimum size limit for red grouper.	Amendment 9 (SAFMC 1998a)	2/24/99
MSY proxy for red grouper is 30% static spawning potential ratio (SPR); Optimum Yield (OY) proxy is 45% static SPR; overfishing level = F>F30% static SPR. Approved definitions for overfished and overfishing.	Amendment 11 (SAFMC 1998b)	12/2/99
Reduced the 5 aggregate grouper bag limit to 3; recreational and commercial shallow water grouper spawning closure January through April; captain and crew on for-hire trips cannot retain the bag limit of vermilion snapper and species within the 3-fish grouper aggregate; reduce the 2 gag/black bag (individually or in combination) bag limit from 2 to 1; when gag quota met, prohibit harvest of, possession, and retention of shallow water groupers (which includes red grouper)	Amendment 16 (SAFMC 2009)	7/29/09
Specified accountability measures (AM) for red grouper: of overfished and sector ACL is met or projected to be met, prohibit harvest and retention. If ACL exceeded, independent of stock status, reduce sector ACL in the following fishing season by amount of overage. Recreational ACL compared to recreational landings using only 2010 landings for 2010, an average of 2010 and 2011 for 2011, and a 3-year running average for 2012 and beyond; established aggregate ACLs (commercial and recreational) for gag, back grouper and red grouper; prohibited commercial possession of shallow water groupers (including red grouper) when gag ACL or aggregate (gag, black and red) is met or projected to be met.	Amendment 17B (SAFMC 2010)	1/30/11
Established ABC control rules, establish ABCs, ACLs, and AMs for species not undergoing overfishing; removed some species from South Atlantic fishing management unit and designated others as ecosystem component species; specified allocations between the commercial and, recreational sectors for species not undergoing overfishing;	Amendment 25 (Comprehensive ACL Amendment) (SAFMC 2011a)	4/16/12

limited the total mortality for federally managed species in the South Atlantic to the ACLs.		
Implemented benchmarks from SEDAR 19, established rebuilding plan (including ACLs, recreational annual catch target, OY, and allocations – 44% commercial and 56% recreational) for red grouper; modified AMs; eliminated commercial and recreational aggregate ACLs (gag, black and red) and corresponding AMs.	Amendment 24 (SAFMC 2011b)	7/11/12
Modified the existing gag commercial ACL and AM for gag that requires a closure of all other shallow water groupers (including red grouper) in the South Atlantic when the gag commercial ACL is met or projected to be met.	Regulatory Amendment 15 (SAFMC 2013)	9/12/13
Modified AMs for snapper grouper species, including red grouper.	Amendment 34 (SAFMC 2015)	2/22/16
Based on SEDAR 53, reduced the commercial and recreational ACLs for red grouper in the EEZ of the South Atlantic to address overfishing of red grouper.	Abbreviated Framework Amendment 1 (SAFMC 2017)	8/27/18

1.7 Why are recreational data reported in Marine Recreational Fisheries Statistics Survey (MRFSS) and Marine Recreational Information Program (MRIP) in different sections of Regulatory Amendment 30?

As of 2013, the MRFSS survey was phased out and replaced by MRIP. MRIP is considered a more scientifically sound methodology for estimating catch because it removes the potential for biases when gathering data, resulting in more accurate catch estimates. However, the ACLs for red grouper set through implementation of Amendment 24 were based on an assessment that used landings data from MRFSS rather than MRIP (refer to **Chapter 3, Table 3.2.2**). Conversion factors developed by SEFSC were used to adjust landings from 2013 through 2017 that are based on MRIP to MRFSS units to ensure these landings were comparable to the existing ACLs for that time period. In 2018, revised ACLs for red grouper went into place via Abbreviated Framework Amendment 1 (SAFMC 2017) that were based in-part on MRIP data instead of MRFSS data. Thus, analyses in **Chapter 4** for the actions proposed in Regulatory Amendment 30 that affect the recreational sector use MRIP instead of MRFFS data for the recreational sector, since the ACL will be tracked using MRIP data into the foreseeable future. Historic landings reported in **Chapter 3** use MRFSS landings, since these landings are retrospective.

Chapter 2. Proposed Actions and Alternatives

2.1 Action 1: Revise the Rebuilding Schedule for Red Grouper

Alternative 1 (No Action). The current rebuilding schedule is set at the maximum time period allowed to rebuild (T_{max}). This is equal to 10 years with the rebuilding time period ending in 2020. 2011 was Year 1.

Alternative 2. Revise the rebuilding schedule to equal the shortest possible time period to rebuild in the absence of fishing mortality (T_{min}). This would equal 5 years with the rebuilding time period ending in 2024. 2020 would be Year 1.

Alternative 3. Revise the rebuilding schedule to equal 8 years with the rebuilding time period ending in 2026. 2019 would be Year 1.

Preferred Alternative 4. Revise the rebuilding schedule to equal the maximum time period allowed to rebuild (T_{max}). This would equal 10 years with the rebuilding time period ending in 2028. 2019 would be Year 1.

Discussion

In general, the shorter the rebuilding schedule, the more restrictive the harvest limitations would be needed to rebuild the stock within the specified timeframe. Abbreviated Framework Amendment 1 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) ended overfishing of red grouper with the implementation of new annual catch limits (ACL) beginning in 2018. The rebuilding projections provided by the Southeast Fisheries Science Center, and used in this framework amendment (refer to **Appendix C**), take into account the newly implemented ACLs. One assumption contained within the Southeast Data, Assessment and Review (SEDAR; SEDAR 53 2017) assessment, and thus the rebuilding projections, is that recruitment will revert to the long-term average rather than remain at a long-term low recruitment scenario. As such, when revising the rebuilding schedule for red grouper, rebuilding projections under long-term average recruitment instead of low recruitment are used for determining the minimum time (T_{min}) and maximum time (T_{max}) period allowed for stock rebuilding to occur.

Guidance on how to define the upper and lower bounds of a rebuilding schedule are specified in National Standard 1 (NS 1) of the National Standard Guidelines[3]. In regards to the determining T_{min}, NS1 specifies that *"T_{min} 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 50 percent probability of attaining the B_{msy}, where such probabilities can be calculated. The starting year for the T_{min} calculation should be the first year that the rebuilding plan is expected to be implemented."* In the case of red grouper, according to projections originating from the model used in

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

SEDAR 53 (2017) (**Appendix C, Table C-1**), the minimum timeline for red grouper to rebuild in the absence of any fishing mortality (F=0) is 5 years, thus T_{min} is specified as being 5 years (**Alternative 2**).

With T_{min} being specified as 5 years, NS 1 defines the T_{max} as being 10 years due to the guidance as follows; *"If T_{min} for the stock or stock complex is 10 years or less, then T_{max} is 10 years."* This upper bound of the potential rebuilding timeline is captured in **Preferred Alternative 4**. The South Atlantic Fishery Management Council (South Atlantic Council) has proposed **Alternative 3** for consideration at 8 years as this is a midpoint between T_{min} and T_{max}. For **Alternative 2**, Year 1 for the revised rebuilding schedule would be 2020[4]. For **Alternatives 3** and **Preferred Alternative 4**, Year 1 for the revised rebuilding schedule would be 2019[5].

2.1.1 Comparison of Alternatives

Alternative 1 (No Action) would likely have adverse indirect effects to the stock as it would not modify the rebuilding schedule per the best scientific information available. The rebuilding schedule allows fishery managers to gauge the progress, success, and short-comings of a rebuilding program. The absence of an updated schedule may compromise the ability to set proper ACLs and management measures to benefit the red grouper stock and ensure overfishing does not occur.

The alternatives to revise the rebuilding schedule (**Alternatives 2** and **3**, and **Preferred Alternative 4**), in contrast, would likely have beneficial indirect effects to the red grouper stock. In general, prescribing less time to rebuild the stock could result in lower ACLs and more restrictive management measures, but would translate into greater biological benefits for the stock in a shorter timeframe. The rebuilding schedule specified under **Alternative 2** is projected to rebuild the red grouper stock in the least amount of time; therefore, it can be expected that future biological benefits would accrue soonest, followed by **Alternative 3**, and **Preferred Alternative 4**.

There are potential indirect economic effects that can occur due to a rebuilding schedule, as the length of the rebuilding period selected can determine how future, long term economic benefits from an improved stock, such as improved catch rates and higher ACLs; with shorter rebuilding periods potentially accruing benefits sooner than longer rebuilding periods. **Alternative 1 (No Action)** would incur the greatest implied economic benefits, if the stock could be rebuilt within its timeline. However, the red grouper stock cannot rebuild by 2020 under the current rebuilding schedule, regardless of the management changes made, thus making this alternative unobtainable. Furthermore, not updating the rebuilding schedule may compromise the ability to set proper ACLs and management measures for red grouper, thus creating the potential for future negative economic effects that may arise such as further degradation of landings and revenue that may be generated from the species. **Alternative 2** would provide the shortest viable rebuilding period of 5 years and the highest implied economic benefits. **Preferred Alternative 4** would provide the longest rebuilding period of 10 years and hence the lowest implied economic benefits amongst the viable alternatives. The economic effects for **Alternative 3** (8 years) falls between those of **Alternative 2** and **Preferred Alternative 4**. In summary, it can be expected

[4] **Alternative 2** selected 2020 as the initial year for the rebuilding schedule because this is the earliest timeframe in which management measures could be implemented to achieve harvest levels at F=0 that would be necessary to rebuild within five years.

[5] **Alternative 3** and **Preferred Alternative 4** selected 2019 as the initial year for the rebuilding schedule because necessary management meaures were already implemented in Abbreviated Framework Amendment 1 (SAFMC 2017) in order to constrain harvest to levels that would be able to achieve a rebuilt status under these timeframes, at $F=F_{rebuild}$.

that implied economic benefits would be highest under **Alternative 2**, followed by **Alternative 3**, **Preferred Alternative 4**, and **Alternative 1 (No Action)**, which is not a viable alternative.

Generally, the shorter the rebuilding schedule the sooner fishing communities would experience the social benefits associated with an improved stock status such as fewer regulatory restrictions and increased fishing opportunities. If the rebuilding schedule and subsequent management measures ensure the sustainability of the red grouper resource, as envisioned, there would be long term positive social effects throughout the red grouper portion of the snapper grouper fishery in the form of consistent access to the resource. Long-term social benefits would be experienced soonest under **Alternative 2**, the shortest rebuilding schedule, followed by **Alternative 3**, **Preferred Alternative 4**, and **Alternative 1 (No Action)**, which retains the situation where the red grouper stock is not making adequate rebuilding progress.

Alternative 1 (No Action), which would not revise the rebuilding schedule by 2020, would require subsequent additional management action to adopt a legally compliant rebuilding schedule. Therefore, it would have the greatest imposed administrative burden on the National Marine Fisheries Service (NMFS) in the long term. Among the action alternatives, **Alternatives 2** and **3**, followed by **Preferred Alternative 4,** would also likely impact the administrative environment for NMFS in the form of developing, implementing, and monitoring more restrictive harvest regulations for red grouper.

2.2 Action 2: Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

Alternative 1 (No Action). During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney).

Preferred Alternative 2. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Revise the timing of these restrictions only for red grouper in the exclusive economic zone off North Carolina and South Carolina as follows:

Preferred Sub-alternative 2a. January – May (five months)
Sub-alternative 2b. February – May (four months)
Sub-alternative 2c. March – June (four months)
Sub-alternative 2d. January – June (six months)

Discussion

	Number of closed months	January	February	March	April	May	June
South Atlantic red grouper spawning season**	-				PEAK	*	
Alternative 1 (No Action)	4				PEAK	*	
Alternative 2, Preferred Sub-alternative 2a	**5**				PEAK	*	
Alternative 2, Sub-alternative 2b	4				PEAK	*	
Alternative 2, Sub-alternative 2c	4				PEAK	*	
Alternative 2, Sub-alternative 2d	6				PEAK	*	

* Fishermen have indicated that red grouper harvested in May off North Carolina are often in spawning condition
**North Carolina and South Carolina: spawning occurs during February-June with a peak in April;
** East Florida: spawning occurs during January through May

Figure 2.2.1. South Atlantic red grouper spawning season, and Action 2 proposed spawning season alternatives.

Off North Carolina and South Carolina, spawning occurs during February-June with a peak in April (**Figure 2.2.1, Table 3.2.1,** Burgos et al., 2007; McGovern et al., 2002). Off east Florida, spawning of red grouper occurs from January through May (McGovern et al. 2002). Currently, there is a January 1 through April 30 shallow-water grouper spawning season prohibition on harvest and possession, including red grouper, for the recreational sector in the South Atlantic exclusive economic zone (EEZ). However, fishermen have indicated that red grouper are often found in spawning condition in May and there is concern that the current spawning season closure is not capturing a large part of the species' spawning activity, particularly off North and South Carolina. The longer the spawning season closure for red grouper, the greater the biological benefits to the stock from allowing the species to have additional spawning opportunities. Since new stock biomass can be increased through growth and recruitment, reducing fishing pressure and protecting red grouper during their vulnerable spawning stages can be expected to increase stock abundance and biomass. Therefore, a longer spawning season prohibition would create indirect, long-term, positive biological and economic effects presumably through the availability of increased numbers of fish in the future; however, there could be some direct, short-term

negative economic effects as fewer fish would be available to harvest until the size of red grouper population increases.

2.2.1 Comparison of Alternatives

Alternative 1 (No Action) captures a significant portion of the spawning season for red grouper by retaining the current January 1 through April 30 shallow-water grouper spawning season closure. However, fishermen have indicated that red grouper harvested off North Carolina in May are often in spawning condition and there is concern that the current spawning season closure is not capturing a large portion of spawning activity off the Carolinas (SAFMC, port meetings 2014). While all of the alternatives considered in this action prohibit harvest and possession during peak spawning season in April, **Preferred Alternative 2** (including **Preferred Sub-alternatives 2a**, and **Sub-alternatives 2b-2d**) would result in greater biological benefits compared to **Alternative 1 (No Action)** since the spawning season closure would be extended past April when red grouper have been reported to still be in spawning condition. The longer the harvest prohibition during its spawning season, the greater the biological benefits to the stock. Therefore, better aligning the prohibition on harvest and possession with when red grouper are spawning is expected to result in beneficial biological effects to the stock. Additionally, all landings would be expected to be reduced under **Preferred Alternative 2** (and its sub-alternatives), with **Sub-alternative 2d** resulting in the most reduced landings. Therefore, **Sub-alternative 2d** would be expected to have the greatest biological benefits to the red grouper stock since spawning protection would be extended for the longest amount of time and result in the most reduced red grouper landings, followed by **Preferred Sub-alternative 2a**, **Sub-alternatives 2b** and **2c**, with **Alternative 1 (No Action)** imposing the least biological benefits on the red grouper stock. However, if the length of the harvest prohibition was extended to five or six months, then regulatory discarding could increase if fishermen targeting co-occurring species during the closed months release incidentally caught red grouper.

Long-term indirect economic benefits in the form of potentially greater future harvest rates and corresponding consumer surplus (CS) would be expected to occur if the modified prohibition on red grouper off North Carolina and South Carolina specified in **Preferred Alternative 2** were to provide enhanced protection to spawning fish and biological benefits for the red grouper stock. **Alternative 1 (No Action)** would be expected to have the lowest direct short-term negative economic effects as it projected to have the lowest decrease in CS, followed equally by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and then equally by **Sub-alternative 2c** and **Sub-alternative 2d**. When examining the long-term, potential positive economic effects that may occur due to the potential for improvements in the red grouper stock, the ranking would be inverse, with **Sub-alternatives 2c** and **2d** equally providing the highest potential positive economic effects, followed equally by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and then **Alternative 1 (No Action)**.

In general, a longer seasonal closure may be biologically beneficial to the stock and contribute to sustainable fishing opportunities in the future if the closure appropriately lines up with spawning, but a longer closure would be more likely to restrict access to red grouper. However, assuming that longer seasonal closures are meant to ensure sustainable harvest of red grouper, long-term benefits to fishing communities in the form of consistent access to the resource would be highest under **Sub-alternative 2d** and **Sub-alternative 2c**, followed by **Preferred Sub-alternative 2a**, **Sub-alternative 2b**, and **Alternative 1 (No Action)**. Alternatively, short-term negative effects on fishing communities due to restrictions in fishing opportunities would be lowest under **Alternative 1 (No Action)**, followed by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and **Sub-alternative 2c** and **Sub-alternative 2d**.

All of the **Alternative 2** sub-alternatives, would require rule-making, education, and enforcement. However, modifying the recreational seasonal prohibition of red grouper under **Preferred Alternative 2** (including **Preferred Sub-Alternative 2a** – **Sub-alternative 2d**) so that the regulations are inconsistent with other shallow-water grouper species, and for different states in the South Atlantic EEZ, could be confusing to the public and add to the administrative burden on NMFS to inform and educate the public, compared to **Alternative 1 (No Action)**. Law enforcement would also need to be informed and educated, and modify their enforcement efforts based on the revised regulations. **Preferred Sub-Alternative 2a** and **Sub-Alternative 2d** may be less confusing to the public since one month and two months would be added to the current seasonal prohibition, respectively, while **Sub-Alternative 2b** and **2c** would shift the four-month seasonal prohibition entirely for North Carolina and South Carolina, compared to the other shallow-water grouper species with a January through April recreational seasonal prohibition in the EEZ. Therefore, it can be expected that **Alternative 1 (No Action)**, and **Preferred Sub-Alternative 2a** and **Sub-Alternative 2d**, would impose the least administrative burden on NMFS, followed by **Sub-Alternatives 2b** and **2c** imposing the greatest administrative burden.

2.3 Action 3: Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

Alternative 1 (No Action). During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Additionally, during January through April, no person may sell or purchase any shallow-water grouper harvested from or possessed in the South Atlantic exclusive economic zone.

Preferred Alternative 2. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Additionally, during January through April, no person may sell or purchase any shallow-water grouper harvested from or possessed in the South Atlantic exclusive economic zone. Revise the timing of these restrictions only for red grouper in the exclusive economic zone off North Carolina and South Carolina as follows:

Preferred Sub-alternative 2a. January – May (five months)
Sub-alternative 2b. February – May (four months)
Sub-alternative 2c. March – June (four months)
Sub-alternative 2d. January – June (six months)

Discussion

	Number of closed months	January	February	March	April	May	June
South Atlantic red grouper spawning season**	-				PEAK	*	
Alternative 1 (No Action)	4				PEAK	*	
Alternative 2, Preferred Sub-alternative 2a	**5**				PEAK	*	
Alternative 2, Sub-alternative 2b	4				PEAK	*	
Alternative 2, Sub-alternative 2c	4				PEAK	*	
Alternative 2, Sub-alternative 2d	6				PEAK	*	

* Fishermen have indicated that red grouper harvested in May off North Carolina are often in spawning condition
**North Carolina and South Carolina: spawning occurs during February-June with a peak in April;
** East Florida: spawning occurs during January through May

Figure 2.3.1. South Atlantic red grouper spawning season, and Action 3 proposed spawning season alternatives.

Off North Carolina and South Carolina, spawning occurs during February-June with a peak in April (**Figure 2.2.1, Table 3.2.1,** Burgos et al., 2007; McGovern et al., 2002). Off east Florida, spawning of red grouper occurs from January through May (McGovern et al. 2002). Currently, there is a January 1 through April 30 shallow-water grouper spawning season prohibition on harvest and possession, including red grouper, for the commercial sector in the South Atlantic EEZ. However, fishermen have indicated that red grouper are often found in spawning condition in May and there is concern that the current spawning season closure is not capturing a large part of the species' spawning activity, particularly off North and South Carolina. The longer spawning season closure for red grouper, the greater the biological benefits to the stock from allowing the species to have additional spawning opportunities. Since new stock biomass can be increased through growth and recruitment, reducing fishing pressure and protecting red grouper during their vulnerable spawning stages can be expected to increase stock abundance and

biomass. Therefore, a longer spawning season prohibition would create indirect, long-term, positive biological and economic effects presumably through the availability of increased numbers of fish in the future; however, there could be some direct, short-term negative economic effects as fewer fish would be available to harvest until the size of red grouper population increases.

2.3.1 Comparison of Alternatives

Alternative 1 (No Action) captures a significant portion of the spawning season for red grouper by retaining the current January 1 through April 30 shallow-water grouper spawning season closure. However, fishermen have indicated that red grouper harvested off North Carolina in May are often in spawning condition and there is concern that the current spawning season closure is not capturing a large portion of spawning activity off the Carolinas (SAFMC, port meetings 2014). While all of the alternatives considered in this action prohibit harvest and possession during peak spawning season in April, **Preferred Alternative 2** (including **Preferred Sub-alternatives 2a**, and **Sub-alternatives 2b-2d**) would result in greater biological benefits compared to **Alternative 1 (No Action)** since the spawning season closure would be extended past April when red grouper have been reported to still be in spawning condition. The longer the harvest prohibition during its spawning season, the greater the biological benefits to the stock. Therefore, better aligning the prohibition on harvest and possession with when red grouper are spawning is expected to result in beneficial biological effects to the stock. Additionally, all landings would be expected to be reduced under **Preferred Alternative 2** (and its sub-alternatives), with **Sub-alternative 2d** resulting in the lowest level of landings associated with the longest harvest prohibition. Therefore, **Sub-alternative 2d** is expected to have the greatest biological benefits to the red grouper stock since spawning protection would be extended for the longest amount of time and result in the most reduced red grouper landings, followed by **Preferred Sub-alternative 2a**, **Sub-alternatives 2b** and **2c**, with **Alternative 1 (No Action)** imposing the least biological benefits on the red grouper stock. However, if the length of the harvest prohibition was extended to five or six months, then regulatory discarding could increase if fishermen targeting co-occurring species during the closed months release incidentally caught red grouper.

Long-term indirect economic benefits in the form of greater future harvest rates and corresponding revenue would be expected to occur if the modified spawning season prohibition on red grouper off North Carolina and South Carolina provides enhanced protection to spawning fish and biological benefits for the stock. **Alternative 1 (No Action)** is expected to have the lowest direct negative short-term economic effects, followed by **Sub-alternative 2b**, **Preferred Sub-alternative 2a**, **Sub-alternative 2c**, and **Sub-alternative 2d**. When examining the long-term, positive in-direct economic effects that may occur due to the potential for improvements in the red grouper stock, the ranking would be inverse, with **Sub-Alternative 2d** providing the highest potential positive economic effects, followed by **Sub-Alternative 2c, Preferred Sub-alternative 2a**, **Sub-alternative 2b**, and **Alternative 1 (No Action)**.

In general, a longer seasonal closure may be biologically beneficial to the stock and contribute to sustainable fishing opportunities in the future if the closure appropriately lines up with spawning, but a longer closure would be more likely to restrict access to red grouper. However, assuming that properly aligned seasonal closures that reduce harvest during peak spawning periods more effectively ensure sustainable harvest of red grouper, long term benefits to fishing communities in the form of consistent access to the resource would be highest under **Sub-alternative 2d**, followed by **Sub-alternative 2c**, **Preferred Sub-alternative 2a**, **Sub-alternative 2b**, and **Alternative 1 (No Action)**. Alternatively, short term negative effects on fishing communities due to restrictions in harvest opportunities would be lowest

under **Alternative 1 (No Action)**, followed by **Sub-alternative 2b**, **Preferred Sub-alternative 2a**, and **Sub-alternative 2c** and **Sub-alternative 2d.**

All of the **Preferred Alternative 2** sub-alternatives, would require rule-making, education, and enforcement. However, modifying the commercial seasonal prohibition of red grouper under **Preferred Alternative 2** (including **Preferred Sub-Alternative 2a** – **Sub-alternative 2d**) so that the regulations are inconsistent with other shallow-water grouper species, and for different states in the South Atlantic EEZ, could be confusing to the public and add to the administrative burden on NMFS to inform and educate the public, compared to **Alternative 1 (No Action)**. Law enforcement would also need to be informed and educated, and modify their enforcement efforts based on the revised regulations. **Preferred Sub-Alternative 2a** and **Sub-Alternative 2d** may be less confusing to the public since one month and two months would be added to the current seasonal prohibition, respectively, while **Sub-Alternative 2b** and **2c** would shift the four-month seasonal prohibition entirely for North Carolina and South Carolina, compared to the other shallow-water grouper species with a January through April commercial seasonal prohibition in the EEZ. Therefore, it can be expected that **Alternative 1 (No Action)**, and **Preferred Sub-Alternative 2a** and **Sub-alternative 2d**, would impose the least administrative burden on NMFS, followed by **Sub-Alternatives 2b** and **2c** imposing the greatest administrative burden.

2.4 Action 4: Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone.

Alternative 1 (No Action). There is no commercial trip limit for red grouper harvested in the South Atlantic exclusive economic zone.

Preferred Alternative 2. Establish a commercial trip limit for red grouper harvested in the South Atlantic exclusive economic zone:

Sub-alternative 2a. 75 pounds gutted weight
Sub-alternative 2b. 100 pounds gutted weight
Sub-alternative 2c. 150 pounds gutted weight
Preferred Sub-alternative 2d. 200 pounds gutted weight

Discussion

Currently, there is no commercial trip limit for red grouper harvested in the South Atlantic EEZ, and overall harvest is limited by the ACL with accountability measures in place to ensure that the ACL is not exceeded. There have been no in-season commercial closures for red grouper since an ACL was implemented in 2012, even without a trip limit. Therefore current measures, with or without a trip limit would be expected to maintain commercial harvest of red grouper below the ACL; hence, biological effects across the alternatives would not differ in terms of the risk of overfishing.

Trip limits are not considered to be economically efficient because they require an increase in the number of trips and associated trip costs to land the same amount of fish. However, the negative economic effects of this inefficiency can be offset by price support resulting from the supply limitations and the lengthening of seasons. Given the ACL for red grouper that restricts maximum harvest to sustainable levels, the alternative with the fewest number of trips that have to stop retaining red grouper because the trip limit has been reached would result in the least amount of direct negative economic effects, assuming the season does not close.

Commercial fishermen would likely be those affected socially by a change in the red grouper commercial trip limit. However, it is likely that fishermen who have targeted red grouper in recent years also target other species and would be able to adjust their businesses to adapt to regulatory changes. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being reached, but trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away.

2.4.1 Comparison of Alternatives

Under **Alternative 1 (No Action)**, there would continue to be no commercial trip limit for red grouper. The sub-alternatives of **Preferred Alternative 2** would set commercial trip limits for red grouper ranging from 75 pounds gutted weight (lbs gw) to 200 lbs gw. Under these proposed trip limits, the total South Atlantic landings of red grouper are projected to be reduced between 8% and 32% (**Table 4.4.1.1)**. Therefore, reduced red grouper landings under **Preferred Alternative 2** and its sub-alternatives would result in positive biological effects to the stock, relative to **Alternative 1 (No Action)**. Additionally, if the stock were to experience a year of high recruitment and additional red grouper became available for harvest, implementing a commercial trip limit as proposed under **Preferred Alternative 2**

and its sub-alternatives would slow the rate of harvest and possibly extend the fishing season; however, discards may increase if the trip limit is reached.

Generally, the lower the trip limit, the more likely some commercial vessels would experience direct negative economic effects. The majority of commercial trips landing red grouper record fewer than 75 lbs gw of the species, indicating that there would be no direct economic effects that occur from the sub-alternatives of **Preferred Alternative 2** on many commercial trips that take place in the South Atlantic Region. Trip limits on red grouper may, however, reduce profitability for commercial vessels on some trips through a reduction in revenue and efficiency. Cumulatively, the commercial landings of red grouper are expected to decrease along with gross revenue, net cash flow, and net revenue with the implementation of trip limits. **Alternative 1 (No Action)** is expected to have the lowest direct negative economic effects, followed by **Preferred Sub-alternative 2d**, **Sub-alternative 2c**, **Sub-alternative 2b**, and **Sub-alternative 2a**.

While a trip limit may help to slow the rate of harvest by restricting landings for larger vessels, it is likely that establishing a trip limit under **Preferred Alternative 2** would have minimal social effects on commercial fishermen and associated communities as few trips land more than 75 lbs gw of red grouper. **Sub-alternative 2a** would result in the largest reduction in landings and **Preferred Sub-alternative 2d** would result in the lowest reduction in landings in comparison to **Alternative 1 (No Action)**. When combined with Action 3/Preferred Sub-alternative 2a, those reductions are estimated to be 31% and 8.7%, respectively. However, none of the alternatives are anticipated to result in landings that would exceed the ACL and result in a shorter season. The absence of a trip limit under **Alternative 1 (No Action)** would likely have little effect on commercial fishermen in the short term but could result in negative social effects in the future if some commercial vessels began targeting red grouper at higher levels. Slowing the rate of harvest and contributing to rebuilding goals for red grouper would be expected to contribute to the sustainability of harvest and the health of the red grouper stock and provide for long term social benefits.

Alternative 1 (No Action) would not change the administrative environment from its current state. Currently, there is a commercial quota monitoring system in place for red grouper that is utilized to monitor landings against the commercial ACL. **Preferred Alternative 2** and its sub-alternatives would establish a commercial trip limit for red grouper, which may slow the rate that landings would reach the ACL, and lengthen the season should landings near the ACL. Of the two alternatives (and sub-alternatives) considered for modifying the trip limit for red grouper, **Alternative 1 (No Action)** and **Preferred Alternative 2** (and its sub-alternatives) would impose similar administrative burdens on NMFS. If total commercial effort for red grouper remains consistent, it is likely the ACL would not be reached prior to the end of the fishing year. Therefore, ongoing monitoring of the commercial quota would still be required, but NMFS would likely not need to prepare and issue fishery closure notices, and enforcement personnel would not have to monitor the closures, but they would need to monitor the trip limits. As with all new management measures, rule-making, education and outreach would be required under **Preferred Alternative 2** and its sub-alternatives. Therefore, an administrative burden on NMFS would be greatest with **Preferred Alternative 2a, 2b, 2c** and **2d**, followed by **Alternative 1** (**No Action**) with the least administrative burden.

Chapter 3. Affected Environment

This chapter describes the affected environment in the proposed action area. The affected environment is divided into five major components:

- **Habitat environment** (Section 3.1)
- **Biological and ecological environment** (Section 3.2)
- **Economic environment** (Section 3.3)
- **Social environment** (Section 3.4)
- **Administrative environment** (Section 3.5)

3.1 Habitat Environment

3.1.1 Inshore/Estuarine Habitat

Red grouper is one of fifty-five species managed by the South Atlantic Fishery Management Council (South Atlantic Council) under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) (SAFMC 1983). Many snapper grouper species utilize both pelagic and benthic habitats during their life histories; larval stages of these species live in the water column and feed on plankton. Most juveniles and adults are demersal (bottom dwellers) and associate with hard structures on the continental shelf that have moderate to high relief (e.g., coral reef systems and artificial reef structures, rocky hard bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings). Juvenile stages of some snapper grouper species use inshore seagrass beds, mangrove estuaries, lagoons, oyster reefs, and embayment systems. In many species, various combinations of these habitats may be utilized during daytime feeding migrations or seasonal shifts in cross-shelf distributions. Additional information on the habitat utilized by species in the Snapper Grouper Complex is included in Volume II of the Fishery Ecosystem Plan[6] (FEP; SAFMC 2018) and incorporated here by reference.

3.1.2 Offshore Habitat

Predominant snapper grouper offshore fishing areas are located in live bottom and shelf-edge habitats where water temperatures range from 11º to 27º C (52º to 81º F) due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11º to 14º C (52º to 57º F). Water depths range from

[6] http://safmc.net/ecosystem-management/fishery-ecosystem-plan/

16 to 55 meters (54 to 180 ft) or greater for live-bottom habitats, 55 to 110 meters (180 to 360 ft) for the shelf-edge habitat, and from 110 to 183 meters (360 to 600 ft) for lower-shelf habitat areas.

The exact extent and distribution of productive snapper grouper habitat in South Atlantic continental shelf habitats is unknown. Current data suggest from 3% to 30% of the shelf is suitable habitat for these species. These live bottom habitats may include low relief areas, supporting sparse to moderate growth of sessile (permanently attached) invertebrates, moderate relief reefs from 0.5 to 2 meters (1.6 to 6.6 ft), or high relief ridges at or near the shelf break consisting of outcrops of rock that are heavily encrusted with sessile invertebrates such as sponges and sea fan species. Live bottom habitat is scattered irregularly over most of the shelf north of Cape Canaveral but is most abundant offshore from northeastern Florida. South of Cape Canaveral the continental shelf narrows from 56 to 16 kilometers (35 to 10 mi) wide off the southeast coast of Florida and the Florida Keys. The lack of a large shelf area, presence of extensive, rugged living fossil coral reefs, and dominance of a tropical Caribbean fauna are distinctive benthic characteristics of this area.

Rock outcroppings occur throughout the continental shelf from Cape Hatteras, North Carolina to Key West, Florida (MacIntyre and Milliman 1970; Miller and Richards 1979; Parker et al. 1983), which are principally composed of limestone and carbonate sandstone (Newton et al. 1971), and exhibit vertical relief ranging from less than 0.5 to over 10 meters (33 ft). Ledge systems formed by rock outcrops and piles of irregularly sized boulders are also common. Parker et al. (1983) estimated that 24% (9,443 km^2) of the area between the 27 and 101-meter (89 and 331 ft) depth contours from Cape Hatteras, North Carolina, to Cape Canaveral, Florida, is reef habitat. Although the bottom communities found in water depths between 100 and 300 meters (328 and 984 ft) from Cape Hatteras, North Carolina, to Key West, Florida, is relatively small compared to the whole shelf, this area, based upon landing information of fishers, constitutes prime reef fish habitat and probably significantly contributes to the total amount of reef habitat in this region.

Artificial reef structures are also utilized to attract fish and increase fish harvests; however, research on artificial reefs is limited and opinions differ as to whether or not these structures promote an increase of ecological biomass or merely concentrate fishes by attracting them from nearby, natural un-vegetated areas of little or no relief. There are several notable shipwrecks along the southeast coast in state and federal waters including *Lofthus* (eastern Florida), *SS Copenhagen* (southeast Florida), *Half Moon* (southeast Florida), *Hebe* (Myrtle Beach, South Carolina), *Georgiana* (Charleston, South Carolina), *U.S.S. Monitor* (Cape Hatteras, North Carolina), *Huron* (Nags Head, North Carolina), and *Metropolis* (Corolla, North Carolina).

The distribution of coral and live hard bottom habitat as presented in the Southeast Marine Assessment and Prediction Program bottom mapping project is a proxy for the distribution of the species within the snapper grouper complex. Maps are available on the South Atlantic Council's Habitat and Ecosystem Atlas[7].

Plots of the spatial distribution of offshore species were generated from the Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP) data. The plots serve as point confirmation of the presence of each species within the scope of the sampling program. These plots, in combination with the hard bottom habitat distributions previously mentioned, can be employed as proxies

[7] http://ocean.floridamarine.org/safmc_atlas/

for offshore snapper grouper complex distributions in the South Atlantic region. Maps of the distribution of snapper grouper species by gear type based on MARMAP data can also be generated through the South Atlantic Council's Habitat and Ecosystem Atlas.

Additional information on the habitat utilized by snapper grouper species is included in Volume II of the FEP (; SAFMC 2018).

3.1.3 Essential Fish Habitat

Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: Estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs, and medium to high profile outcroppings on and around the shelf break zone from shore to at least 183 meters [600 ft (but to at least 2,000 ft for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine-dependent and near shore snapper grouper species, EFH includes areas inshore of the 30 meter (100-ft) contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom habitats.

Refer to **Appendix J** for more information on EFH.

3.1.4 Habitat Areas of Particular Concern

Areas which meet the criteria for EFH-Habitat Areas of Particular Concern (EFH-HAPCs) for species in the snapper grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; near shore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the Oculina Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese

outcroppings on the Blake Plateau; South Atlantic Council-designated Artificial Reef Special Management Zones; and deepwater Marine Protected Areas. Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, postlarval, juvenile, and adult stages).

In addition to protecting habitat from fishing related degradation though fishery management plan regulations, the South Atlantic Council, in cooperation with the National Marine Fisheries Service (NMFS), actively comments on non-fishing projects or policies that may impact essential fish habitat. With guidance from the Habitat Advisory Panel, the South Atlantic Council has developed and approved policies on: energy exploration, development, transportation and hydropower re-licensing; beach dredging and filling and large-scale coastal engineering; protection and enhancement of submerged aquatic vegetation; alterations to riverine, estuarine and near shore flows; offshore aquaculture; and marine and estuarine invasive species.

The potential impacts the actions in this framework amendment may have on EFH, and EFH-HAPCs are discussed in **Chapter 4** of this document.

3.2 Biological and Ecological Environment

The reef environment in the South Atlantic management area affected by actions in this environmental assessment is defined by two components (**Figure 3.2.1**). Each component will be described in detail in the following sections.

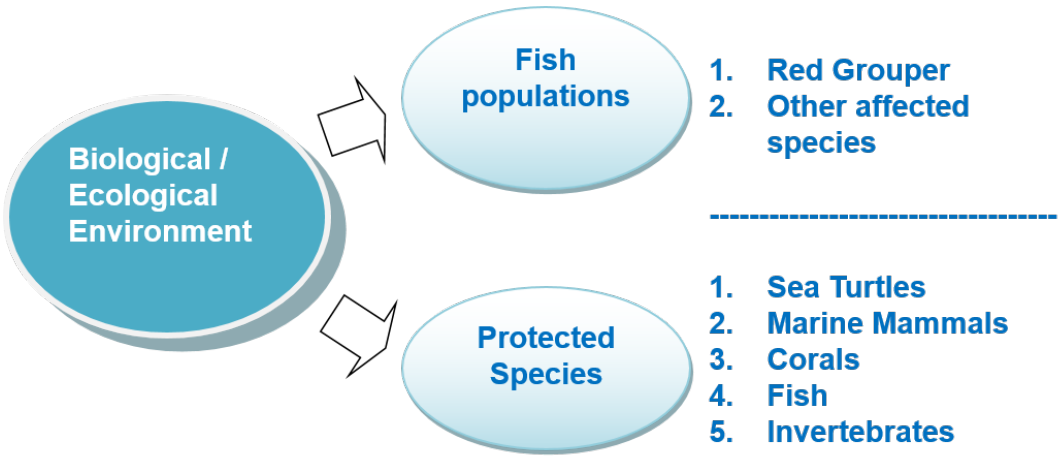

Figure 3.2.1. Two components of the biological environment described in this document.

The waters off the South Atlantic coast are home to a diverse population of fish. The snapper grouper fishery management unit (FMU) contains 55 species of fish, many of them neither "snappers" or "groupers." These species live in depths from a few feet (typically as juveniles) to hundreds of feet. As far as north/south distribution, the more temperate species tend to live in the upper reaches of the South Atlantic management area (black sea bass, red porgy) while the tropical variety's core residence is in the waters off south Florida, Caribbean Islands, and northern South America (black grouper, mutton snapper).

These are reef-dwelling species that live amongst each other. These species rely on the reef environment for protection and food. There are several reef tracts that follow the southeastern coast. The fact that these fish populations congregate together dictates the nature of the fishery (multi-species) and further forms the type of management regulations proposed in this document.

Several species in the snapper grouper FMU, though they occupy the same time and space in the reef environment, occupy different trophic niches. For example, blueline tilefish consume a higher diversity of organisms and prey that is more closely associated with the bottom (Bielsa et al. 1987). In contrast, the diet of snowy grouper is more specialized and prey items are found higher in the water column. It has been suggested that the different trophic niches reduce the interspecific competition for food items among these two species (Bielsa et al 1987).

3.2.1 Fish Populations Affected by this Regulatory Amendment

Life history information for species that co-occur with red grouper may be found in the South Atlantic EcoSpecies Database[8]. Other species most likely to co-occur with red grouper include gag, gray triggerfish, greater amberjack, mutton snapper, red porgy, red snapper, scamp, speckled hind, vermilion snapper, white grunt, and yellowtail snapper. Amendment 17A to the Snapper Grouper FMP (SAFMC 2010) describes the life history characteristics of these species. More recent work updated the timing of spawning for several snapper grouper species in the South Atlantic region (**Table 3.2.1**). In the South Atlantic, red grouper spawn from February through June with a peak spawning period in April.

Table 3.2.1. Timing of spawning (gray shading) and peak spawning (black shading) for exploited Atlantic Ocean reef fish stocks off the southeastern United States. Months in bold denote core SERFS core fishery-independent sampling months.

Stock	Jan	Feb	Mar	Apr	**May**	**Jun**	**Jul**	**Aug**	**Sep**	Oct	Nov	Dec	Citation
Gray triggerfish													[10]
Greater amberjack													[7]
White grunt													[14, 17]
Cubera Snapper													WDH, pers. comm.
Red snapper													[17, 18]
Vermilion snapper													[2, 17]
Blueline tilefish													[6]
Tilefish													[4, 17]
Black sea bass													[15, 17]
Gag													[13, 17]
Red grouper													[1]
Scamp (NC)													[12]
Scamp (FL)													[5]
Scamp (29.95–32.95 ˚N)													[8, 17]
Snowy grouper													[16, 19]
Speckled hind													[20]
Warsaw Grouper													[11, 17]
Red porgy													[3, 17]

doi:10.1371/journal.pone.0172968.t006

Source: Farmer et al. 2017 and references therein.

[8] http://saecospecies.azurewebsites.net

3.2.2 Red Grouper (*Epinephelus morio*)

Life History

Life history, biological characteristics, and stock status information for red grouper may be found in the Southeast Data, Assessment, and Review (SEDAR) report, SEDAR 53 (2017), which is available on the SEDAR web site http://www.sefsc.noaa.gov/sedar/ and is hereby incorporated by reference (refer to **Section 3.2.3** for more information on the SEDAR process).

Red grouper, *Epinephelus morio*, is primarily a continental species, mostly found in broad shelf areas (Jory and Iversen 1989). Red grouper is distributed in the Western Atlantic, from North Carolina to southeastern Brazil, including the eastern Gulf of Mexico and Bermuda, but can occasionally be found as far north as Massachusetts (Heemstra and Randall 1993). The red grouper is uncommon around coral reefs; it generally occurs over flat rock perforated with solution holes (Bullock and Smith 1991), and is commonly found in the caverns and crevices of limestone reef in the Gulf of Mexico (Moe 1969). It also occurs over rocky reef bottoms (Moe 1969). These fish eat a wide variety of fishes, octopuses, and crustaceans, including shrimp, lobsters, and stomatopods (Bullock and Smith 1991; Heemstra and Randall 1993).

There is no significant genetic differentiation among red grouper populations in the southeastern U.S. Atlantic coast and in the Gulf of Mexico; however, there is evidence suggesting that the red grouper stock off North Carolina and South Carolina may constitute geographically isolated subpopulations, and therefore, life history parameters may differ from other areas. Historic commercial data and fishery independent sampling show that landings off southern South Carolina and Georgia are infrequent or absent (Burgos et al., 2007). Adult red grouper are sedentary fish that are usually found at depths of 5-300 meters (16-984 feet). Fishermen off North Carolina commonly catch red grouper at depths of 27-76 meters (88-249 feet) with an average of 34 meters (111 feet). Fishermen off southeastern Florida also catch red grouper in depths ranging from 27-76 with an average depth of 45 meters (148 feet) (Burgos et al., 2007; McGovern et al., 2002). Moe (1969) reported that juveniles live in shallow water nearshore reefs until they are 40 centimeters (16 inches) and five years of age, when they become sexually mature and move offshore. Off North Carolina and South Carolina, spawning occurs during February-June with a peak in April (**Table 3.2.1,** Burgos et al., 2007; McGovern et al., 2002). Spawning males were observed between November and August, although they occurred more frequently between January and March (Burgos et al., 2007). Off east Florida, spawning occurs from January through May (McGovern et al., 2002). In the Gulf of Mexico, spawning occurs during February through June, with a peak spawning period during March, April and May (Biggs et al. 2018). Based on the presence of ripe adults (Moe 1996) and larval red grouper (Johnson and Keener 1984), spawning occurs offshore. Coleman et al. (1996) found groups of spawning red grouper at depths of 21-110 meters (70-360 feet). Red grouper do not appear to form spawning aggregations or spawn at specific sites (Coleman et al. 1996). They are reported to spawn in depths of 30-90 meters (98-295 feet) off the Southeast Atlantic coast (Burgos et al., 2007; McGovern et al. 2002).

Red grouper are protogynous, meaning they function as a female first and later transition to males. The proportion of males in the population increases with age. Off North Carolina, red grouper first become males at 50.9 centimeters (20.1 inches) total length (TL) and males dominate size classes greater than 70 centimeters (27.8 inches) TL. Most females transform to males between ages seven and 14. Burgos et al., (2007) reported that 50% of the females caught off North Carolina are undergoing sexual

transition at age 8. Maximum age reported by Heemstra and Randall (1993) was 25 years. Burgos et al., (2007) and McGovern et al., (2002) indicated that red grouper live for at least 20 years in the Southeast Atlantic and a maximum age of 26 years has been reported for red grouper in the Gulf of Mexico (L. Lombardi, NMFS Panama City, personal communication). Natural mortality rate is estimated to be 0.14 (SEDAR 19 2010). Maximum reported size is 125.0 centimeters (49.2 inches) TL (male) and 23.0 kilograms (51.1 lb). For fish collected off North Carolina during the late 1990s, age at 50% maturity of females is 2.4 years and size at 50% maturity is 48.7 centimeters (19.3 inches) TL. Off southeastern Florida, age at 50% maturity was 2.1 years and size at 50% maturity was 52.9 centimeters (21.0 inches) TL (McGovern et al. 2002).

Biomass and Landings

Spawning stock biomass (SSB) remained below the minimum stock size threshold (MSST) except for a short period in the mid-2000s (**Figure 3.2.2**). The MSST is the level below which a stock is considered overfished. In addition, red grouper biomass has remained below the SSB at maximum sustainable yield (MSY) (SSB_{MSY}) since 1976.

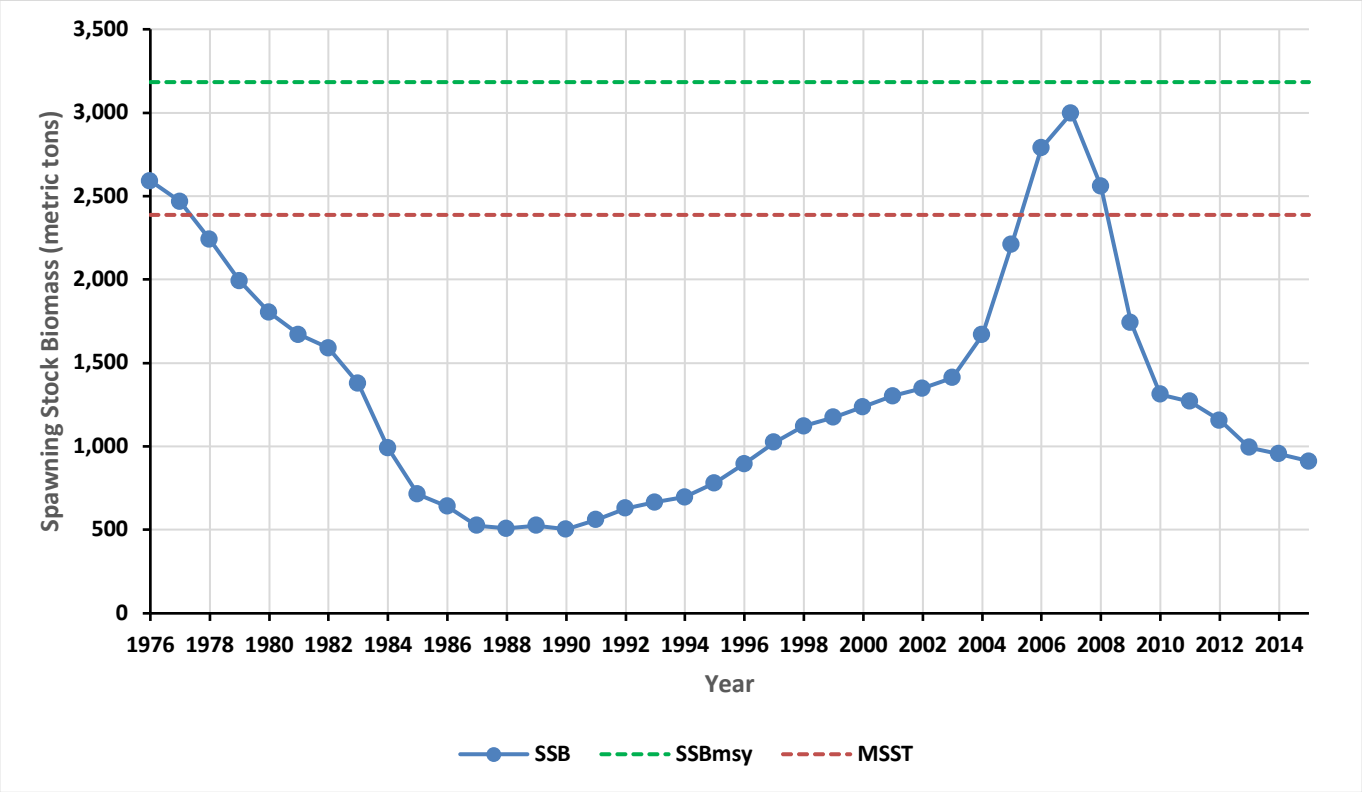

Figure 3.2.2. South Atlantic red grouper estimated annual spawning stock biomass (metric tons), 1976-2014. SEDAR 53 2017.

Overall, total landings compared to the total annual catch limit (ACL) for red grouper (prior to recent revisions implemented through Abbreviated Framework Amendment 1) have showed a continuing declining trend (**Table 3.2.2** and **Figure 3.2.3**). The percent of the ACL harvested decreased from 53% in 2012, to 18% by 2017. Recreational landings decreased from just below 200,000 pounds whole weight (lbs ww) (51% of the recreational ACL) in 2012, to below 100,000 lbs (22% of the recreational ACL) by 2017. Commercial landings have also decreased from 55% of the ACL (157,499 lbs ww) in 2012, to

below 50,000 lbs ww, equating to 13% of commercial ACL, in 2017. The reduced level of observed landings is supported by information received from commercial and recreational stakeholders who report that red grouper are not caught in large quantities in the South Atlantic. Between 2015 and 2017, a total of 2,447 commercial trips harvested at least one pound of red grouper, and 80% of those commercial trips landed 75 lbs gw or less **(Chapter 4, Figure 4.4.1.1)**. A productivity regime shift and certain environmental factors could be driving the low observed numbers of fish, and the recent (since 2005) poor recruitment may or may not continue into the future (SEDAR 53 2017).

Table 3.2.2. South Atlantic red grouper landings and ACLs in lbs ww, 2012-2017.

Year	Total ACL	Total Landings	% ACL	Commercial			Recreational		
				SEFSC Landings	ACL	% ACL	MRFSS Landings[1]	ACL	% ACL
2017	780,000	141,243	18%	44,813	343,200	13%	96,430	436,800	22%
2016	780,000	208,041	27%	52,770	343,200	15%	155,271	436,800	36%
2015	780,000	238,112	31%	97,717	343,200	28%	140,395	436,800	32%
2014	780,000	304,751	39%	133,855	343,200	39%	170,896	436,800	39%
2013	718,000	287,605	40%	120,222	315,920	38%	167,383	402,080	42%
2012	647,000	341,698	53%	157,499	284,680	55%	184,199	362,320	51%

Sources: SEFSC Commercial ACL Database [October, 23, 2018]; MRFSS SEFSC Recreational ACL Database [August 9, 2018]

1. As of 2013, the Marine Recreational Fisheries Statistics Survey (MRFSS) survey was phased out and replaced by the Marine Recreational Information Program (MRIP). MRIP is a more scientifically sound methodology for estimating catch because it reduces the biases when gathering data, resulting in more accurate catch estimates. However, the ACLs set in Amendment 24 to the Snapper Grouper FMP (SAFMC 2011b) were based on an assessment that did not use MRIP landings, but rather MRFSS landings. Conversion factors developed by the SEFSC were used to adjust 2013 through 2017 MRIP landings to MRFSS landings to ensure landings were comparable to the existing ACL as shown in this table. This included an additional adjustment by applying a conversion for MRIP's Access-Point Angler Intercept Survey (APAIS), which has the potential to capture additional landings through increased late afternoon and evening sampling. The ACLs implemented in Abbreviated Framework Amendment 1 are based on an assessment that used MRIP landings, and therefore all analyses done herein are performed using MRIP landings. Recreational landings data were post-stratified to include Monroe County landings in South Atlantic landings.

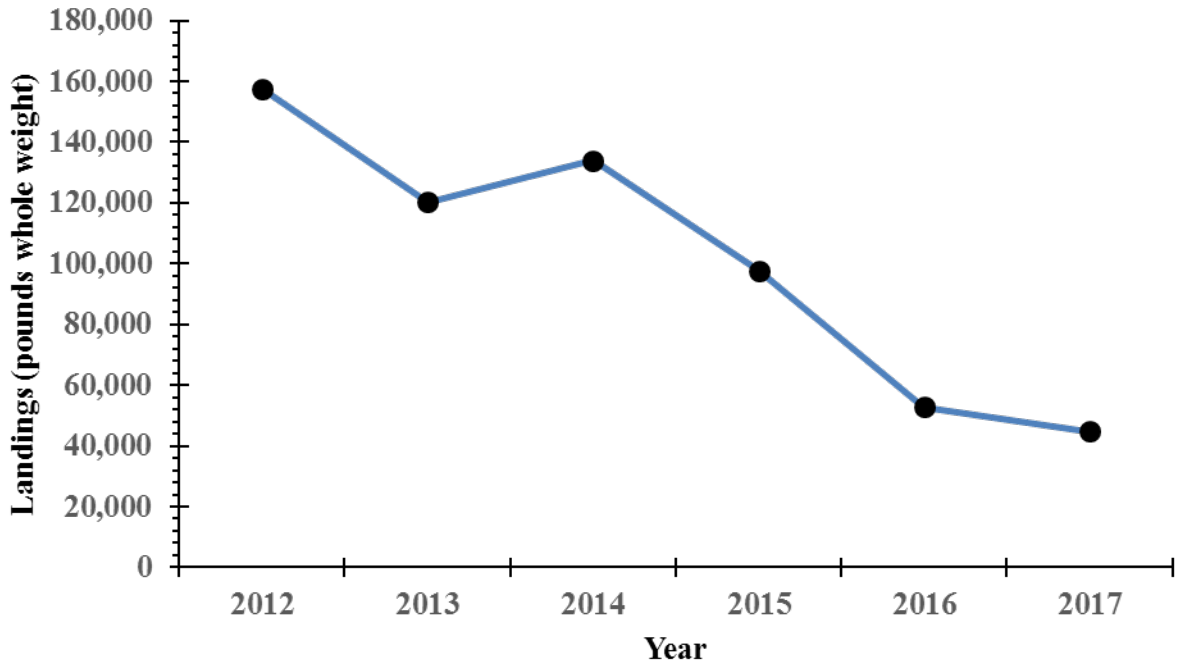

Figure 3.2.3. South Atlantic red grouper commercial landings (lbs ww) by year for 2012-2017.
Source: SEFSC Commercial ACL Database [October, 23, 2018]

Discards and Bycatch

Release (discard) mortality rates are unknown for many managed species; however, some SEDAR assessments include estimates of release mortality rates based on published studies. The estimated release mortality for red grouper is 20% (SEDAR 53, 2017).

Red grouper is part of a multi-species fishery. While discard data in conjunction with the trip co-occurrence analyses in **Appendix I** indicate fishers are likely able to selectively harvest red grouper, other species were co-occurring on approximately 30-40% of the same commercial trips that landed red grouper; most notably red porgy, scamp and gag. It is difficult to compare the ratio of commercial landings to discards because commercial landings are reported in lbs ww and discards are reported in numbers of fish. However, compared to the average landings for 2015-2017 (**Table 3.2.2**), commercial discards of red grouper are relatively low in the South Atlantic. Commercial fishermen report, 76.95% of the time, that red grouper are discarded because they are not legal size (**Table 3.2.3).** Contrarily, a high number of discards were reported on average annually by the recreational sector for red grouper in the South Atlantic from 2015 through 2017 compared to average landings, with the private sector discarding the highest number of fish (**Table 3.2.3**). For the private angling sector, red grouper had trip co-occurrence with mutton snapper (21.7%), gray snapper (21.2%), yellowtail snapper (21.2%). Similar co-occurrences were present in the charter sector with high co-occurrence with mutton snapper (55.2%), yellowtail snapper (47.8%), and white grunt (46.3%). Red grouper had high trip co-occurrence on headboat trips with yellowtail snapper (84.5%), mutton snapper (72.4%), and white grunt (64.4%).

Additional information on red grouper discards and trip co-occurrence can be found in **Appendix I.**

Table 3.2.3. The mean number of South Atlantic red grouper discarded annually from 2015-2017 for each sector of the commercial and recreational fisheries in numbers of fish. Commercial discards are from self-reported logbook information and unexpanded. Discards were aggregated across years due to confidentiality concerns.

Fishery and Sector	Number
Commercial	677
Recreational - Private	65,523
Recreational - Charter	10,535
Recreational - Headboat	7,691

Source: SEFSC Supplemental Commercial Discard Logbook [May 2018]; MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads; SEFSC Headboat Logbook CRNF files (March 2017)

3.2.3 Stock Status of Red Grouper

Stock assessments provide an evaluation of stock health under the current management regime and other potential future harvest conditions. More specifically, the assessments provide an estimation of MSY and a determination of stock status (whether *overfishing* is occurring and whether the stock is *overfished*).

The SEDAR process, initiated in 2002, is a cooperative Fishery Management Council process intended to improve the quality, timeliness and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and US Caribbean. SEDAR is managed by the fishery management councils in the Caribbean, Gulf of Mexico, and South Atlantic regions, in coordination with NMFS and the Atlantic and Gulf States Marine Fisheries Commissions. SEDAR emphasizes constituent and stakeholder participation in assessment development, transparency in the assessment process, and a rigorous and independent scientific review of completed stock assessments.

Following an assessment, the South Atlantic Council's Scientific and Statistical Committee (SSC) reviews the stock assessment information and advises the South Atlantic Council on whether the stock assessment was performed utilizing the best available data and whether the outcome of the assessment is suitable for management purposes.

Red Grouper Stock Status

The stock status of red grouper in the South Atlantic was updated in February 2017.The stock assessment used data through 2015 and indicated the stock was overfished and undergoing overfishing (SEDAR 53, 2017). On June 23, 2017, the South Atlantic Council requested the Southeast Fishery Science Center (SEFSC) produce rebuilding projections for red grouper based on SEDAR 53 (2017). The South Atlantic Council's SSC reviewed four rebuilding projections produced by the SEFSC at their October 2017 meeting. The projections were based on fishing mortality rates of F_{MSY} (fishing mortality rate that would achieve MSY under equilibrium conditions) and $F_{REBUILD}$ (fishing mortality rate that would rebuild the stock), each with long-term (expected) recruitment and low recruitment scenarios. Due to poor recruitment trends for the red grouper stock in recent years, the SSC recommended the projections at F_{MSY} and the low recruitment scenario for the overfishing limit (OFL), and projections for $F_{Rebuild}$ under

the low recruitment scenario for the acceptable biological catch (ABC). The South Atlantic Council followed the recommendations of their SSC in Abbreviated Framework Amendment 1 to the Snapper Grouper FMP (SAFMC 2017) by specifying new ACLs (equal to the ABC) from the $F_{REBUILD}$ low recruitment scenario to end overfishing. The total red grouper ACL implemented in 2018 through Abbreviated Framework Amendment 1 (SAFMC 2017) is 139,000 lbs ww for 2018, 150,000 lbs ww for 2019, and 162,000 lbs ww for 2020 (**Table 3.2.4**). Sector allocations are 56% recreational and 44% commercial.

Table 3.2.4. Red grouper OFLs, ABCs, and ACLs beginning in 2018 in lbs ww based on recommendations from the South Atlantic Council's SSC implemented through Abbreviated Framework Amendment 1. Sector allocations are 56% recreational and 44% commercial. Amendment 24 set the total ACL equal to the ABC (SAFMC 2011b).

	OFL	ABC	Total ACL	Commercial ACL	Recreational ACL
2018	183,000	139,000	139,000	61,160	77,840
2019	191,000	150,000	150,000	66,000	84,000
2020 until modified	202,000	162,000	162,000	71,280	90,720

Projections from SEDAR 53 (2017) were produced to meet statutory requirements that the rebuilding schedule for red grouper be revised (**Appendix C**). One implicit assumption within the model used in SEDAR 53 (2017) was that recruitment would revert to the long-term average rather than remain at low levels. As such, when revising the rebuilding schedule for red grouper, rebuilding projections under long-term average recruitment instead of low recruitment were used for determining the minimum and maximum time period needed for stock rebuilding to occur.

In 2018, the MRIP replaced the Coastal Household Telephone Survey with the Fishing Effort Survey (FES) as an improved way to estimate recreational fishing effort. The new recreational effort data resulting from the FES was utilized to update data used in four recent stock assessments, including SEDAR 53 (2017), which resulted in a revised stock assessment for red grouper. The SSC reviewed these revised stock assessment during their April 9-11, 2019 meeting, but did not accept the assessments as best scientific information available due to concerns over the revised recreational data that was used in the model. The SSC deemed the assessments not useful for making catch recommendations at the current time; therefore, the ABC recommendations based on the previous assessments still stand. Based on this guidance, the projections for SEDAR 53 (2017) were incorporated where appropriate in this framework amendment instead of those that would have resulted from the revised stock assessment for red grouper if it had been approved by the SSC.

3.2.4 Other Fish Species Affected

Refer to **Appendix I** for more information on bycatch and co-occurring species. Other species most likely to co-occur with red grouper include gag, gray triggerfish, greater amberjack, mutton snapper, red porgy, red snapper, scamp, speckled hind, vermilion snapper, white grunt, and yellowtail snapper. For life history information on these and the remainder of species in the snapper grouper FMU that are not directly affected by actions in this framework amendment, refer to the South Atlantic Ecospecies Database (refer to reference in **Section 3.2.1**)).

3.2.5 Protected Species

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). There are 29 ESA-listed species or Distinct Population Segments (DPS) of marine mammals, sea turtles, fish, and corals managed by NMFS that may occur in the exclusive economic zone (EEZ) of the South Atlantic or Gulf of Mexico. There are 91 stocks of marine mammals managed within the Southeast region plus the addition of the stocks such as North Atlantic Right whales (NARW), and humpback, sei, fin, minke, and blue whales that regularly or sometimes occur in Southeast region managed waters for a portion of the year (Hayes et al. 2017). All marine mammals in U.S. waters are protected under the MMPA. The MMPA requires that each commercial fishery be classified by the number of marine mammals they seriously injure or kill. NMFS's List of Fisheries (LOF) classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they cause to marine mammals. More information about the LOF and the classification process can be found at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries.

Five of the marine mammal species (sperm, sei, fin, blue, and NARW) protected by the MMPA, are also listed as endangered under the ESA. In addition to those five marine mammals, six species or DPSs of sea turtles (green (the North Atlantic DPS and the South Atlantic DPS), hawksbill, Kemp's ridley, leatherback, and the Northwest Atlantic DPS of loggerhead); nine species or DPSs of fish (the smalltooth sawfish; five DPSs of Atlantic sturgeon; Nassau grouper; oceanic whitetip shark, and giant manta ray); and seven species of coral (elkhorn coral, staghorn coral, rough cactus coral, pillar coral, lobed star coral, mountainous star coral, and boulder coral) are also protected under the ESA and occur within the action area of the snapper grouper fishery. Portions of designated critical habitat for NARW, the Northwest Atlantic DPS of loggerhead sea turtles, and *Acropora* corals occur within the South Atlantic Council's jurisdiction.

NMFS has conducted specific analyses ("Section 7 consultations") to evaluate the potential effects from the South Atlantic snapper grouper fishery on species and critical habitat protected under the ESA. On December 1, 2016, NMFS completed its most recent biological opinion (2016 Opinion) on the snapper grouper fishery of the South Atlantic Region (NMFS 2016). In the 2016 Opinion, NMFS concluded that the snapper grouper fishery's continued authorization is likely to adversely affect but is not likely to jeopardize the continued existence of the NARW, loggerhead sea turtle Northwest Atlantic DPS, leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper. NMFS also concluded that designated critical habitat and other ESA-listed species in the South Atlantic Region were not likely to be adversely affected.

Since publication of the 2016 Opinion, NMFS has published two additional final listing rules. On January 22, 2018, NMFS listed the giant manta ray (*Manta birostris*) as threatened under the ESA, effective February 21, 2018. On January 30, 2018, NMFS listed the oceanic whitetip shark (*Carcharinus longimanus*) as threatened under the ESA, effective March 1, 2018. Giant manta rays and oceanic whitetip sharks are found in the South Atlantic and may be affected by the subject fishery via incidental capture in snapper grouper fishing gear. In a June 11, 2018, memorandum NMFS analyzed and documented ESA Section 7(a)(2) and Section 7(d) determinations for allowing the continued authorization of fishing managed by the Snapper Grouper FMP, during reinitiation of ESA consultation on this fishery, for its effects on the giant manta ray and the oceanic whitetip shark. Based on the analysis, NMFS determined that allowing the proposed action to continue during the reinitiation period

will not violate Section 7(a)(2) or 7(d). This Section 7(a)(2) determination is only applicable to the proposed action during the reinitiation period and does not address the agency's long-term obligation to ensure its actions are not likely to jeopardize the continued existence of any listed species or destroy or adversely modify critical habitat.

For summary information on the species that may be adversely affected by the snapper grouper fishery and how they are affected refer to Section 3.2.5 in Vision Blueprint Regulatory Amendment 27 (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries). The 2016 Opinion provides additional information on these species, how they are affected by the snapper grouper fishery, and the authorized incidental take levels of these species in the snapper grouper fishery.

3.3 Economic Environment

3.3.1 Economic Description of the Commercial Sector

3.3.1.1 South Atlantic Snapper Grouper Fishery

Commercial fishing vessels that participate in the federal snapper grouper fishery must have a federal snapper grouper permit, which either limits trips to landing no more than 225 lbs of snapper grouper or has no such limit. A condition of the permit is that these permitted vessels must report their fishing activity via logbooks submitted for each trip. On average, 80% vessels report landings of snapper grouper annually (**Table 3.3.1**).

Table 3.3.1. Number and percentage of permitted vessels that reported landing snapper grouper (SG), 2013-2017.

Year	Number Vessels with Unlimited Permit	Number Vessels with 225-lb Permit	Total Number of Vessels with SG Permit	Number Permitted Vessels that Landed SG	Percentage of Permitted Vessels that Landed SG
2013	592	129	721	561	77.8%
2014	584	125	709	562	79.3%
2015	571	121	692	566	81.8%
2016	565	116	681	546	80.2%
2017	554	114	668	533	79.8%
5-Year Average	**573**	**121**	**694**	**554**	**79.8%**
3-Year Average	**563**	**117**	**680**	**548**	**80.4%**

Source: NMFS SERO for permits and SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019) for permitted vessels that landed red grouper.

Additional information on the permitted vessels and their landings of the snapper grouper fishery as a whole can be found in the report, Socio-Economic Profile of the Snapper Grouper Fishery in the South Atlantic Region, and is incorporated herein by reference (http://safmc.net/download/SGProfileReport_May2018.pdf). See also Vision Blueprint Commercial Regulatory Amendment 27 to the Snapper Grouper FMP (https://www.fisheries.noaa.gov/action/regulatory-amendment-27-vision-blueprint-commercial-measures) (SAFMC 2019a).

3.3.1.2 Red Grouper

On average, approximately 38% to 41% of the permitted vessels that harvest snapper grouper land red grouper. Those vessels represent approximately 31% to 32% of all permitted vessels (**Table 3.3.2**).

Table 3.3.2. Numbers of permitted vessels and those that reported landing SG and red grouper (RG) and percentages that landed RG, 2013-2017.

Year	With SG Permit	Landed SG	Landed RG	Percentage Permitted Vessels Landed RG	Percentage Vessels with SG Landings that Landed RG
2013	721	561	251	34.8%	44.7%
2014	709	562	245	34.6%	43.6%
2015	692	566	223	32.2%	39.4%
2016	681	546	206	30.2%	37.7%
2017	668	533	200	29.9%	37.5%
2013-2017 Average	**694**	**554**	**225**	**32.4%**	**40.6%**
2015-2017 Average	**680**	**548**	**210**	**30.8%**	**38.2%**

Source: NMFS SERO for permits and SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

During the same 5-year period (2013 – 2017), there were general declines in reported red grouper landings (lbs gw) and numbers of vessels and trips with red grouper landings (**Table 3.3.2**). During the 3-year period from 2015 through 2017, average red grouper landings per trip were down to 51 lbs gw. Average red grouper landings per vessel from 2013 through 2017 declined by 58% and by 51% per trip. The largest average annual decrease in red grouper landings was in North Carolina, followed in turn by South Carolina and Florida/Georgia (**Table 3.3.3**).

Table 3.3.2. Reported commercial landings (lbs gw) of RG, number of permitted vessels and trips making those landings and average landings of RG per vessel and per trip, 2013 – 2017.

Year	RG landings (lbs gw)	Vessels	Trips	Average RG landings per vessel	Average RG landings per trip
2013	98,726	251	1,141	393	87
2014	74,462	245	1,190	304	63
2015	58,530	223	936	262	63
2016	38,064	206	789	185	48
2017	32,771	200	824	164	42
2013-2017 Average	**60,511**	**225**	**976**	**262**	**60**
2015-2017 Average	**43,122**	**210**	**850**	**204**	**51**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

Table 3.3.3. Reported commercial landings (lbs gw) of RG by state and annual change by state, 2013 – 2017.

Year	FL + GA[1]	NC	SC	Total	Change FL + GA[1]	Change NC	Change SC	Change Total
2013	23,110	54,834	20,782	98,726				
2014	22,183	40,236	12,043	74,462	-927	-14,598	-8,739	-24,264
2015	21,853	28,060	8,617	58,530	-330	-12,176	-3,426	-15,932
2016	15,602	16,375	6,087	38,064	-6,251	-11,685	-2,530	-20,466
2017	16,896	13,033	2,843	32,772	1,294	-3,342	-3,244	-5,292
2013-2017 Average	**19,929**	**30,508**	**10,074**	**60,511**	**-1,554**	**-10,450**	**-4,485**	**-16,489**
2015-2017 Average	**18,117**	**19,156**	**5,849**	**43,122**	**-1,762**	**-9,068**	**-3,067**	**-13,897**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

1. Georgia combined with Florida to not disclose confidential information.

The percentage of dockside revenue from red grouper landings declined annually over the same 5-year period (**Table 3.3.4**). In 2013, red grouper accounted for 2.4% of dockside revenue from all trips made by the permitted vessels that landed red grouper that year. Five years later, that percentage was down to 0.9%.

Table 3.3.4. Percent of total dockside revenue from red grouper by permitted vessels that landed red grouper, 2013-2017.

Year	Percentage of Total Revenue from Red Grouper
2013	2.4%
2014	1.7%
2015	1.5%
2016	1.0%
2017	0.9%
2013-2017 Average	**1.5%**
2015-2017 Average	**1.1%**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

Commercial landings of red grouper generate beneficial economic impacts to the nation, such as jobs and income. Those impacts declined from 2013 through 2017. From 2013 through 2017, average annual landings of red grouper by permitted vessels generated an estimated 38 part-time and full-time jobs, approximately $1.05 million in income, $1.48 million in value-added, and $2.85 million in sales impacts annually (2017 $) (**Table 3.3.5**). From 2015 through 2017, those averages were down to 27 jobs, $0.7 million in income, etc.

Table 3.3.5. Average annual economic Impacts to the nation from landings of red grouper by permitted vessels, 2013 – 2017.

Years	Jobs	Income (2017 $)	Value-Added (2017 $)	Sales (2017 $)
2013 - 2017	38	$1,046 thousand	$1,478 thousand	$2,849 thousand
2015 - 2017	27	$745 thousand	$1,052 thousand	$2,028 thousand

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS (2017) and BEA for GDP implicit price deflator.

The majority of trips that land red grouper harvest no more than 75 lbs gw of the species and on average 6.0% landed more than 200 lbs gw from 2013 through 2017, while from 2015 through 2017, that average was 3.9% (**Table 3.3.6**). An annual average of 30 vessels make 62 trips annually that land over 200 lbs gw of red grouper from 2013 through 2017 (**Table 3.3.7**). From 2015 through 2017, an average of 21 vessels make 33 trips that land over 200 lbs gw of red grouper. The average trip that landed over 200 lbs gw from 2013 through 2017 harvested 342 lbs gw of red grouper, whereas from 2015 through 2017 that average trip harvested 326 lbs gw (**Table 3.3.8**).

Table 3.3.6. Average annual number of trips by lbs gw of red grouper landed, 2013-2017.

Year	1 to 75	76 to 100	101 to 150	151 to 200	Over 200	Total	Percentage over 200
2013	795	175	72	66	133	1,141	11.7%
2014	913	73	79	46	79	1,190	6.6%
2015	718	60	69	33	56	936	6.0%
2016	636	49	57	19	27	788	3.4%
2017	649	50	43	21	17	780	2.2%
2013-2017 Average	**742**	**61**	**64**	**37**	**62**	**967**	**6.0%**
2015-2017 Average	**668**	**53**	**56**	**24**	**33**	**835**	**3.9%**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

Table 3.3.7. Average annual number of vessels by lbs gw of red grouper (RG) landed per trip, 2013-2017.

Year	1 to 75	76 to 100	101 to 150	151 to 200	Over 200	Total	Percentage over 200
2013	145	15	21	19	51	251	20.3%
2014	164	14	20	13	34	245	13.9%
2015	147	8	25	12	31	223	13.9%
2016	145	13	18	10	20	206	9.7%
2017	149	13	15	10	13	200	6.5%
2013-2017Average	**150**	**313**	**20**	**13**	**30**	**225**	**12.9%**
2015-2017 Average	**147**	**11**	**19**	**11**	**21**	**201**	**10.0%**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

Table 3.3.8. Average lbs gw of red grouper landed per trip by range , 2013-2017.

Year	1 to 75	76 to 100	101 to 150	151 to 200	Over 200	All
2013	26	87	124	172	385	87
2014	26	85	122	176	345	63
2015	24	86	120	177	395	63
2016	24	86	121	169	302	48
2017	23	87	122	169	280	42
2013-2017 Average	**25**	**86**	**122**	**173**	**342**	**60**
2015-2017 Average	**24**	**86**	**121**	**172**	**326**	**51**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

During January through April, no person may sell or purchase a red grouper harvested from or possessed in the South Atlantic EEZ or, if harvested or possessed by a vessel for which a valid Federal commercial permit for South Atlantic snapper-grouper has been issued, harvested from the South Atlantic. Despite that probation, which has been in place since mid-2009 (SAFMC 2009), there were reported landings of red grouper during those months from 2013 through 2017. However, approximately 96% of annual landings occurred from May through December and 70% from May through August (**Table 3.3.9**).

Table 3.3.9. Monthly landings (lbs gw) of red grouper, 2013-2017.

Month	2013	2014	2015	2016	2017	Average	Percentage
Jan	5,256	0	974	0	362	1,318	2.2%
Feb	229	348	0	6	1,282	373	0.6%
Mar	755	171	0	378	856	432	0.7%
Apr	342	230	232	439	382	325	0.5%
May	32,297	18,335	15,127	10,821	9,292	17,174	28.4%
Jun	13,036	14,533	14,676	4,362	4,777	10,277	17.0%
Jul	11,692	8,442	9,990	5,577	3,409	7,822	12.9%
Aug	9,751	10,951	6,410	4,703	3,368	7,037	11.6%
Sep	7,614	7,926	3,566	4,613	1,330	5,010	8.3%
Oct	6,947	7,376	2,890	2,567	2,189	4,394	7.3%
Nov	4,921	2,305	1,493	1,863	2,655	2,647	4.4%
Dec	5,888	3,846	3,174	2,735	2,870	3,703	6.1%
Total	**98,728**	**74,463**	**58,532**	**38,064**	**32,772**	**60,512**	**100.0%**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

In North and South Carolina, monthly landings by permitted vessels tend to peak in May (**Table 3.3.10**). From 2013 through 2017, an annual average of 55 vessels made 106 trips that landed red grouper that month, whereas from 2015 through 2017, an annual average of 48 vessels made 86 trips that landed over 200 lbs gw of red grouper.

Table 3.3.10. Monthly landings (lbs gw) of red grouper in North and South Carolina by permitted vessels, 2013-2017.

Month	2013	2014	2015	2016	2017	2013-2017 Average	2015-2017 Average
Jan - Apr	42	0	0	0	0	8.4	0
May	27,452	14,067	10,512	5,840	4,515	12,477	6,956
Jun	10,642	11,080	11,050	2,662	3,329	7,753	5,680
Jul	10,692	7,118	4,740	4,243	2,671	5,999	3,885
Aug	7,814	6,452	4,823	3,511	2,055	5,059	346
Sep	5,794	5,877	2,853	3,530	626	3,777	2,336
Oct	5,251	5,608	1,653	2,087	1,170	3,174	1,637
Nov	3,487	780	417	514	1,217	1,283	71
Dec	4,442	1,297	630	70	293	1,347	33
Total	**75,616**	**52,279**	**36,678**	**22,457**	**15,876**	**40,877**	**25,004**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

During the months from June through December from 2013 through 2017, there were trips by permitted vessels that landed over 200 lbs gw of red grouper in North and South Carolina. An annual average of 37 trips landed of over 200 lbs gw of red grouper during the seven month period (**Table 3.3.11**) The average of those trips landed 307 lbs gw of the species; however, the number of trips with landings over 200 lbs gw declined. From 2015 through 2017, an annual average of 15 trips landed over 200 lbs gw of red grouper, and collectively those 15 trips landed 4,806 lbs gw of red grouper.

Table 3.3.11. Number of trips that landed over 200 lbs gw of red grouper from June through December in North and South Carolina, total RG landings from those trips and average RG landings per trip for those with over 200 lbs gw.

Year	Trips over 200 lbs gw RG	RG Landings (lbs gw)	Average RG Landings per Trip
2013	67	24,253	362
2014	71	15,593	220
2015	31	10,468	338
2016	11	2,899	264
2017	3	1,051	350
2013-2017 Average	**37**	**10,853**	**307**
2015-2017 Average	**15**	**4,806**	**317**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

In Florida and Georgia, monthly landings also tend to peak in May (**Table 3.3.12**). From May through December an annual average of 7 trips landed more than 200 lbs gw or red grouper in Florida and Georgia (**Table 3.3.13**). During those months from 2015 through 2017, an annual average of 559 lbs gw of red grouper were landed on those trips.

Table 3.3.12. Monthly landings (lbs gw) of red grouper by permitted vessels in Florida and Georgia, 2013-2017.

Month	2013	2014	2015	2016	2017	2013-2017 Average	2015-2017 Average
Jan - Apr	6,540	749	1,206	817	2,882	2,439	1,635
May	4,845	4,267	4,615	4,981	4,777	4,697	4,791
Jun	2,394	3,453	3,626	1,701	1,448	2,524	2,258
Jul	1,000	1,324	5,250	1,335	738	1,929	2,441
Aug	1,937	4,499	1,587	1,192	1,313	2,106	1,364
Sep	1,820	2,049	713	1,083	704	1,274	833
Oct	1,695	1,768	1,237	480	1,019	1,240	912
Nov	1,434	1,525	1,076	1,349	1,438	1,364	1,288
Dec	1,446	2,549	2,544	2,665	2,577	2,356	2,295
Total	**23,111**	**22,183**	**21,854**	**15,603**	**16,896**	**19,929**	**18,118**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

Table 3.3.13. Number of trips that landed over 200 lbs gw of red grouper from May through December in Florida and Georgia, total RG landings from those trips and average RG landings per trip for those with over 200 lbs gw.

Year	Trips over 200 lbs gw RG	RG Landings (lbs gw)	Average RG Landings per Trip
2013	5	2,103	421
2014	8	4,969	621
2015	6	5,951	992
2016	7	2,855	408
2017	8	2,205	276
2013-2017 Average	**7**	**3,617**	**543**
2015-2017 Average	**7**	**3,670**	**559**

Source: SEFSC Socioeconomic Panel (Version 7) accessed by the SEFSC Economic Query System (March 2019).

3.3.2 Economic Description of the Recreational Sector

3.3.2.1 South Atlantic Snapper Grouper Fishery

Private or rented recreational fishing vessels are not required to have a federal permit to harvest snapper grouper species/species groups from the EEZ. Anglers aboard these vessels, however, must either be federally registered or licensed in states that have a system to provide complete information on the states' saltwater anglers to the national registry.

Any for-hire fishing vessel that takes anglers into the South Atlantic EEZ where they harvest snapper grouper species/species groups must have a charter/headboat permit, which is an open-access permit that specifically assigned to that vessel. Since 2013, there has been a general increase in the number of vessels with the permit (**Table 3.3.14**). However, as of July 1, 2018, there were 1,690 vessels with the permit, which falls outside the 2013-2017 range, but as of October 22, 2018, there were 1,753, which is within that range.

Table 3.3.14. Number of for-hire vessels with South Atlantic charter/headboat snapper grouper permit.

Year	Number of permitted for-hire vessels
2013	1,799
2014	1,727
2015	1,779
2016	1,867
2017	1,982
2013-2017 Average	**1,831**
2015-2017 Average	**1,876**

Source: NMFS SERO.

As of July 1, 2018, approximately 91% of the South Atlantic charter/headboat permits were held by entities residing in a South Atlantic state (**Table 3.3.15**). Florida entities ranked first, followed in turn by North Carolina, South Carolina and Georgia.

Table 3.3.15. Number of for-hire vessels with South Atlantic charter/headboat snapper grouper permit.

State	SA SG Charter/Headboat Permits	
	Number	Percent
FL	999	59.1%
GA	59	3.5%
NC	305	18.0%
SC	172	10.2%
Other	155	9.2%
Total	**1,690**	**100.0%**

Source: NMFS SERO FOIA Page.

The actions of this framework amendment concern fishing for red grouper only. Consequently, the remainder of this section focuses exclusively on recreational fishing for red grouper in the Region.

Additional information on recreational landings and fishing for the snapper grouper fishery as a whole or the other species or complexes within it can be found in previous amendments to the Snapper Grouper FMP, such as Vision Blueprint Recreational Regulatory Amendment 26 (https://www.fisheries.noaa.gov/action/regulatory-amendment-26-vision-blueprint-recreational-measures) (SAFMC 2019b), Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009), Regulatory Amendment 9 (SAFMC 2011d), and Amendment 25 (SAFMC 2012), Regulatory Amendment 25 (SAFMC 2016), and are incorporated herein by reference.

3.3.2.2 Red Grouper

The recreational fishing year (season) for most species and species groups within the snapper grouper fishery runs from January 1 to December 31 every year. However, recreationally harvest and possession of red grouper or any other shallow water grouper is prohibited in federal waters from January 1 through April 30.

If recreational landings of red grouper reach or are projected to reach or exceed the recreational ACL, the season is closed. From 2012 through 2016, there were no early closures of the recreational season for red grouper because no more than 35.5% of the recreational ACL was landed annually during that 5-year period (**Table 3.3.16**). Recreational landings declined in 2013 and 2014, but then increased in both 2015 and 2016.

Table 3.3.16. Recreational landings and ACL pounds whole weight (lbs ww) for red grouper, 2012 – 2017.

	Recreational landings (lbs ww) of red grouper		
Year	ACL	Landings	Percent ACL
2012	362,320	101,604	28.0%
2013	402,080	87,123	21.7%
2014	436,800	38,756	8.9%
2015	436,800	128,213	29.4%
2016	436,800	155,271	35.5%
2017	436,800	96,430	22.1%

Source: NMFS SERO ACL.

Recreational landings of red grouper tend to be minimal by comparison during the first two waves (January – February and March – April) before rising substantially during the third wave months of May and June, which are the first two months of the open federal season and illustrated in **Figure 3.3.4**. In the Carolinas, average landings in May represented approximately 4% of average annual landings from 2013 through 2017.

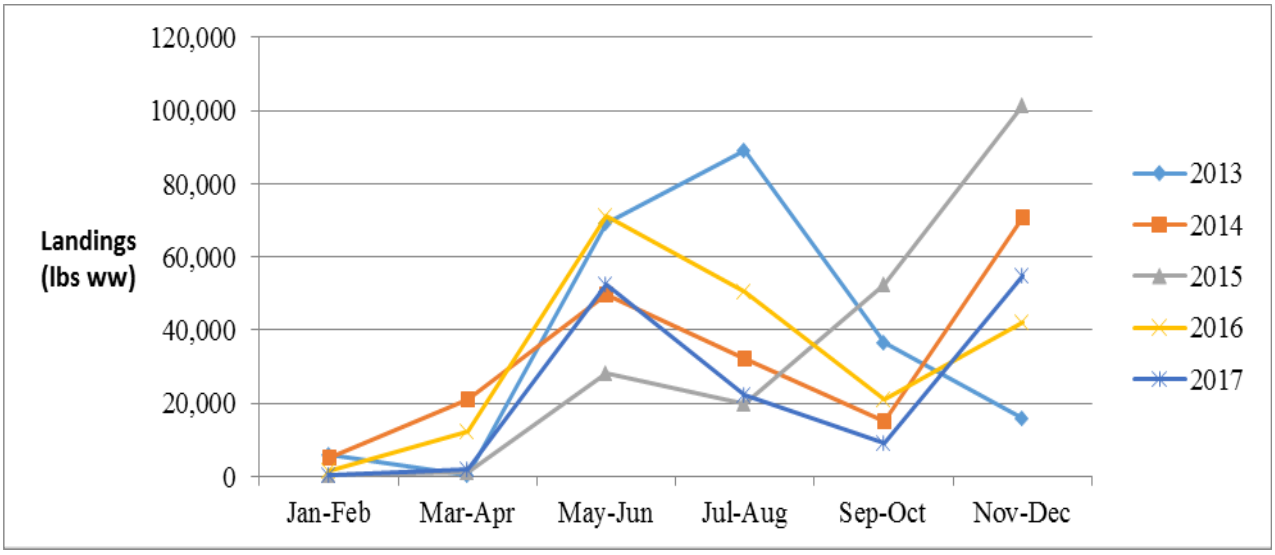

Figure 3.3.1. Recreational landings (lb gw) of red grouper from South Atlantic EEZ by wave,2013-2017.
Source: NMFS SERO ACL MRIP June 11, 2018.

Most trips by vessels that land red grouper from the South Atlantic are made by headboats (**Table 3.3.15**).

Table 3.3.15. Number of South Atlantic recreational fishing vessel trips that landed red grouper by type of vessel. Source: NMFS SERO ACL.

Year	Private/Rented Vessels	Charter Vessels	Headboat	Total
2013	10	1	46	57
2014	6	7	48	61
2015	5	3	41	49
2016	6	3	34	43
2017	8	2	40	50
2013-2017 Average	**7**	**3**	**42**	**52**
2015-2017 Average	**6**	**3**	**38**	**47**

Recreational saltwater fishing trips have associated expenses. These trip-related expenses can include bait, ice, charter fees, boat fuel, boat and equipment rentals, lodging, public and other vehicle transportation, access and parking, and food. There are also durable goods expenditures associated with recreational fishing, such as, but not limited to rods and reels, tackle, boat purchases and maintenance, boat accessories, and clothing. These expenditures represent only part of the value of the recreational fishing sector. Fish harvested by saltwater anglers for their own or family's consumption are not included in traditional economic (market) valuation of the recreational sector, although those fish harvested may have substantial personal and social values, especially to the individuals and families that rely on recreationally caught fish and shellfish to feed themselves and their families throughout the year and especially at times of economic hardship. There is relaxation, camaraderie of being with family and friends, being out in nature, the thrill of adventure, and other factors that cause one to value recreational fishing beyond the expenses. One method used to put a dollar value on those values is determining saltwater angler's willingness to pay in excess of expenses, and that extra amount (above expenses) is termed consumer surplus. Estimates of consumer surplus from recreational fishing for red grouper are not available; however, there are estimates for grouper species in general. Carter and Liese (2012) estimated the value for catching and keeping a second grouper on an angler trip was $80.40 at 2003 prices, which is $105.14 at 2017 prices. The values of an additional grouper landed decreases for every additional one

Estimates of average annual economic impacts from trips by private/rented and charter vessels that landed red grouper are presented below (**Table 3.3.16**). These annual impacts are relatively small because red grouper is primarily landed by headboats and only a small percentage of trips by private/rented and charter vessels land red grouper.

Table 3.3.16. Average annual economic Impacts from private/rented and charter vessel trips that landed red grouper.

Mode	Trips	Sales (2017 $)	Income (2017 $)	Value Added (2017 $)
Charter	3	$3,000	$1,000	$2,000
Private/Rental	6-7	$1,000	Less than $1,000	Less than $1,000
Total	**9-10**	**$4,000**		

Source: Estimates of economic impacts calculated by NMFS SERO using model developed for NMFS (2017) and BEA for GDP implicit price deflator.

3.4 Social Environment

Commercial Fishing

Since 2001, South Atlantic Snapper Grouper Unlimited Permits and Snapper Grouper 225-pound Trip Limit Permits have shown a downward trend (**Figure 3.4.1**) as would be expected with a limited entry program in place since 1998 and a "2 for 1" requirement for new permits. That trend will likely continue as long as the criteria are a continued part of management for the snapper grouper commercial fishery. The decline in the number of permits has slowed in recent years but continues to trend lower with the number of unlimited permits in 2013 going from 593 to 554 in 2017 and limited permits dropping from 130 in 2013 to 114 in 2017.

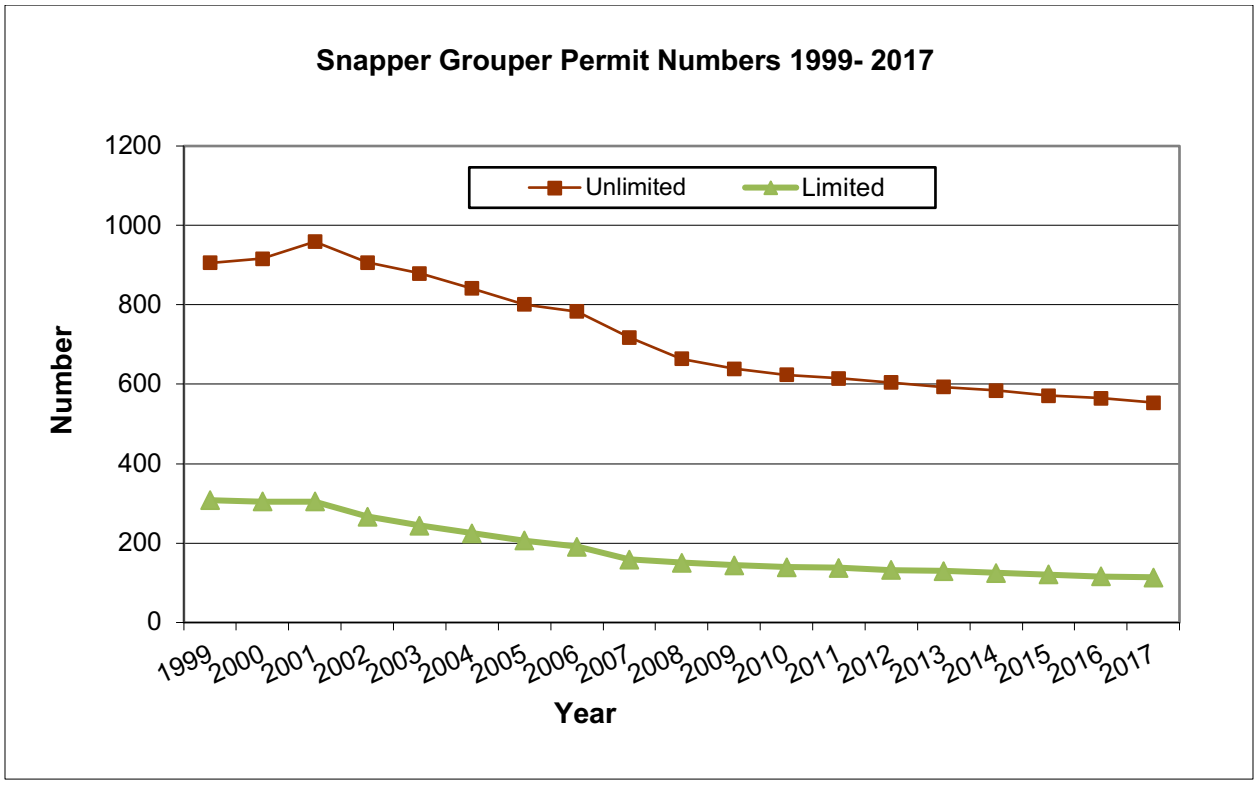

Figure 3.4.1. Snapper grouper Unlimited and 225-pound trip limit permits 1999-2016.
Source: NMFS SERO Permits (2017).

The geographical distribution of South Atlantic Snapper Grouper Unlimited and Limited Permits appears in **Figure 3.4.2**. There are several concentrations of unlimited permits (SG1) with the largest in the Florida Keys and a smaller concentration near Jacksonville, Florida. The northern South Carolina coast and southern North Carolina coast have the second largest concentration of unlimited permits with a smaller concentration in the Outer Banks and Wanchese in North Carolina. Although not concentrated in any particular zip code, Florida's southeastern coast does have a considerable number of permits spread throughout many different zip codes. Limited (SG2) permits are concentrated in Southern Florida with the majority in the Florida Keys communities.

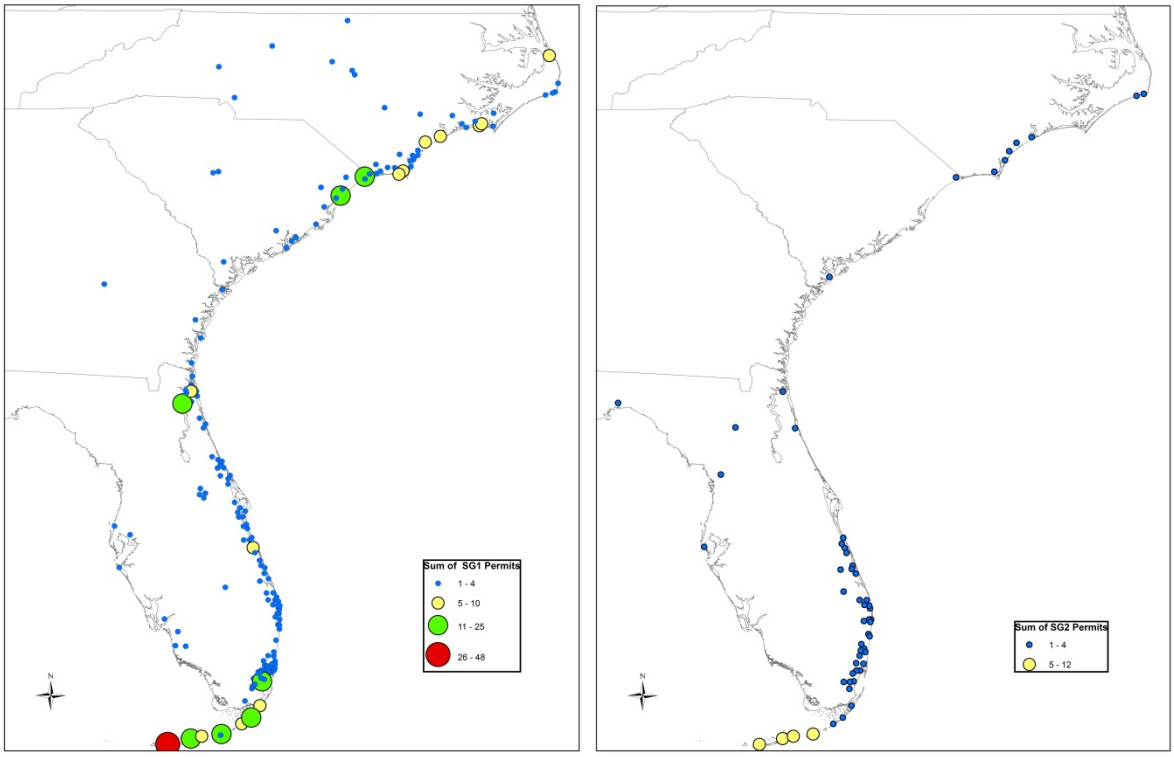

Figure 3.4.2. Snapper grouper unlimited (SG1) and limited (SG2) permits by owner's zip code. Source: NMFS SERO Permits (2017).

A regional quotient (RQ) measure was used to identify commercial fishing involvement at the community level by species or species group. The RQ measures the relative importance of a given species or species group across all communities in the region and represents the proportional distribution of commercial landings. This proportional measure does not provide the actual number of pounds or the value of the catch; data that might be confidential at the community level. The RQ is calculated by dividing the total pounds (or value) of a species landed in a given community, by the total pounds (or value) for that species for all communities in the region. The measure is a way to quantify the importance of a particular species or species group to communities around the South Atlantic and suggest where impacts from management actions are more likely to be experienced. The time series for the describing the RQ was from 2010 to 2016. The data used for the RQ measure were assembled from the accumulated landings system (ALS), which includes commercial landings of all species from both state and federal waters and is based on dealer reports. These data were converted to provide landings by (dealer's) address.

While most communities have demonstrated a fairly stable trend in their RQ for red grouper in **Figure 3.4.3**, Key West, Florida, has seen a rather steady rise in its landings of after 2010 and then a decrease in its RQ in 2013 with another rise in the latest years. Murrells Inlet, SC is ranked second and was ranked higher in 2013 and 2014 but has fallen in recent years. Winnabow, NC has seen a steady decline over the time period. Most other communities have seen a rather consistent RQ ranking through the time series.

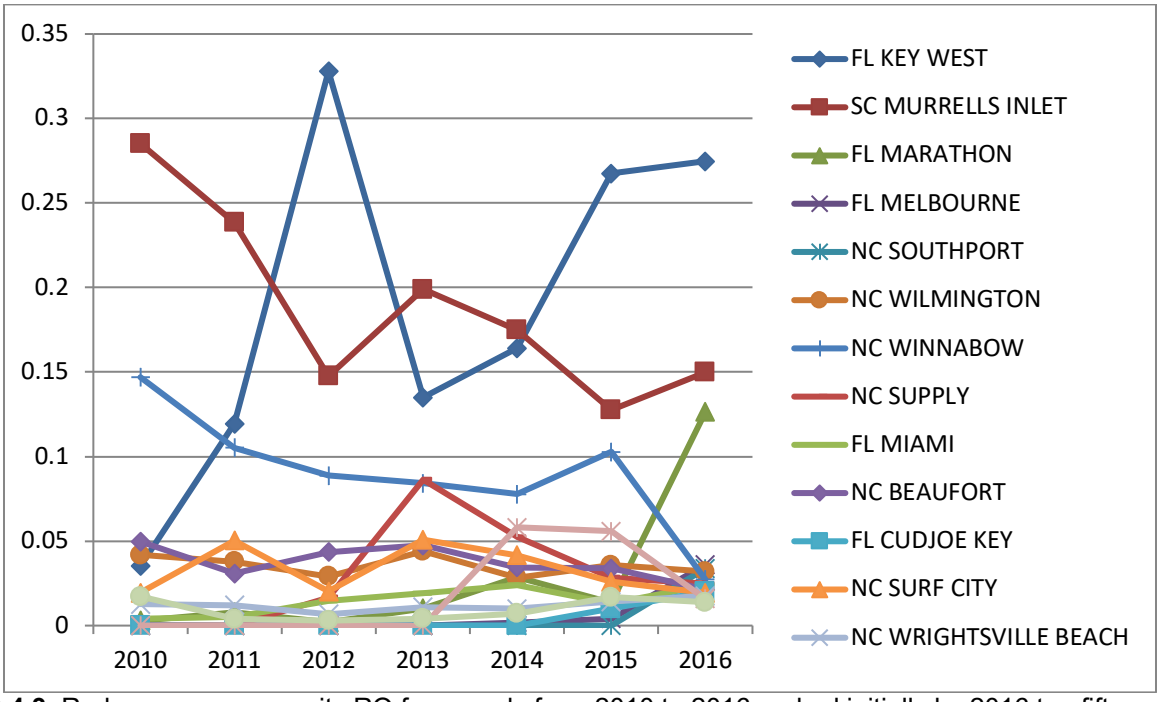

Figure.3.4.3. Red grouper community RQ for pounds from 2010 to 2016 ranked initially by 2016 top fifteen. Source: NMFS SERO ALS Database (with dealer address) (2017).

Commercial Fishing Engagement

While we can characterize those communities that have high regional quotients for landings and value, it is more difficult to characterize the fleet and its labor force regarding demographics and places of residence for captains and crew of vessels. There is little to no information on captains and crew, including demographic makeup of crew, so we are left with descriptions regarding the engagement and reliance of fishing communities and their social vulnerability. To further delineate which communities are more dependent upon fishing, a measure has been developed to gauge overall fishing engagement.

An index of existing permit and landings data was created to provide a more empirical measure of fishing dependence (Jacob et al. 2013; Colburn and Jepson 2013). Fishing engagement uses the absolute numbers of permits, dealers, landings and value of landings to provide a more robust look at a community's dependence upon fishing.

Using a principal component and single solution factor analysis each community receives a factor score for each index to compare to other communities. Factor scores are represented by colored bars and are standardized, therefore the mean is zero. Two thresholds of 1 and ½ standard deviation above the mean are plotted onto the graphs to help determine thresholds for significance. Because the factor scores are standardized, a score above 1 is also above one standard deviation. The top 20 communities in **Figure 3.4.4** are all above the threshold of one standard deviation and therefore commercial fishing is likely to have a large impact on the local economy.

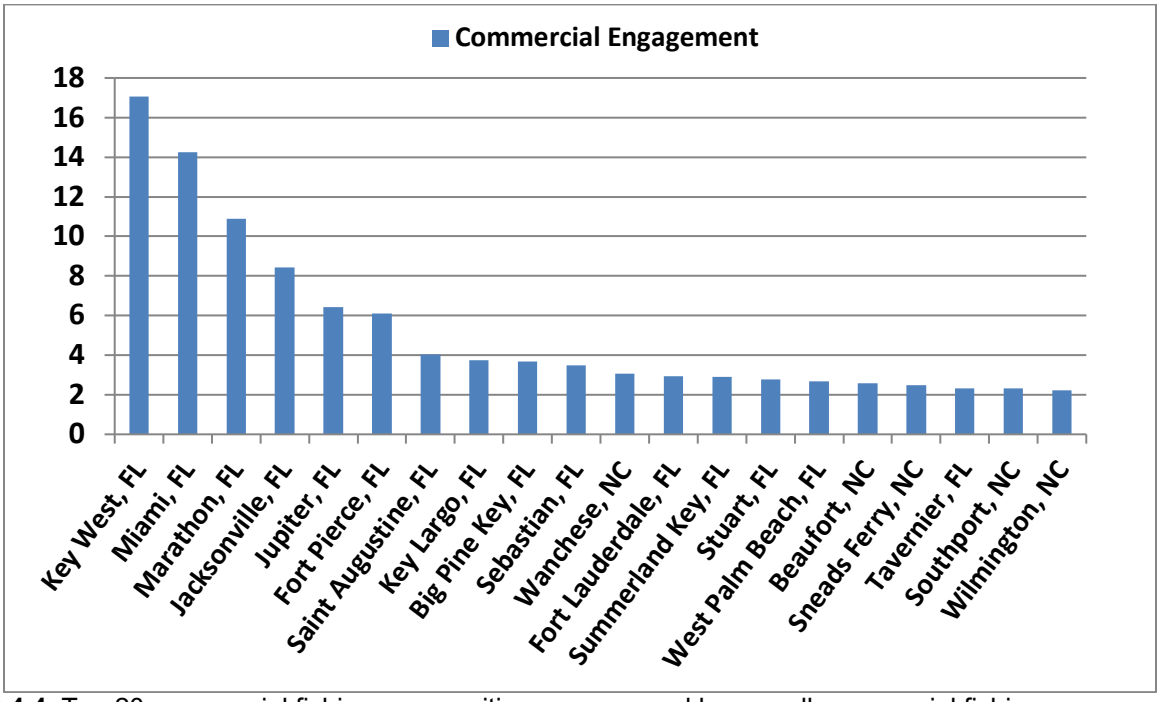

Figure.3.4.4. Top 20 commercial fishing communities as measured by overall commercial fishing engagement. Source: SERO, Community Social Vulnerability Indicators Database 2017 (American Community Survey 2010-2014).

Environmental Justice

Executive Order 12898 requires that federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. This executive order is generally referred to as environmental justice (EJ).

In order to assess whether a community may be experiencing EJ issues, a suite of indices created to examine the social vulnerability of coastal communities (Colburn and Jepson 2013; Jacob et al. 2013) is presented in **Figures 3.4.5 - Figure 3.4.7** for some communities that appear in **Figure 3.4.2 - Figure 3.4.4**. All communities that have permits or landings do not always have census data associated with it to create the vulnerability indices and therefore may not appear in figures. The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified as important components that contribute to a community's vulnerability. Indicators such as increased poverty rates for different groups, more single female-headed households and children under the age of 5, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of vulnerable populations. These indicators are closely aligned to previously used measures of EJ which used thresholds for the number of minorities and those in poverty. For those communities that exceed the threshold, it is expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

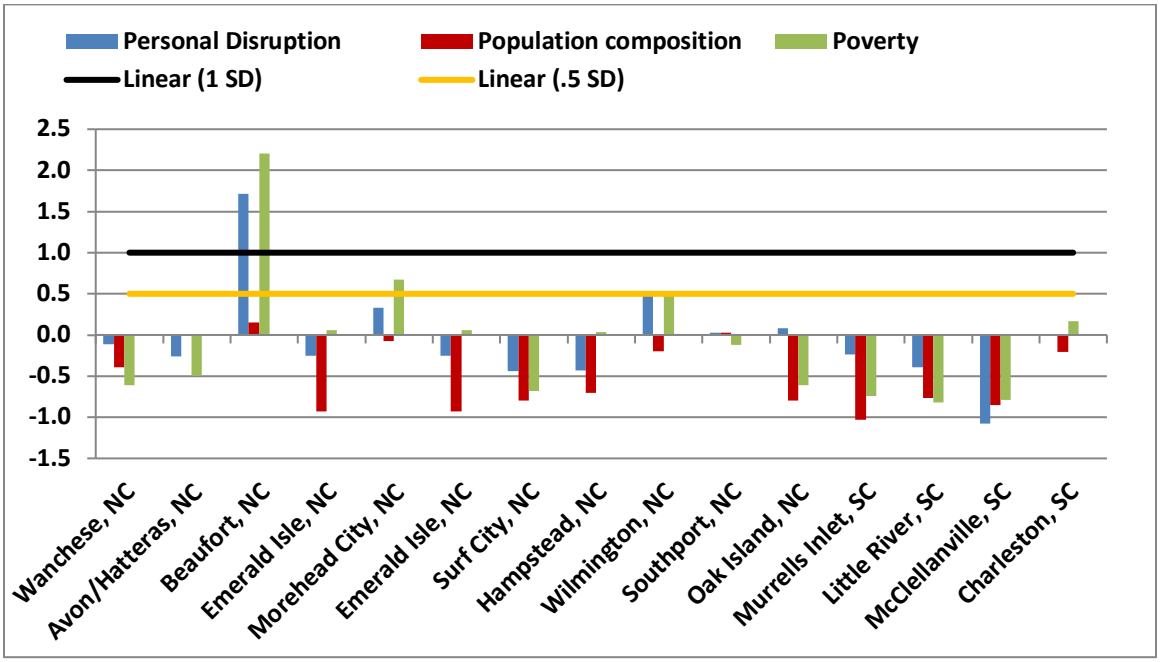

Figure.3.4.5. Social vulnerability indicators for selected NC/SC snapper grouper fishing communities. Source: SERO, Community Social Vulnerability Indicators Database 2017 (American Community Survey 2010-2014).

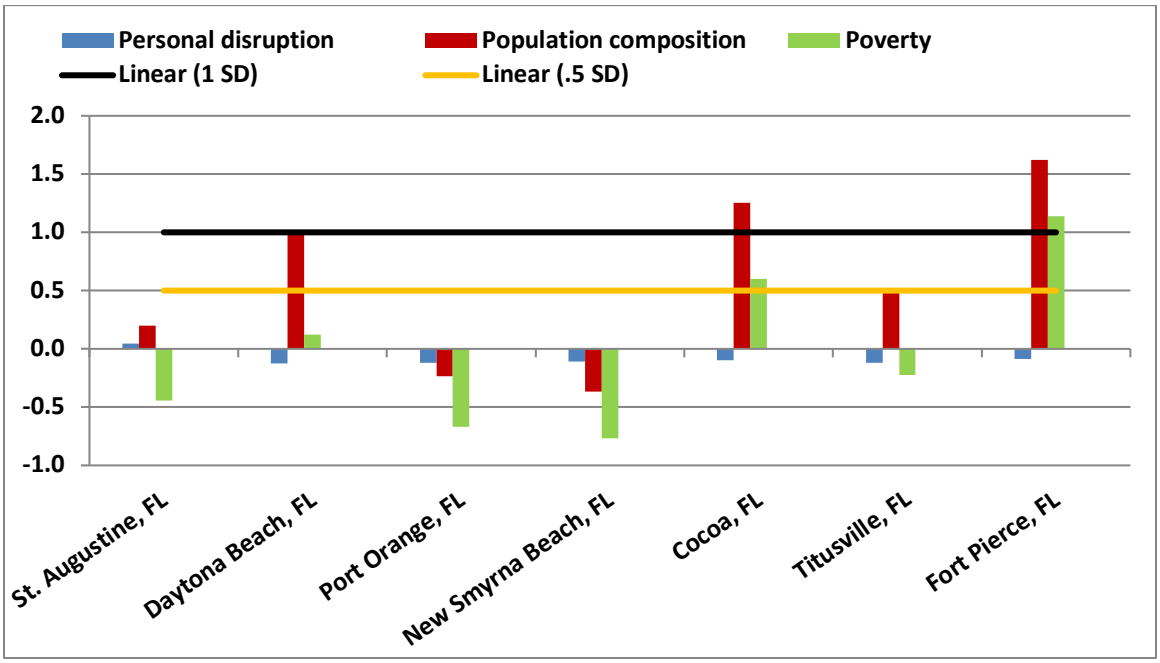

Figure.3.4.6. Social vulnerability indicators for selected Northern Florida snapper grouper fishing communities. Source: SERO, Community Social Vulnerability Indicators Database 2017 (American Community Survey 2010-2014).

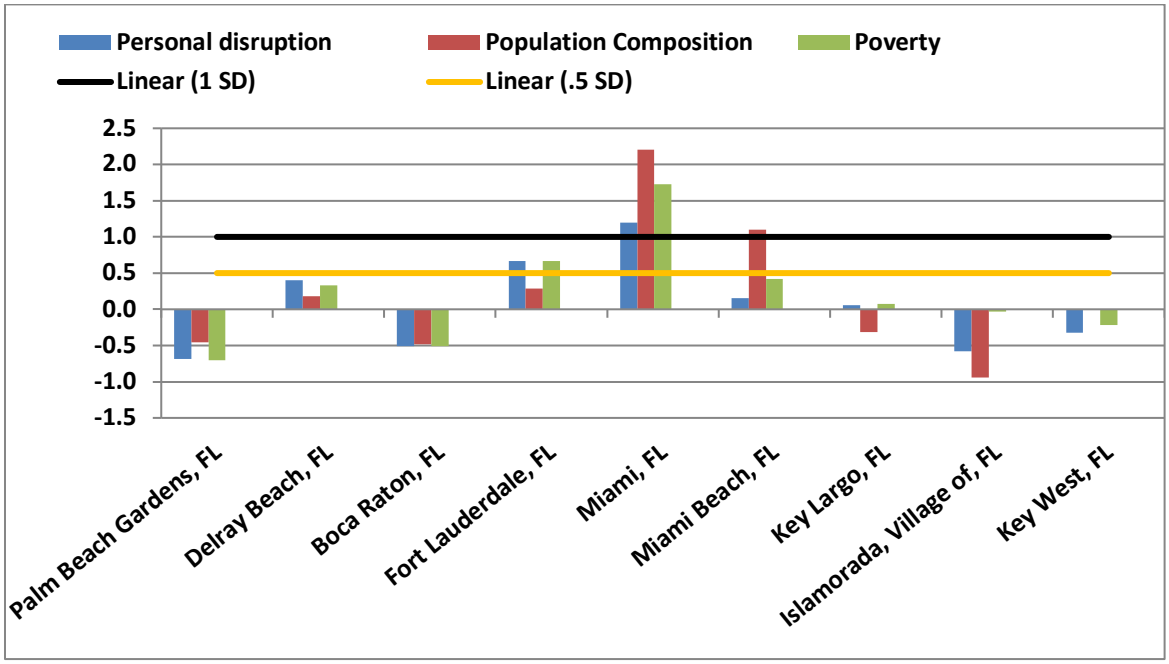

Figure.3.4.7. Social vulnerability indicators for selected Southern Florida snapper grouper fishing communities. Source: SERO, Community Social Vulnerability Indicators Database 2017 (American Community Survey 2010-2014).

Recreational Fishing

Recreational landings for included species and federal for-hire permits for South Atlantic snapper grouper are included by state to provide information on the geographic distribution of fishing involvement. Descriptions of the top recreational fishing communities in the South Atlantic based on recreational engagement are included, along with the distribution of federal for-hire permits for South Atlantic snapper grouper by community, top ranking communities by the number of federal for-hire permits for South Atlantic snapper grouper, and top communities with Southeast Headboat Survey (SRHS) landings by red grouper. Community level data are presented in order to meet the requirements of National Standard 8 of the Magnuson-Stevens Act, which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered. Lastly, social vulnerability data are presented to assess the potential for environmental justice concerns. Additional information on the South Atlantic recreational snapper grouper fishery is provided in the Economic Environment in **Section 3.3**.

Landings by State

The greatest proportions of landings for the majority of red grouper are from waters adjacent to Florida and Georgia (**Table 3.4.1**).

Table 3.4.1. Recreational red grouper landings (ww) by species and by state for 2016 and 2017.

Year	Species	FLE/GA	NC	SC	Total
2016	red grouper	154,691	503	77	155,271
2017	red grouper	96,342	67	21	96,430

Source: SEFSC MRIP and MRFSS datasets.

Permits by State

In 2016, there were a total of 1,867 federal for-hire permits for South Atlantic snapper grouper (**Table 3.3.2.1**). The majority of permits are held by operators in Florida (58.9% in 2016), followed by North Carolina (17.8%), South Carolina (11.4%), other states (5.5%), Gulf states (3.7%), and Georgia (2.8%).

Recreational Communities

Landings for the recreational sector are not available by species at the community level; therefore, it is not possible with available information to identify communities as dependent on recreational fishing for specific species. Because limited data are available concerning how recreational fishing communities are engaged and reliant on specific species, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jepson and Colburn 2013; Jacob et al. 2013). Recreational fishing engagement is represented by the number of recreational permits and vessels designated as "recreational" by homeport and owners address and recreational infrastructure (boat ramps and fishing piers). Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted. Communities were analyzed in ranked order by recreational fishing engagement.

Figure 3.4.8 identifies the top 20 recreational communities located in the South Atlantic that are the most engaged and reliant on recreational fishing, in general. All included communities demonstrate high levels of recreational engagement. Five communities (Marathon, Florida; Islamorada, Florida; Hatteras, North Carolina; Manteo, North Carolina; and Atlantic Beach, North Carolina) demonstrate high levels of recreational reliance.

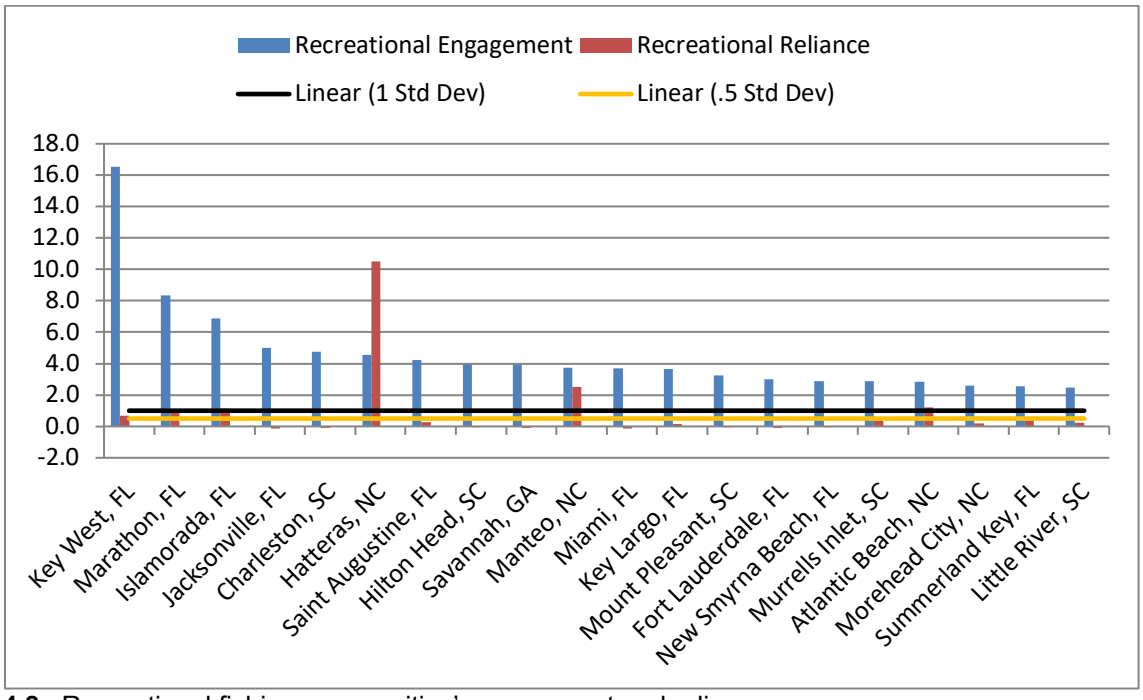

Figure 3.4.8. Recreational fishing communities' engagement and reliance.
Source: SERO, Community Social Vulnerability Indicators Database 2017 (American Community Survey 2010-2014).

Charter Vessels and Headboats by Community

Federal for-hire permits for South Atlantic snapper grouper are held by those with mailing addresses in a total of 438 communities, located in 26 states (SERO permit office, December 27, 2017). **Figure 3.4.9** provides the geographical distribution of federal for-hire permits by community. The figure focuses on the eastern US because the majority of permits are issued to individuals with addresses in the South Atlantic, Gulf, and Mid-Atlantic regions. A small number of permits are held by individuals with addresses in the western US, which is not shown. The communities with the most for-hire permits for snapper grouper are provided in **Table 3.4.2**. The majority of top communities are located in Florida, followed by North Carolina, South Carolina, and Georgia.

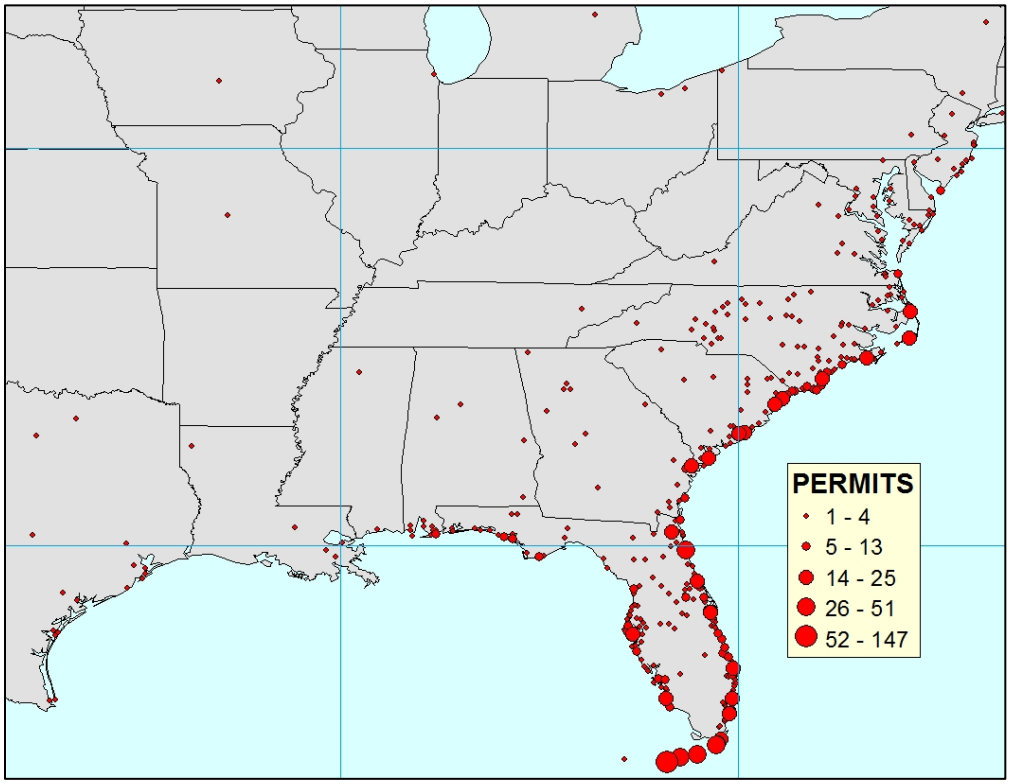

Figure 3.4.9. Number of federal for-hire permits for South Atlantic snapper grouper by community. Source: NMFS SERO permit office, December 27, 2017.

Table 3.4.2. Top ranking communities based on the number of federal for-hire permits for South Atlantic snapper grouper, in descending order.

State	Community	Permits
FL	Key West	147
FL	Marathon	51
FL	St. Augustine	34
FL	Islamorada	31
FL	Summerland Key	29
FL	Merritt Island	25
FL	Tavernier	24
NC	Hatteras	24
FL	Naples	22

State	Community	Permits
NC	Wilmington	22
FL	Port Orange	21
NC	Manteo	21
SC	Hilton Head	21
FL	Jacksonville	20
SC	Murrells Inlet	20
FL	Fort Lauderdale	19
GA	Savannah	19
SC	Charleston	19
FL	St. Petersburg	18

Source: NMFS SERO permit office, December 27, 2017.

Charter vessels and headboats target red grouper species throughout the South Atlantic. At this time it is not possible to determine which species are targeted by specific charter vessels and associate those vessels with their homeport communities. However, harvest data are available for headboats by species and can be linked to specific communities through the homeport identified for each vessel. These data are available for headboats registered in the SRHS. The SRHS includes a subset of vessels with federal for-hire permits.

In 2016, 75 federal for-hire vessels in the South Atlantic were registered in the SRHS (SRHS, SERO Limited Access Privilege Programs/Data Management database). The top communities by headboat landings of red grouper are provided in **Table 3.4.3**. Top communities are located in Florida, North Carolina, and South Carolina.

Table 3.4.3. Top homeports based on number of red grouper landed by headboats included in the SRHS.

Homeport Ranked
Stock Island, FL
Islamorada, FL
Key West, FL
Marathon, FL
Fort Lauderdale, FL
Key Largo, FL
Morehead City, NC
Boynton Beach, FL
Lantana, FL
Atlantic Beach, FL
Stuart, FL,
Lake Worth, FL
Riviera Beach
North Miami Beach, FL
Carolina Beach, NC
Little River, SC

Homeport Ranked
Cape Canaveral, FL
Hollywood, FL
Jupiter, FL
Ponce Inlet, FL
Wrightsville Beach, NC

Source: SRHS, SERO Limited Access Privilege Programs/Data Management Database, 2016.

Environmental Justice

Executive Order 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. The main focus of Executive Order 12898 is to consider "the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories…" This executive order is generally referred to as environmental justice (EJ).

Recreational fishermen, their households, and associated industries could be impacted by the proposed actions. However, information on the race and income status for groups at the different participation levels is not available. Although information is available concerning communities overall status with regard to minorities and poverty (e.g., census data), such information is not available specific to fishermen, their households, and those involved in the industries and activities, themselves. To help assess whether any environmental justice concerns arise from the actions in this framework amendment, a suite of indices were created to examine the social vulnerability of coastal communities. The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community's vulnerability. Indicators such as increased poverty rates for different groups, more single female-headed households and households with children under the age of five, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of populations experiencing vulnerabilities. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figure 3.4.10 provides the social vulnerability for some of the top recreational communities (**Figure 3.4.9**), top ranking communities based on the number of federal for-hire permits for South Atlantic snapper grouper (**Table 3.4.2**), and top South Atlantic communities with headboats included in the SRHS and with landings of red grouper (**Table 3.4.3**). Several South Atlantic communities exceed the threshold of 0.5 standard deviation for at least one of the social vulnerability indices: Marathon, St. Augustine, Miami, Ft. Lauderdale, Stock Island, and Lantana, Florida; Manteo, Morehead City, Wilmington, and Calabash, North Carolina; and Savannah, Georgia. The communities of Miami, Florida, and Savannah, Georgia, exceed the threshold for all three social vulnerability indices. These communities have substantial vulnerabilities and may be susceptible to further effects from any regulatory changes depending upon the direction and extent of that change.

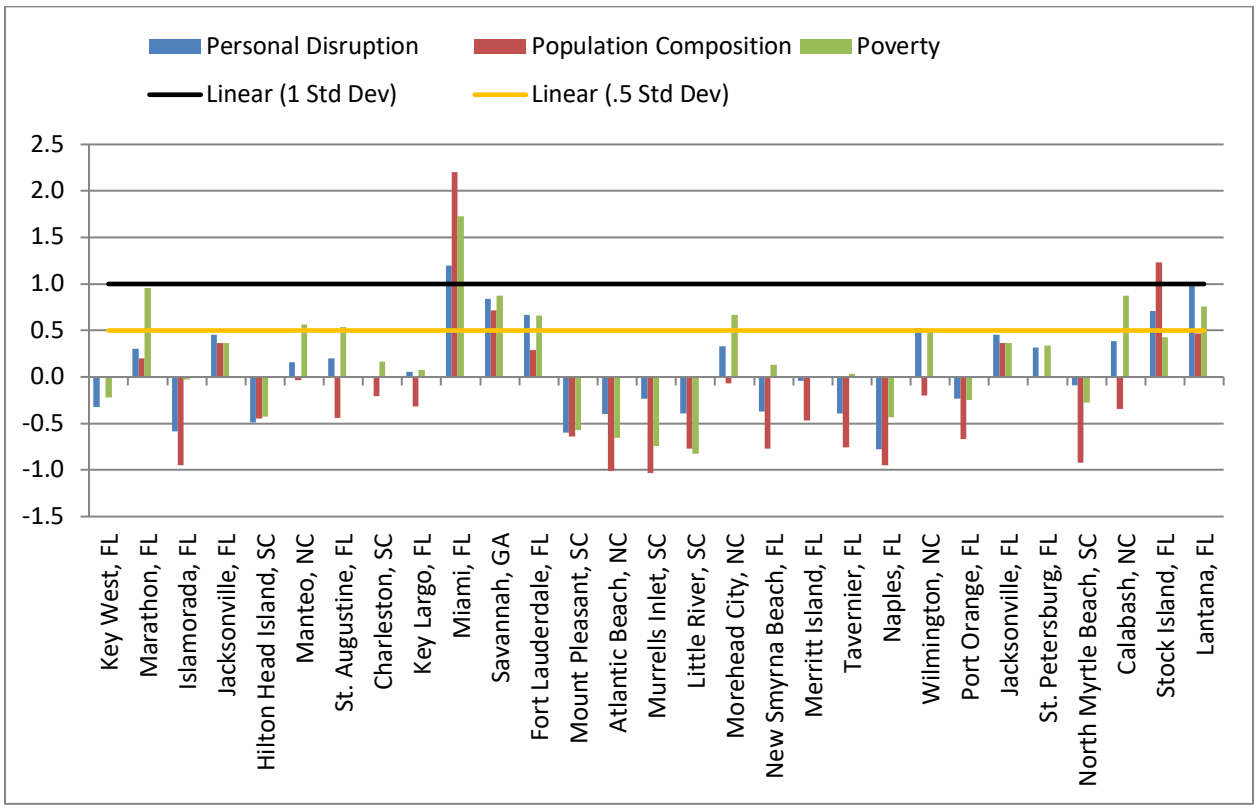

Figure 3.4.10. Social vulnerability indices for top recreational communities.
Source: SERO, Community Social Vulnerability Indicators Database 2017 (American Community Survey 2010-2014).

People in these communities may be affected by fishing regulations in two ways: participation (including targeting, catching, and/or consuming the fish) and employment. Although these communities may have the greatest potential for EJ concerns, no data are available on the race and income status for those involved in the local fishing industry (employment), or for their dependence on specific snapper grouper species (participation). However, the implementation of the proposed actions of this framework amendment would not discriminate against any group based on their race, ethnicity, or income status because the proposed actions would be applied to all participants in the fishery, although there may be income and/or race or other demographic differences between the average private angler and the average owner of a for-hire fishing business with a federal permit. Thus, the actions of this framework amendment are not expected to result in adverse or disproportionate environmental or public health impacts to EJ populations. Although no EJ issues have been identified, the absence of potential EJ concerns cannot be assumed.

3.5 Administrative Environment

3.5.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nm from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for collecting and providing the data necessary for the councils to prepare fishery management plans and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the Magnuson-Stevens Act and with other applicable laws. In most cases, the Secretary has delegated this authority to NMFS.

The South Atlantic Council is responsible for conservation and management of fishery resources in federal waters of the U.S. South Atlantic. These waters extend from 3 to 200 mi offshore from the seaward boundary of North Carolina, South Carolina, Georgia, and east Florida to Key West. The South Atlantic Council has thirteen voting members: one from NMFS; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the South Atlantic Council, there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard, State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The South Atlantic Council has adopted procedures whereby the non-voting members serving on the South Atlantic Council Committees have full voting rights at the Committee level but not at the full South Atlantic Council level. The South Atlantic Council also established two voting seats for the Mid-Atlantic Council on the South Atlantic Mackerel Committee. South Atlantic Council members serve three-year terms and are recommended by state governors and appointed by the Secretary from lists of nominees submitted by state governors. Appointed members may serve a maximum of three consecutive terms.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing personnel and legal matters, are open to the public. The South Atlantic Council uses its SSC to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedure Act, in the form of "notice and comment" rulemaking.

3.5.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines.

North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environmental Quality. The Marine Resources Division of the South Carolina Department of Natural Resources regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the South Atlantic Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters.

The South Atlantic States are also involved through the ASMFC in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of consistent state regulations to conserve coastal species. The ASFMC is also represented at the South Atlantic Council level, but does not have voting authority at the South Atlantic Council level.

NMFS's State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.5.3 Enforcement

Both the NMFS Office for Law Enforcement (NOAA/OLE) and the United States Coast Guard (USCG) have the authority and the responsibility to enforce South Atlantic Council regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the states in the Southeast Region (North Carolina), which granted authority to state officers to enforce the laws for which NOAA/OLE has jurisdiction. In recent years, the level of involvement by the states has increased through Joint Enforcement Agreements, whereby states conduct patrols that focus on federal priorities and, in some circumstances, prosecute resultant violators through the state when a state violation has occurred.

The NOAA Office of General Counsel Penalty Policy and Penalty Schedule is available online at http://www.gc.noaa.gov/enforce-office3.html.

Chapter 4. Environmental Effects and Comparison of Alternatives

4.1. Action 1. Revise the Rebuilding Schedule for Red Grouper.

4.1.1 Biological and Ecological Effects

Alternatives*

1 No Action. The current rebuilding schedule is set at the maximum time period allowed to rebuild (T_{max}). This is equal to 10 years with the rebuilding time period ending in 2020. 2011 was Year 1.

2. Alternative 2. Revise the rebuilding schedule to equal the shortest possible time period to rebuild in the absence of fishing mortality (T_{min}). This would equal 5 years with the rebuilding time period ending in 2024. 2020 would be Year 1.

3. Alternative 3. Revise the rebuilding schedule to equal 8 years with the rebuilding time period ending in 2026. 2019 would be Year 1.

4. Preferred Alternative 4. Revise the rebuilding schedule to equal the maximum time period allowed to rebuild (T_{max}). This would equal 10 years with the rebuilding time period ending in 2028. 2019 would be Year 1.

* Preferred indicated in bold.

Expected Effects to the Red Grouper Stock and Bycatch of Co-Occurring Species

Alternatives (No Action) 1 through **3,** and **Preferred Alternative 4** would not have direct biological effects on the red grouper stock. There are regulations currently in place (e.g., annual catch limits (ACL) and accountability measures (AM)) to control the level of harvest and the proposed action is not expected to alter the manner in which the red grouper resource is exploited. As stated in Chapter 1, Abbreviated Framework Amendment 1 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) ended overfishing of red grouper by reducing ACLs.

Alternative 1 (No Action) would likely have adverse indirect effects to the stock as it would not modify the rebuilding schedule per the best scientific information available. The rebuilding schedule allows fishery managers to gauge the progress, success, and short-comings of a rebuilding program. The absence of an updated schedule may compromise the ability to set proper ACLs and management measures to benefit the red grouper stock and ensure overfishing does not occur.

The alternatives to revise the rebuilding schedule (**Alternatives 2** and **3**, and **Preferred Alternative 4**), in contrast, would likely have beneficial indirect effects to the red grouper stock. In general, prescribing less time to rebuild the stock could result in lower ACLs and more restrictive management measures, but would translate into greater biological benefits for the stock in a shorter timeframe. The rebuilding schedule under **Alternative 2** is projected to rebuild the red grouper stock in the least amount of time; therefore, it can be expected that future biological benefits may accrue soonest, followed by **Alternative 3**, and **Preferred Alternative 4**.

Defining the Range of Alternatives

Guidance on how to define the upper and lower bounds of a rebuilding schedule are specified in the National Standard 1 (NS 1) of the National Standard Guidelines (https://www.fisheries.noaa.gov/national/laws-and-policies/national-standard-guidelines). Refer to **Appendix C** (**Red Grouper Projections**) for revised projections prepared by the NMFS Southeast Fisheries Science Center.

In regards to the determining the minimum time for rebuilding a stock (T_{min}), NS1 specifies that *"T_{min} 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 50 percent probability of attaining the B_{msy}, where such probabilities can be calculated. The starting year for the T_{min} calculation should be the first year that the rebuilding plan is expected to be implemented."* In the case of red grouper, according to projections originating from SEDAR 53 (**Appendix C, Table C-1**), the minimum timeline for red grouper to rebuild in the absence of any fishing mortality under long-term average recruitment is 5 years, thus T_{min} is specified as being 5 years (**Alternative 2**).

With T_{min} being specified as 5 years, NS 1 defines the maximum time for rebuilding a stock (T_{max}) as being 10 years due to the guidance as follows; *"If Tmin for the stock or stock complex is 10 years or less, then Tmax is 10 years."* This upper bound of the potential rebuilding timeline is captured in **Preferred Alternative 4**. **Alternative 3** is a midpoint between T_{min} and T_{max}. For **Alternative 2**, Year 1 for the revised rebuilding schedule would be 2020. For **Alternatives 3** and **Preferred Alternative 4**, Year 1 for the revised rebuilding schedule would be 2019 (Refer to **Chapter 2, Section 2.1.1**).

Alternatives proposed under this action would not result in any direct effects, positive or negative, on bycatch of co-occurring species (refer to **Appendix I** and **Section 3.2.2**).

Expected Effects to Habitat and Protected Species

The alternatives under this action would not significantly modify the way in which the snapper grouper fishery is prosecuted in terms of gear types. Therefore, there are no additional impacts on Endangered Species Act (ESA)-listed species or designated critical habitats anticipated as a result of this action (refer to **Section 3.2.5** for a detailed description of ESA-listed species and critical habitat in the action area). Furthermore, no additional impacts on Essential Fish Habitat (EFH) or EFH-Habitat Areas of Particular Concern (HAPC) are expected to result from any of the alternatives considered for this action (refer to **Section 3.1.3** and **Appendix J** for detailed descriptions of EFH in the South Atlantic region). The predicted effects on EFH and ESA-listed species and designated critical habitats are applicable to all actions in this framework amendment.

4.1.2 Economic Effects

A rebuilding schedule does not impose direct economic effects, as it does not directly constrain harvest or fishing effort. There are potential indirect economic effects that can occur due to a rebuilding schedule, as the length of the rebuilding period selected can determine how future, long term economic benefits from an improved stock, such as improved catch rates and increased ACLs; with shorter rebuilding periods potentially accruing benefits sooner than longer rebuilding periods.

Alternative 1 (No Action) would incur the greatest implied economic benefits, if the stock could be rebuilt within this timeline. However, the red grouper stock cannot rebuild by 2020 under the current rebuilding schedule, regardless of the management changes made, thus making this alternative unobtainable. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that the rebuilding schedule be revised to reflect a viable timeline for rebuilding of the red grouper stock, making **Alternative 1 (No Action)** not a viable alternative. Furthermore, not updating the rebuilding schedule may compromise the ability to set proper ACLs and management measures for red grouper, thus creating the potential for future negative economic effects that may arise such as further degradation of landings and revenue that may be generated from the species. **Alternative 2** would provide the shortest viable rebuilding period of 5 years and the highest implied economic benefits. **Preferred Alternative 4** would provide the longest rebuilding period of 10 years; hence, it has the lowest implied economic benefits amongst the viable alternatives. The economic effects for **Alternative 3** (8 years) falls between those of **Alternative 2** and **Preferred Alternative 4**. In summary, it can be expected that implied economic benefits would be highest under **Alternative 2**, followed by **Alternative 3**, **Preferred Alternative 4**, and **Alternative 1 (No Action)**, which is not a viable alternative.

4.1.3 Social Effects

Although defining a rebuilding schedule is an administrative action and would not result in direct positive or negative social effects, the schedule would determine the time allotted to rebuild the red grouper resource. Generally, the shorter the rebuilding schedule the sooner fishing communities would experience the social benefits associated with an improved stock status such as fewer regulatory restrictions and increased fishing opportunities. Commercial and recreational fishermen may be able to adjust to a longer rebuilding period by switching to other species and/or seeking other employment or recreational pursuits while the red grouper stock rebuilds, thereby mitigating any potential negative social effects. However, if other stocks are also depleted, regulations may prevent switching to another species during the rebuilding period and net negative social effects are potentially more severe. If current resource users choose or are economically forced to exit the red grouper portion of the snapper grouper fishery due to a longer rebuilding period, long term benefits associated with recovery of the species may be realized by a different set of users.

Because current red grouper rebuilding is not making adequate process, the current rebuilding schedule must be revised, as proposed in **Alternative 2** through **Preferred Alternative 4**. Therefore, **Alternative 1 (No Action)**, which would not revise the rebuilding schedule, is not a viable option. Overall, if the rebuilding schedule and subsequent management measures ensure the sustainability of the red grouper resource, as envisioned, there would be long term positive social effects throughout the red grouper portion of the snapper grouper fishery in the form of consistent access to the resource. Long-term benefits would be experienced soonest under **Alternative 2**, the shortest rebuilding schedule, followed by **Alternative 3**, **Preferred Alternative 4**, and **Alternative 1 (No Action)**, which is not making adequate rebuilding progress.

4.1.4 Administrative Effects

Alternative 1 (No Action) would not revise the rebuilding schedule for the red grouper stock and would, therefore, not comply with Magnuson-Stevens Act requirements. **Alternative 2** would rebuild the red grouper in the least amount of time (five years) followed by **Alternative 3** (eight years), and **Preferred Alternative 4** would have the longest rebuilding schedule considered (10 years). The shorter the amount of time required to rebuild the stock would likely require more restrictive harvest regulations for red grouper. **Alternative 1 (No Action)**, which would not revise the rebuilding schedule by 2020, would require subsequent additional management action to adopt a legally compliant rebuilding schedule. Therefore, it would have the greatest imposed administrative burden on NMFS in the long term. Among the action alternatives, **Alternatives 2** and **3**, followed by **Preferred Alternative 4,** would also likely impact the administrative environment for NMFS in the form of developing, implementing, and monitoring more restrictive harvest regulations for red grouper.

4.2 Action 2. Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina.

4.2.1 Biological and Ecological Effects

Off North Carolina and South Carolina, spawning occurs during February-June with a peak in April (**Table 3.2.1,** Burgos et al., 2007; McGovern et al., 2002). Spawning males were observed between November and August, although they occurred more frequently between January and March (Burgos et al., 2007). Spawning off east Florida occurs from January through May (McGovern et al., 2002). Currently, there is a January 1 through April 30 spawning season prohibition on harvest and possession of shallow-water groupers, including red grouper, for the recreational sector in the South Atlantic exclusive economic zone (EEZ). Reducing fishing pressure and protecting red grouper during their vulnerable spawning stages would be expected to increase spawning stock biomass, thus imparting biological benefits to the stock.

Alternatives*

1. No Action. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney).

2. Preferred Alternative 2. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Revise the timing of these restrictions only for red grouper in the exclusive economic zone off North Carolina and South Carolina as follows:

Preferred Sub-alternative 2a. January – May (five months)

Sub-alternative 2b. February – May (four months)

Sub-alternative 2c. March – June (four months)

Sub-alternative 2d. January – June (six months)

* Preferred indicated in bold.

Expected Effects to the Red Grouper Stock and Bycatch of Co-Occurring Species

Alternative 1 (No Action) captures a significant portion of the spawning season for red grouper by retaining the current January 1 through April 30 shallow-water grouper spawning season closure. However, fishermen have indicated that red grouper harvested in May off North Carolina are often in spawning condition and there is concern that the current spawning season prohibition is not capturing a large portion of spawning activity off the Carolinas (SAFMC, port meetings 2014). Therefore, better aligning the prohibition on harvest and possession with the red grouper spawning season is expected to result in biological benefits to the stock. While all of the alternatives considered in this action prohibit harvest and possession during peak spawning season in April, **Preferred Alternative 2** (including **Preferred Sub-alternatives 2a**, and **Sub-alternatives 2b-2d)**, would result in greater biological benefits over **Alternative 1 (No Action)** since the spawning season closure would be extended past April when red grouper are still reportedly in spawning condition off the Carolinas.

In general, the longer the harvest prohibition during its spawning season, the greater the biological benefits to the stock. **Sub-alternative 2d** would extend the red grouper seasonal prohibiton by two months, thus, imposing the longest time period during which harvest and possession of this species would

be prohibited, and also encompassing the entirety of the red grouper spawning period in the Carolinas, hence, imparting the greatest biological benefits relative to other alternatives considered. Following **Sub-alternative 2d**, **Preferred Sub-alternative 2a** would also have increased biological benefits since the seasonal prohibition for red grouper would be extended by one month when red grouper are still reportedly in spawning condition off the Carolinas during May. Between **Sub-alternatives 2b** and **2c**, each would each shift the four-month seasonal prohibition for red grouper to later in the spawning season, while also protecting spawning grouper during the month of May. Although **Alternative 1 (No Action)** would also impose a four-month seasonal prohibition, it would also impose the least biological benefits on the red grouper stock because it would continue to allow harvest of red grouper in May when they are reportedly still in spawning condition off North Carolina and South Carolina (Burgos et al., 2007). In terms of beneficial biological effects to the red grouper stock based upon the length of the spawning season closure, **Sub-alternative 2d** (6-month closure) would be followed by **Preferred Sub-alternative 2a** (5-month closure), **Sub-alternatives 2b** and **2c** (both with a 4-month closure), and **Alternative 1 (No Action)** would impose the least biological effects.

Since 2012, recreational landings of red grouper have been below the recreational ACL, and have shown a declining trend in recent years (refer to **Chapter 3, Table 3.2.2**). However, Abbreviated Framework Amendment 1, effective August 27, 2018, (83 FR 35437; July 26, 2018) reduced the total, recreational, and commercial ACLs for 2018 and later years (**Table 3.2.4** and **Table 4.2.1.1**) to end overfishing in response to results from SEDAR 53 (2017).

Table 4.2.1.1. Recreational red grouper ACL in pounds whole weight (lbs ww) recently implemented through Abbreviated Framework Amendment 1 to the Snapper Grouper FMP.

Year	Recreational ACL (lbs ww)
2018	77,840
2019	84,000
2020 until modified	90,720

Average 2015-2017 South Atlantic red grouper recreational landings (**Appendix H, Table H-2**) were used to estimate landings by adjusting the months that would be closed to harvest off North Carolina and South Carolina for each of the Action 2 alternatives, and assuming no red grouper were reported as being caught and released during the current closure during January or February (**Table 4.2.1.2**, and refer to **Appendix H** for detailed analysis methodology presented here). To determine season length based on the alternatives, daily catch rates were developed for each two-month period. However, it is difficult to make meaningful predictions of the amount of harvest that would be realized under the proposed modification of the shallow-water grouper seasonal prohibition off North Carolina and South Carolina due to the limited duration it has been in place (since 2009); therefore, such estimates are uncertain given the low numbers of Marine Recreational Information Program intercepts for this species, low recreational ACLs, and fishery seasonality. During these years, the highest recreational landings for red grouper have occurred in November and December followed by May and June (**Figure 4.2.1.1**), and the lowest landings occurred from January through April[9]. **Figure 4.2.1.2** presents projected cumulative recreational red grouper landings (lbs ww) for each sub-alternative under **Action 2** compared to the recreational red grouper ACLs implemented through Abbreviated Framework Amendment 1.

[9] The current shallow-water grouper spawning season prohibition occurs from January through April. However, there are minimal catch when the season is closed due to bycatch.

In general, increasing the length of the spawning season prohibition off North Carolina and South Carolina would be expected to reduce landings of red grouper, which would result in positive biological effects to the stock. Because projected landings were estimated using 2015-2017 landings, and there is minimal amount of recent catch data due to the current January through April seasonal prohibition that has been in place since 2009, predicting future landings is challenging since there is no acceptable basis for quantifying projected landings; for example, red grouper landings are projected to be highest under **Alternative 1 (No Action)**. Identical landings are predicted for **Preferred Sub-alternative 2a** and **Sub-Alternative 2b,** and for **Sub-alternatives 2c** and **2d** (**Table 4.2.1.2**); however, **Sub-Alternative 2b** would be expected to have higher landings than **Preferred Sub-alternative 2a** due to one extra month of open harvest (January), and **Sub-Alternative 2c** would have higher landings than **Sub-alternative 2d** due to two extra months of open harvest (January and February). Overall, reduced red grouper landings under **Preferred Alternative 2** and its sub-alternatives would result in positive biological effects to the stock, relative to **Alternative 1 (No Action). Sub-Alternative 2d** followed by **Sub-alternative 2a** would result in positive biological effects to the stock, relative to **Alternative 1 (No Action)**.

Table 4.2.1.2. Projected recreational red grouper landings (lbs ww) that would have occurred 2015 -2017 under the proposed alternatives and sub-alternatives by modifying the recreational seasonal prohibition for red grouper.

Alternatives	Projected Landings (lbs ww)
Alternative 1 (No Action) (Jan-Apr)	181,206
Sub-Alternative 2a (Jan-May)	**180,913**
Sub-Alternative 2b (Feb-May)	180,913
Sub Alternative 2c (Mar-Jun)	180,620
Sub-Alt 2d (Jan-Jun)	180,620

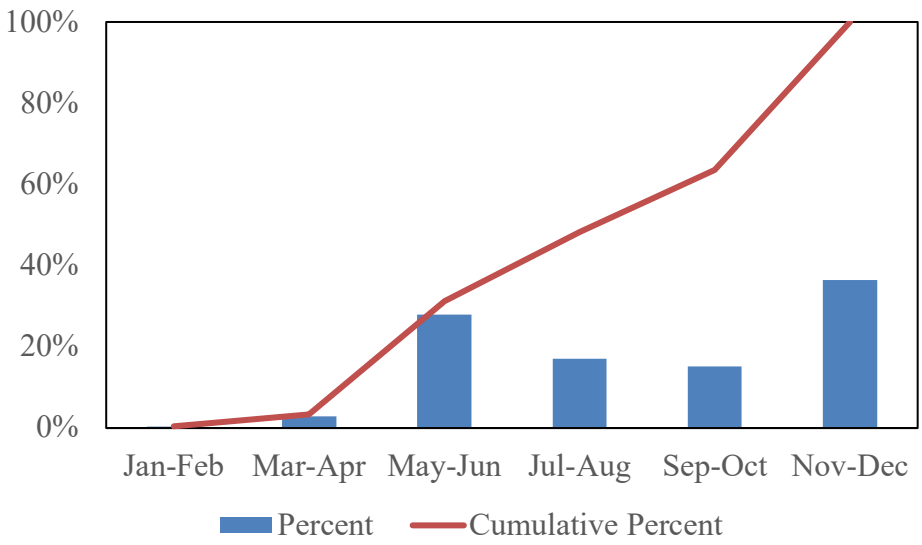

Figure 4.2.1.1. Percent and cumulative percent of red grouper landings by wave for the South Atlantic recreational sector (charter boat, headboat, and private vessels) from 2015 to 2017.

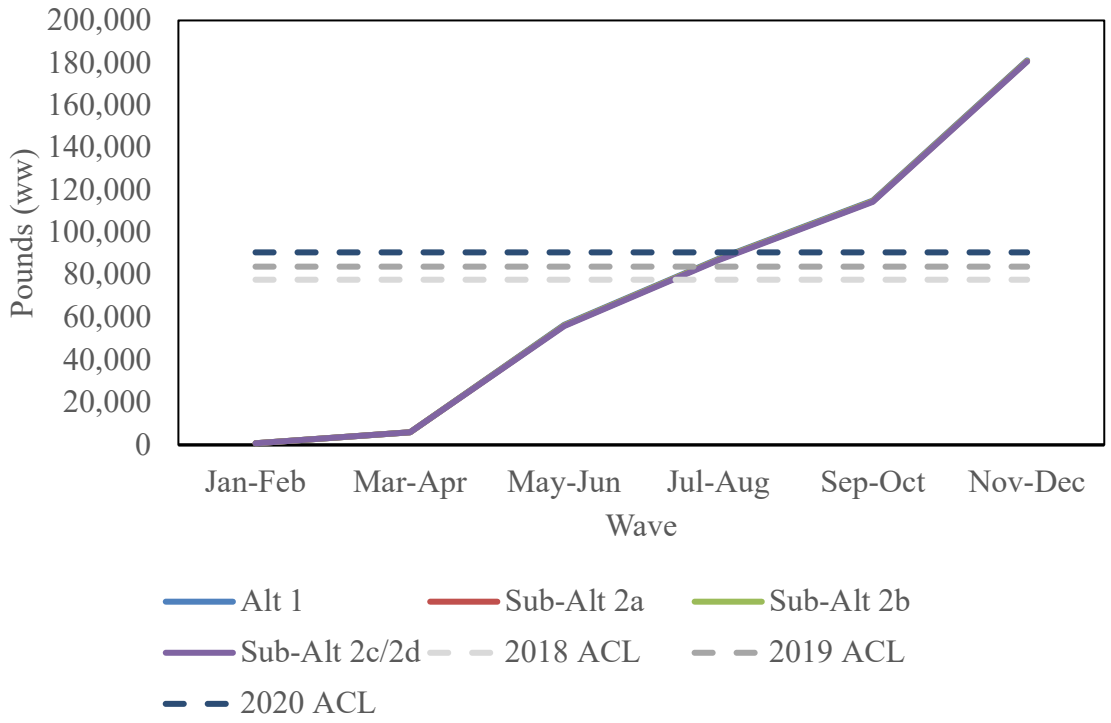

Figure 4.2.1.2. Projected cumulative recreational red grouper landings (lbs ww) under the proposed alternatives and sub-alternatives and the proposed recreational red grouper ACL from 2018, 2019, and 2020 and beyond. *Differences in projected landings among the alternatives are minimal and overlap in the figure.

In terms of the risk of overfishing, the biological effects of **Preferred Alternative 2** (and its sub-alternatives) would not differ relative to **Alternative 1 (No Action)**. ACL and AMs are in place to prevent overfishing. If an ACL is reached or exceeded, an AM would be triggered, resulting in an in-season AM closure, or post-seasonal AM overage payback. The current recreational AM for red grouper is to close the recreational sector for the remainder of the fishing year if recreational landings for red grouper are projected to reach the recreational ACL. Therefore, although there is a delay in recreational reported landings, harvest is expected to result in an in-season closure near the fourth wave of the season or later (July/August) (refer to **Appendix H**, and **Figure 4.2.1.2**). Since the difference between each of the alternatives was less than 1,000 lbs ww (**Table 4.2.1.2**), the estimated closure dates for each of the **Alternative 2** sub-alternatives differed very little from the status quo (**Appendix H**).

A high number of discards were reported on average annually (83,749 total) by the recreational sector for red grouper in the South Atlantic (**Chapter 3, Table 3.2.3**). The ratio of discarded to landed red grouper was highest in the headboat sector, with a 369% ratio, and was similar in the private angling sector (**Appendix I, Table I-3**). Bycatch and discards could increase or remain the same by modifying the seasonal prohibition on recreational harvest and possession of red grouper depending on fishing effort. If the harvest prohibition was extended further into the summer when fishing effort typically increases, the discards could remain similar or increase. If the length of the harvest prohibition was extended to five or six months in North Carolina and South Carolina, as proposed under **Preferred Sub-alternative 2a** and **Sub-alternative 2d**, respectively, then regulatory discarding could increase off those states if fishermen are fishing for co-occurring species during the closed months and need to release incidentally caught red grouper. However, since the estimated release mortality for red grouper is 20% (SEDAR 53, 2017), the majority of discarded red grouper would be expected to survive.

4.2.2 Economic Effects

In general, providing increased protection for spawning red grouper would be expected to result in improvements in stock abundance and biomass and create indirect, long-term, positive economic effects presumably through the availability of increased numbers of fish in the future. However, there can be some direct, short-term negative economic effects as fewer fish would be available to harvest until the biomass of harvestable fish increases.

Alternative 1 (No Action) would maintain the current recreational January through April spawning season prohibition of shallow-water groupers, which includes red grouper. **Preferred Alternative 2** would modify the duration of the harvest prohibition, specifically for red grouper in the EEZ off North Carolina and South Carolina. Increasing the length of the red grouper spawning season closure or shifting the dates of the harvest prohibition off the Carolinas (**Preferred Sub-alternative 2a** and **Sub-alternatives 2b, 2c,** and **2d**) would be expected to reduce landings of red grouper in the short-term and, consequently, consumer surplus (CS) as well (**Section 4.2.1**). In relation to overall harvest, the projected marginal decrease from modifying the seasonal prohibition on recreational possession of red grouper in the EEZ off South Carolina and North Carolina is less than 1% of the total catch in the region, signaling a likely minimal impact on CS in the recreational sector (**Section 4.2.1**). While the overall economic effects are expected to be minor, some CS may be lost on trips when red grouper are caught but must be discarded due to changes in the annual prohibition in **Preferred Sub-alternative 2a** through **Sub-alternative 2d**. To estimate the change in total CS, the average landings of red grouper from 2015-2017 as well as the projected reductions in landings found in **Table 4.2.1.3** were converted to numbers of fish using a conversion rate of 7.301 pounds (lbs) whole weight (ww) per fish, which is the average observed weight of recreationally landed red grouper in the South Atlantic Region[10]. The change in landings were paired with a marginal CS value of $105.14 per fish (2017 dollars)(**Section 3.3.2.3**). The resulting estimated change in CS that would occur under **Preferred Sub-alternative 2a** through **Sub-alternative 2d** ranges from approximately -$4,200 to -$8,400 (2017 dollars)(**Table 4.2.2.1**), with the anticipated short-term decrease in CS from **Preferred Sub-alternative 2a** being $4,219.

Table 4.2.2.1. Estimated change in consumer surplus for **Preferred Alternative 2** of **Action 2** in comparison to status quo (**Alternative 1**(**No Action**)) (2017 dollars). Preferred sub-alternative is indicated in bold.

Sub-Alternative	Difference from baseline landings (numbers of fish)	Change in consumer surplus (2017 dollars)
Pref. Sub-Alt 2a	**-40**	**-$4,219**
Sub-Alt 2b	-40	-$4,219
Sub-Alt 2c	-80	-$8,439
Sub-Alt 2d	-80	-$8,439

In addition to the described reductions in CS, there is the potential that angler demand for for-hire (charter and headboat) trips could decrease, creating the possibility of decreased booking rates and for-hire business net operating revenue (NOR). Due to the complex nature of angler behavior and the for-hire

[10] According to the Marine Recreational Information Program.

industry, it is not possible to quantify these potential economic effects with available data[11]. As such, no estimates of the change in for-hire NOR are provided, although they may exist. The small change or marginal increase in the spawning season closure combined with relatively low catch rates of red grouper in the recreational sector and several other substitute grouper species being available, suggests that any short-term negative economic effects on the for-hire industry would be minimal.

Long-term indirect economic benefits in the form of potentially greater future harvest rates and corresponding CS would be expected to occur if the modified prohibition on red grouper off North Carolina and South Carolina provides enhanced protection to spawning fish and biological benefits for the red grouper stock. **Alternative 1 (No Action)** would be expected to have the lowest direct short-term negative economic effects as it projected to have the lowest decrease in CS, followed equally by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and then equally by **Sub-alternative 2c** and **Sub-alternative 2d**. When examining the long-term, potential positive economic effects that may occur due to the potential for improvements in the red grouper stock, the ranking would be inverse, with **Sub-alternatives 2c** and **2d** equally providing the highest potential positive economic effects, followed equally by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and then **Alternative 1 (No Action)**.

4.2.3 Social Effects

The potential effects on recreational fishing and coastal communities of modifying the red grouper closure would be a trade-off between the biological benefits of the seasonal closure and resulting long-term social benefits from a heathier stock, and the increased recreational fishing opportunities if the closure is shortened. In general, a longer seasonal closure may be biologically beneficial to the stock and contribute to sustainable fishing opportunities in the future if the closure appropriately lines up with spawning, but a longer closure would be more likely to restrict access to red grouper. Each of the proposed sub-alternatives is projected to reduce recreational red grouper landings by less than 1% with **Sub-Alternative 2d** and **Sub-Alternative 2c** resulting in the largest reduction followed by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, which are estimated to result in the same reduction (**Section 4.2.1**).

There may be some benefits to maintaining the current seasonal closure in **Alternative 1 (No Action)**, including minimized complexity in management that would result from North Carolina and South Carolina experiencing a different season prohibition time period under **Preferred Alternative 2**. However, public input from fishermen indicates that red grouper are still in spawning condition during May off the North Carolina coast. Burgos et al., (2007) also reported that red grouper are in spawning condition during May off North Carolina and South Carolina. If the public input and information from Burgos et al., (2007) is accurate, the biological benefits of the spawning season closure could be maximized if the closure were better tailored by area and better aligned with red grouper spawning periods. The benefits to recreational fishermen of those more appropriate closures for the areas would be more likely under **Preferred Alternative 2** and associated sub-alternatives than under **Alternative 1 (No Action)**. Related, **Preferred Alternative 2** and its sub-alternatives have the positive social benefit of utilizing fishermen knowledge to improve management measures, which could have the social benefit of improving perceptions of the management process.

[11] Anglers have heterogeneous preferences and may target and/or harvest a diverse mix of snapper grouper and other species on a trip. The absence of the opportunity to fish for any single species may or may not affect their overall desire to take/pay for trips.

Assuming that longer seasonal spawning closures ensure sustainable harvest of red grouper, as envisioned, long term benefits to fishing communities in the form of consistent access to the resource would be highest under **Sub-alternative 2d** and **Sub-alternative 2c**, followed by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and **Alternative 1 (No Action)**. Alternatively, short-term negative effects on fishing communities due to restrictions in fishing opportunities would be lowest under **Alternative 1 (No Action)**, followed by **Preferred Sub-alternative 2a** and **Sub-alternative 2b**, and **Sub-alternative 2c** and **Sub-alternative 2d**.

4.2.4. Administrative Effects

All of the **Alternative 2** sub-alternatives, would require rule-making, education, and enforcement. However, modifying the recreational seasonal prohibition of red grouper under **Preferred Alternative 2** (including **Preferred Sub-Alternative 2a** – **Sub-alternative 2d**) so that the regulations are inconsistent with other shallow-water grouper species, and for different states in the South Atlantic EEZ, could be confusing to the public and add to the administrative burden on NMFS to inform and educate the public, compared to **Alternative 1 (No Action)**. Law enforcement would also need to be informed and educated, and modify their enforcement efforts based on the revised regulations. **Preferred Sub-Alternative 2a** and **Sub-Alternative 2d** may be less confusing to the public since one month and two months would be added to the current seasonal prohibition, respectively, while **Sub-Alternative 2b** and **2c** would shift the four-month seasonal prohibition entirely for North Carolina and South Carolina, compared to the other shallow-water grouper species with a January through April recreational seasonal prohibition in the EEZ. Therefore, it can be expected that **Alternative 1 (No Action)**, and **Preferred Sub-Alternatives 2a** and **2d**, would impose the least administrative burden on NMFS, followed by **Sub-Alternatives 2b** and **2c** imposing the greatest administrative burden.

4.3 Action 3. Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina.

4.3.1 Biological and Ecological Effects

Alternatives*

1. No Action. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Additionally, during January through April, no person may sell or purchase any shallow-water grouper harvested from or possessed in the South Atlantic exclusive economic zone.

2. Preferred Alternative 2. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Additionally, during January through April, no person may sell or purchase any shallow-water grouper harvested from or possessed in the South Atlantic exclusive economic zone. Revise the timing of these restrictions only for red grouper in the exclusive economic zone off North Carolina and South Carolina as follows:

Preferred Sub-alternative 2a. January – May (five months)

Sub-alternative 2b. February – May (four months)

Sub-alternative 2c. March – June (four months)

Sub-alternative 2d. January – June (six months)

* Preferred indicated in bold.

Expected Effects to the Red Grouper Stock and Bycatch of Co-Occurring Species

Alternative 1 (No Action) would retain the January 1 through April 30 spawning season prohibition on harvest, possession, sale and purchase, for shallow-water grouper species, including red grouper, for the commercial sector in the South Atlantic EEZ. Reducing fishing pressure and protecting red grouper during their vulnerable spawning stages would be expected to increase spawning stock biomass, thus, **Alternative 1 (No Action)** would continue to impart biological benefits to the stock.

Alternative 1 (No Action) captures a significant portion of the spawning season for red grouper by retaining the current January 1 through April 30 shallow-water grouper spawning season closure. However, fishermen have indicated that red grouper harvested in May off North Carolina are often in spawning condition and there is concern that the current spawning season prohibition is not capturing a large portion of spawning activity off the Carolinas (SAFMC, port meetings 2014). Therefore, better aligning the prohibition on harvest and possession with the red grouper spawning season is expected to result in biological benefits to the stock. While all of the alternatives considered in this action prohibit harvest and possession during peak spawning season in April, **Preferred Alternative 2** (including **Preferred Sub-alternatives 2a**, and **Sub-alternatives 2b-2d)**, would result in greater biological benefits over **Alternative 1 (No Action)** since the spawning season closure would be extended past April when red grouper are still reportedly in spawning condition off the Carolinas.

In general, the longer the harvest prohibition during its spawning season, the greater the biological benefits to the stock. **Sub-alternative 2d** would extend the red grouper seasonal prohibiton by two months, thus, imposing the longest time period during which harvest and possession of this species would be prohibited, and also encompassing the entirety of the red grouper spawning period in the Carolinas, hence, imparting the greatest biological benefits relative to other alternatives considered. Following **Sub-**

alternative 2d, **Preferred Sub-alternative 2a** would also have increased biological benefits since the seasonal prohibition for red grouper would be extended by one month when red grouper are still reportedly in spawning condition off the Carolinas during May. Between **Sub-alternatives 2b** and **2c**, each would each shift the four-month seasonal prohibition for red grouper to later in the spawning season, while also protecting spawning grouper during the month of May. Although **Alternative 1 (No Action)** would also impose a four-month seasonal prohibition, it would also impose the least biological benefits on the red grouper stock because it would continue to allow harvest of red grouper in May when they are reportedly still in spawning condition off North Carolina and South Carolina (Burgos et al., 2007). In terms of beneficial biological effects to the red grouper stock based upon the length of the spawning season closure, **Sub-alternative 2d** (6-month closure) would be followed by **Preferred Sub-alternative 2a** (5-month closure), **Sub-alternatives 2b** and **2c** (both with a 4-month closure), and **Alternative 1 (No Action)** would impose the least biological effects.

Since 2012, commercial landings have been well below the commercial ACL, and there has been a declining trend in landings in recent years (**Table 3.2.2**). Total commercial red grouper landings in the South Atlantic from 2015 through 2017 are provided in **Table 3.2.2**. Abbreviated Framework Amendment 1, effective August 27, 2018, (83 FR 35437; July 26, 2018) revised the ACLs for red grouper, substantially reducing the total, recreational, and commercial ACLs for 2018 and later years (**Table 3.2.4** and **Table 4.3.1.1**). In recent years, commercial landings have declined each year, with 40,490 lbs ww being landed in 2017, well below the 2017 ACL of 343,200 lbs ww, and below the revised commercial ACLs implemented under Abbreviated Framework Amendment 1 (**Table 4.3.1.1**).

Table 4.3.1.1. Commercial red grouper ACL in pounds lbs ww recently implemented through Abbreviated Framework Amendment 1 to the Snapper Grouper FMP.

Year	Commercial ACL (lbs ww)
2018	61,160
2019	66,000
2020 until modified	71,280

Average 2015-2017 South Atlantic red grouper commercial landings (**Appendix H, Table H-5)** were used to estimate the change in landings by adjusting the months that were closed to harvest off North Carolina and South Carolina for each of the Action 3 alternatives (**Table 4.3.1.2,** and refer to **Appendix H** for detailed analysis methodology presented here). Backfilling landings for North Carolina and South Carolina for the January through April closed time period was required to provide an estimate of landings during this period if commercial harvest for red grouper was open as proposed under **Sub-alternative 2b and 2c**. However, it is difficult to make meaningful predictions of the amount of harvest that would be realized under the proposed modification of the shallow-water grouper seasonal prohibition off North Carolina and South Carolina due to the duration it has been in place (since 2009). **Figure 4.3.1.1** presents South Atlantic red grouper commercial landings (lb ww) by month for 2015-2017, projected landings for all South Atlantic states, and projected landings for North Carolina and South Carolina for 2015-2017.

If the commercial red grouper spawning season prohibition was modified, as proposed under all Action 3 alternatives including **Preferred Alternative 2** (and its sub-alternatives), commercial landings of red grouper are projected to stay below the revised commercial ACL implemented through the final rule for Abbreviated Framework Amendment 1 (**Table 3.2.4**). Therefore, none of the proposed alternatives are expected to result in in-season closures. In general, increasing the duration of the red grouper spawning season prohibition off North Carolina and South Carolina would be expected to reduce

landings of red grouper and provide greater protection to spawning red grouper, which would be expected to result in positive biological effects to the stock. As such, the length of the spawning season closure would be longest and landings were projected to be lowest under **Sub-alternative 2d**, which would result in the greatest positive biological effects to the stock, followed by **Sub-alternative 2c**, **Preferred Sub-alternative 2a**, and **Sub-alternative 2b. Alternative 1 (No Action)** would include the shortest spawning season closure and was projected to have the highest commercial landings, and would result in the least positive biological effects to the stock. Overall, longer spawning season closures and reduced red grouper landings under **Preferred Alternative 2** and its sub-alternatives would result in positive biological effects to the stock, relative to **Alternative 1 (No Action).** In terms of the risk of overfishing, the effects of **Preferred Alternative 2** (and its sub-alternatives) would not differ relative to **Alternative 1 (No Action)** as AMs would be triggered if the ACL was expected to be reached or exceeded.

Table 4.3.1.2. Projected South Atlantic red grouper commercial landings for each **Action 3** alternatives. Landings were estimated from the average 2015-2017 commercial landings. Preferred alternative indicated in bold.

Action 3 Alternatives	Projected Landings (lbs ww)
Alternative 1 (No Action)	59,962
Sub-Alternative 2a	51,950
Sub-Alternative 2b	55,026
Sub-Alternative 2c	50,531
Sub-Alternative 2d	44,433

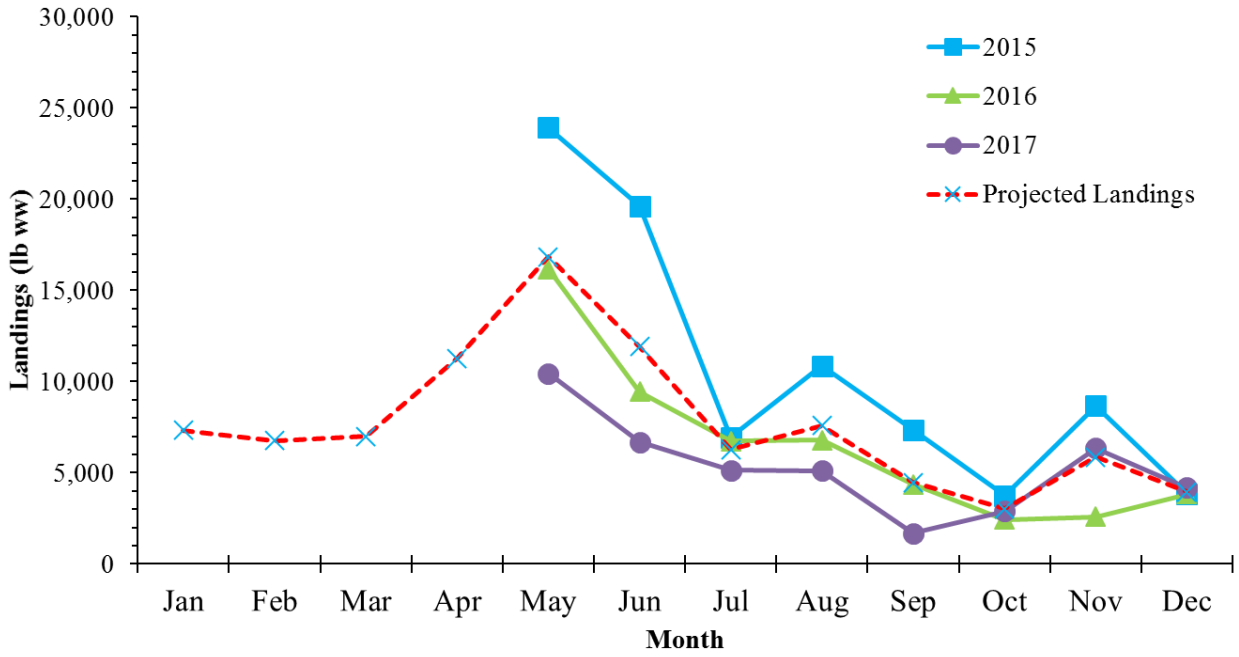

Figure 4.3.1.1. South Atlantic red grouper commercial landings (lb ww) by month for 2015-2017[12].

[12] Landings for the months of Jan-Apr were removed since these months are closed to all shallow-water grouper through Amendment 16 (SAFMC 2009) on July 29, 2009, and therefore future landings are assumed to be either zero or negligible. To produce Projected Landings, average landings from 2015-2017 are used. Projected January through April landings (for North Carolina and South Carolina) were estimated using May landings, and the ratio

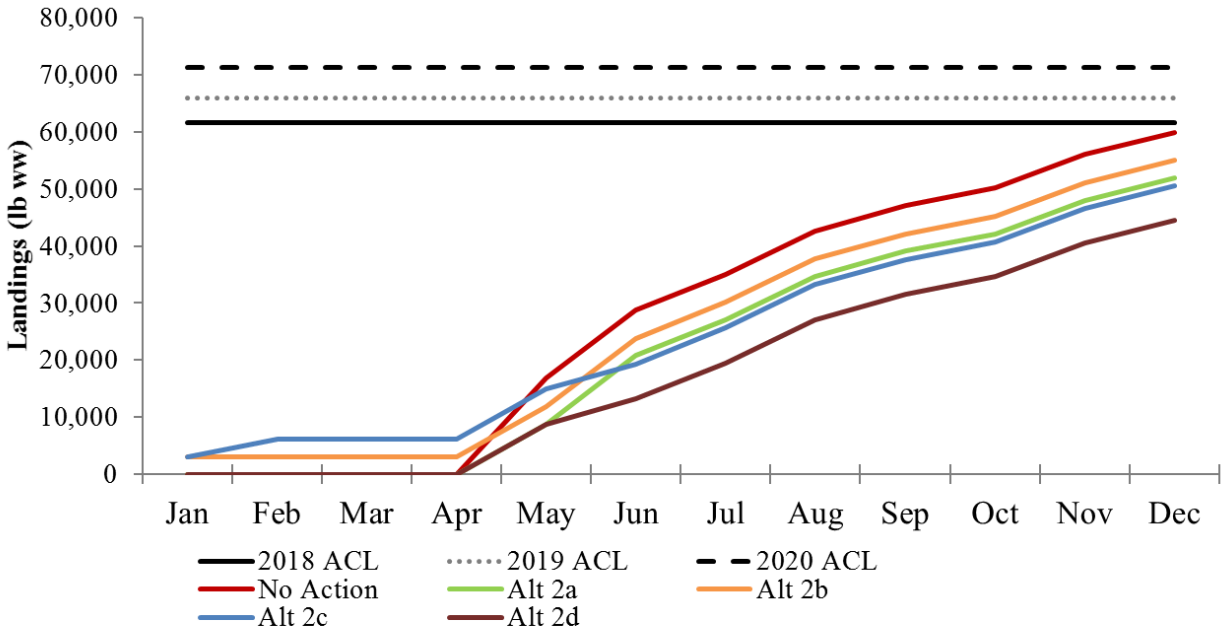

Figure 4.3.1.2. Predicted South Atlantic red grouper commercial landings (lbs ww) by month with the commercial ACLs implemented through Abbreviated Framework Amendment 1 to predict South Atlantic red grouper commercial closure dates.

On average, 677 red grouper were discarded annually according to the SEFSC discard logbook from 2015 through 2017, with 'out of season' selected as the reason for discarding in 23% of the reports. Depending on fishing effort, bycatch and discards could remain the same or increase if the seasonal spawning prohibition on commercial harvest and possession of red grouper is modified. If the prohibition length is extended to five or six months, then regulatory discarding could increase if fishermen are fishing for co-occurring species during the closed months and need to release incidentally caught red grouper. However, currently very few discards relative to the landings are being reported (**Chapter 3, Table 3.2.3**), and the majority of reports select 'not legal size' as the reason for discarding. Therefore, any changes would likely have minimal population effects.

4.3.2 Economic Effects

In general, providing increased protection for spawning red grouper that results in improvements in stock abundance and biomass would create indirect, long-term, positive economic effects presumably through the availability of increased numbers of fish in the future. However, there can be some direct, short-term negative economic effects as fewer fish would be available to harvest until the biomass of harvestable fish increases.

Under Alternative 1 (No Action), there would be no change to the spawning season closure for red grouper. Increasing the duration of the red grouper prohibition or shifting the dates of the prohibition off the Carolinas (**Preferred Sub-alternative 2a** and **Sub-alternatives 2b, 2c,** and **2d**) would be expected to

was determined from historic landings from 2007-2009. No predictions were made for Florida and Georgia landings in January through April because none of the alternatives of Action 3 propose opening the harvest of red grouper during this period in these states. Refer to **Appendix H** for more information.

reduce landings of red grouper and consequently gross revenue, net cash flow, and net revenue as well (**Section 4.3.1**). According to Overstreet, Perruso, and Liese (2018), from 2014 through 2016, "trip net cash flow" from snapper grouper trips was 42% of the gross revenue on those trips, while "trip net revenue" was 23.9% of the gross revenue from these trips.[13] "Trip net cash flow" represents the additional flow of money to the business from taking a trip, while "trip net revenue" represents economic profit at the trip level and thus is the best measure of net economic benefits.

The estimated short-term change in red grouper landings and economic effects that are projected to occur in Action 3 under **Sub-alternatives 2a** through **2d** in comparison to **Alternative 1 (No Action)** are shown in **Table 4.3.2.1**. The anticipated short-term change in gross revenue, net cash flow, and net revenue from **Preferred Sub-alternative 2a** is -$31,573, -$13,261, and -$7,546 respectively. In computing these values, commercial landings from 2015 through 2017 in lbs ww provided in **Table 4.3.1.2** were converted to lbs gutted weight (lbs gw) using a conversion factor of 1.18 (SEDAR 53, 2017). After applying this conversion factor, the three-year average commercial red grouper landings of 47,439 lbs gw was considered the baseline in calculating the estimated marginal decrease in landings. Additionally, to calculate the representative gross revenue of the difference between the baseline landings and projected landings, an ex-vessel price of $4.65 (2017 dollars) per pound (gw) was applied, which is the average ex-vessel price per pound (gw) of red grouper over the past three years of available data (2015-2017) (SEFSC-SSRG Socioeconomic Panel v.7 as accessed April 30, 2019). Inflation adjustments were made using the annual gross domestic product implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Table 4.3.2.1. Estimated change in commercial landings, gross revenue, net cash flow, and net revenue for Alternative 2 of Action 3 in comparison to status quo (Alternative 1(No Action)) (2017 dollars). Preferred sub-alternative is indicated in bold.

Sub-alternative	Estimated change in commercial landings (lbs gw)	Estimated change in gross revenue	Estimated change in net cash flow	Estimated change in net revenue
Pref. Sub-Alternative 2a	**-6,790**	**-$31,573**	**-$13,261**	**-$7,546**
Sub-Alternative 2b	-4,183	-$19,451	-$8,169	-$4,649
Sub-Alternative 2c	-7,992	-$37,165	-$15,609	-$8,882
Sub-Alternative 2d	-13,610	-$63,287	-$26,581	-$15,126

In addition to the reductions in ex-vessel value stated above, changes in the open season for red grouper may have varying effects on individual harvesters that fish off North Carolina and South Carolina. These would depend on each harvester's profit maximization strategy, their dependence on red grouper, their seasonal fishing behavior, and their ability to adapt to the changing regulations. Unfortunately, these individual-level economic effects cannot be quantified with available data.

Long-term indirect economic benefits in the form of greater future harvest rates and corresponding revenue would be expected to occur if the modified spawning season prohibition on red grouper off North Carolina and South Carolina provides enhanced protection to spawning fish and biological benefits for the stock. **Alternative 1 (No Action)** is expected to have the lowest direct negative short-term economic effects, followed by **Sub-alternative 2b**, **Preferred Sub-alternative 2a**, **Sub-alternative 2c**, and **Sub-**

[13] Trip net cash flow is gross revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, and hired crew. Trip net revenue is gross revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, as well as the opportunity cost of the owner's time as captain.

alternative 2d. When examining the long-term, positive in-direct economic effects that may occur due to the potential for improvements in the red grouper stock, the ranking would be inverse, with **Sub-Alternative 2d** providing the highest potential positive economic effects, followed by **Sub-Alternative 2c, Preferred Sub-alternative 2a**, **Sub-alternative 2b**, and **Alternative 1 (No Action)**.

4.3.3 Social Effects

The potential effects on commercial fishing businesses and coastal communities of modifying the red grouper closure would be a trade-off between the biological benefits of the seasonal closure and the increased commercial fishing opportunities if the spawning season closure is shortened. In general, a longer seasonal closure may be biologically beneficial to the stock and contribute to sustainable fishing opportunities in the future if the closure appropriately lines up with spawning, but a longer closure would be more likely to restrict access to red grouper. **Sub-alternative 2d** is projected to result in the largest decrease in landings followed by **Sub-alternative 2c**, Preferred **Sub-alternative 2a**, and **Sub-alternative 2b** (**Section 4.3.1**).

There may be some benefits to maintaining the current seasonal spawning closure in **Alternative 1 (No Action)**, including minimized complexity in management that would result from North Carolina and South Carolina experiencing a different time period during which commercial harvest restrictions would apply, as proposed under **Preferred Alternatives 2**. However, Burgos et al., (2007) and public input from fishermen indicates that red grouper are still in spawning condition during May off the North Carolina coast. If information from Burgos et al., (2007) and the public input is accurate, the biological benefits of the closure could be maximized if the closures were better tailored by area and better aligned with red grouper spawning periods. The benefits to commercial fishermen of those more appropriate closures for the areas would be more likely under **Preferred Alternative 2** and associated sub-alternatives than under **Alternative 1 (No Action)**. Related, **Preferred Alternative 2** has the positive social benefit of utilizing fishermen knowledge to improve management measures, which could have the social benefit of improving perceptions of the management process.

Assuming that properly aligned seasonal closures that reduce harvest during peak spawning periods more effectively ensure sustainable harvest of red grouper, long term benefits to fishing communities in the form of consistent access to the resource would be highest under **Sub-alternative 2d**, followed by **Sub-alternative 2c**, **Preferred Sub-alternative 2a**, **Sub-alternative 2b**, and **Alternative 1 (No Action)**. Alternatively, short term negative effects on fishing communities due to restrictions in harvest opportunities would be lowest under **Alternative 1 (No Action)**, followed by **Sub-alternative 2b**, **Preferred Sub-alternative 2a**, and **Sub-alternative 2c** and **Sub-alternative 2d.**

4.3.4. Administrative Effects

All of the **Preferred Alternative 2** sub-alternatives, would require rule-making, education, and enforcement, however, modifying the commercial seasonal spawning prohibition for red grouper under **Preferred Alternative 2** (including **Preferred Sub-Alternative 2a** – **Sub-Alternative 2d)** so that the regulations are inconsistent with other shallow-water grouper species, and for different states in the South Atlantic EEZ, could be confusing to the public and add to the administrative burden on NMFS to inform and educate the public, compared to **Alternative 1 (No Action)**. Law enforcement would also need to be informed and educated, and modify their enforcement efforts based on the revised regulations. **Preferred Sub-Alternative 2a** and **Sub-Alternative 2d** may be less confusing to the public since one month and two months would be added to the current seasonal prohibition, respectively, while **Sub-Alternative 2b** and **2c** would shift the four-month seasonal prohibition entirely, compared to the other shallow-water

grouper species with a January through April commercial seasonal prohibition. Therefore, it can be expected that **Alternative 1 (No Action)**, and **Preferred Sub-Alternatives 2a** and **2d**, would impose the least administrative burden on NMFS, and **Sub-Alternatives 2b** and **2c** would impose the greatest administrative burden.

4.4 Action 4. Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone.

4.4.1 Biological and Ecological Effects

Alternatives*

1. No Action. There is no commercial trip limit for red grouper harvested in the South Atlantic exclusive economic zone.

2. Establish a commercial trip limit for red grouper harvested in the South Atlantic exclusive economic zone:
Sub-alternative 2a. 75 pounds gutted weight.
Sub-alternative 2b. 100 pounds gutted weight.
Sub-alternative 2c. 150 pounds gutted weight.
Sub-alternative 2d. 200 pounds gutted weight.

* Preferred indicated in bold.

Expected Effects to the Red Grouper Stock and Bycatch of Co-Occurring Species

Currently, there is no commercial trip limit for red grouper in the South Atlantic EEZ. Commercial harvest is limited by the ACL, and AMs are in place to take action if the ACL is met or exceeded to ensure overfishing does not occur. Therefore, under **Preferred Alternative 2** and its sub-alternatives, including **Preferred Sub-alternative 2d**, annual commercial harvest of red grouper would be constrained by the ACL; hence, biological effects of these alternatives would not differ from **Alternative 1 (No Action)** in terms of the risk of overfishing.

There have been no in-season commercial closures for red grouper since an ACL was established in 2012 (refer to **Chapter 3, Table 3.2.1**). Between 2015 and 2017, a total of 2,447 commercial trips harvested at least one pound of red grouper, and 80% of those commercial trips landed 75 lbs gw or less **(Figure 4.4.1.1)**. Under the trip limits proposed under **Preferred Alternative 2** and its sub-alternatives, the total South Atlantic landings of red grouper are projected to be reduced between 8% and 32% (**Preferred Sub-Alternative 2d** and **2a**, respectively) (**Table 4.4.1.1)**. Therefore, reduced red grouper landings under **Preferred Alternative 2** and its sub-alternatives would result in positive biological effects to the stock, relative to **Alternative 1 (No Action)**. No in-season closures are projected for any of the proposed commercial trip limit alternatives because none of the revised ACLs implemented through the final rule Abbreviated Framework Amendment 1 (beginning in 2018) are predicted to be met. Additionally, if the stock were to experience a year of high recruitment and additional red grouper became available for harvest, implementing a commercial trip limit as proposed under **Preferred Alternative 2** and its sub-alternatives would slow the rate of harvest and possibly extend the fishing season. However, as described below, implementing a trip limit could increase discards if fishermen target co-occurring species after the trip limit is met.

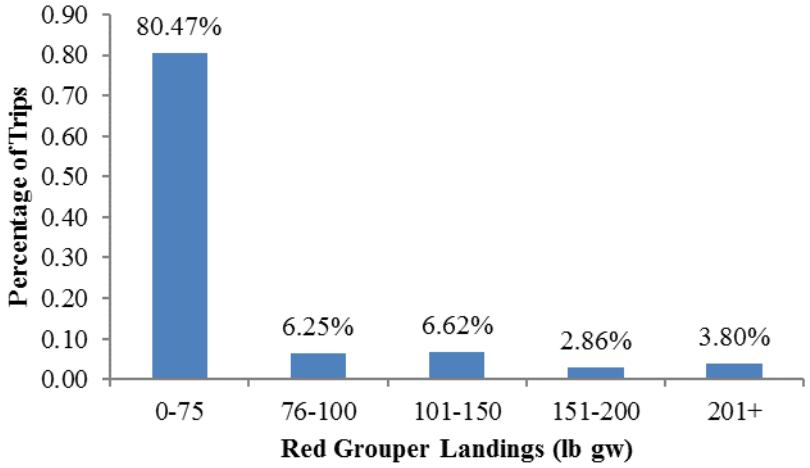

Figure 4.4.1.1. Distribution of South Atlantic red grouper commercial trips within each landing bin. Predicted commercial landings came from the average 2015-2017 commercial landings.

Table 4.4.1.1. Projected South Atlantic red grouper commercial landings for each Action 4 Alternatives. Landings were estimated from the average 2015-2017 commercial landings. Note: Analyses do not assume an extended season closure as proposed under Action 3.

Action 4 Alternatives	Predicted Landings (lbs ww)	Percent Reduction from Alternative 1 (No Action)
Alternative 1 (No Action) (No Action 3 alternatives + No trip limit)	59,962	0%
Sub-Alternative 2a (No Action 3 alternatives + 75 lbs gw trip limit)	41,122	31.4%
Sub-Alternative 2b (No Action 3 alternatives + 100 lbs gw trip limit)	46,062	23.2%
Sub-Alternative 2c (No Action 3 alternatives + 150 lbs gw trip limit)	51,745	13.7%
Pref. Sub-Alternative 2d (No Action 3 alternatives + 200 lbs gw trip limit)	**54,810**	**8.6%**

If **Preferred Sub-Alternative 2a** in **Action 3** (extending the spawning closure through May in North Carolina and South Carolina) is implemented in conjunction with the **Action 4, Preferred Alternative 2** trip limit alternatives, then the landings of South Atlantic commercial red grouper would be further reduced (**Table 4.4.1.2**). Both actions combined result in total landings that are further reduced to 51,950 lbs ww with no trip limit (**Alternative 1** (**No Action**)), and continue to decline with **Preferred Sub-alternative 2d**, and **Sub-Alternatives 2c**, **2b**, and **2a**, the latter resulting in the lowest landings, and the greatest biological effects to the stock. Therefore, reduced red grouper landings under **Preferred Alternative 2** and its sub-alternatives, combined with **Preferred Sub-Alternative 2a** in **Action 3,** would result in positive biological effects to the stock, relative to **Alternative 1 (No Action)**.

Table 4.4.1.2. Projected South Atlantic red grouper commercial landings combined with a January through May closed season for North Carolina and South Carolina (Action 3, Preferred Sub-alternative 2a) for each trip limit alternative (Action 4). Predicted landings were estimated from the average 2015-2017 commercial landings.

Action 4 Alternatives:	Predicted Landings (lbs ww)	Percent Reduction from Alternative 1 (No Action)
Alternative 1 (No Action) (Action 3 preferred + No trip limit)	51,950	0%
Sub-Alternative 2a (Action 3 preferred + 75 lbs gw trip limit)	35,848	31.0%
Sub-Alternative 2b (Action 3 preferred + 100 lbs gw trip limit)	40,087	22.8%
Sub-Alternative 2c (Action 3 preferred + 150 lbs gw trip limit)	44,905	13.6%
Pref. Sub-Alternative 2d (Action 3 preferred + 200 lbs gw trip limit)	47,452	8.7%

According to fishermen, red grouper, scamp, gag, and red porgy are commonly caught together on commercial trips in some areas in the South Atlantic region. This is supported in trip co-occurrence analyses in **Appendix I** that show a high percentage of red porgy, scamp, and gag on trips where at least one pound of red grouper was landed (**Table I-4**). Red grouper had co-occurring species landed on the same trip on no more than 40% of the trips, with red porgy, scamp, and gag being the most frequent at 39.8%, 39.6%, and 36.4%, respectively. Implementing a commercial trip limit under **Alternative 2** (and its Sub-alternatives) could increase discards of red grouper if fishers catch more red grouper than the trip limit when targeting these co-occurring species. However, only about 4% of commercial trips catch more than 200 lbs ww of red grouper (**Figure 4.4.1.1**.). Thus, discards of red grouper would not be expected to substantially increase based on the trip limit specified by **Preferred Sub-Alternative 2d**. Additionally, red grouper have low estimated release mortality rates, so increases in discards may have minimal negative effects on the population if released fish are able to survive being caught and released.

4.4.2 Economic Effects

Generally, trip limits are not considered to be economically efficient because they require an increase in the number of trips and associated trip costs to land the same amount of fish. However, the negative economic effects of this inefficiency can be offset by price support resulting from the supply limitations and the lengthening of seasons. Given the ACL for red grouper that restricts maximum harvest to sustainable levels, the alternative with the fewest number of trips that have to stop retaining red grouper because the trip limit has been reached would result in the least amount of direct negative economic effects, assuming the season does not close.

Under **Alternative 1 (No Action)**, there would continue to be no commercial trip limit for red grouper. The sub-alternatives of **Preferred Alternative 2** set commercial trip limits for red grouper. The lower the trip limit, the more likely some commercial vessels would experience direct negative economic effects from reduced revenue from red grouper. The majority of commercial trips landing red grouper record fewer than 75 lbs gw of the species (**Figure 4.4.1.1)**, indicating that there would be no direct economic effects that occur from the sub-alternatives of **Preferred Alternative 2** on many commercial trips that take place in the South Atlantic Region. Trip limits on red grouper may, however, reduce profitability for commercial vessels on some trips through a reduction in revenue and efficiency. Cumulatively, the commercial landings of red grouper are expected to decrease along with gross revenue,

net cash flow, and net revenue with the implementation of trip limits. According to Overstreet, Perruso, and Liese (2018), from 2014 through 2016, "trip net cash flow" from snapper grouper trips was 42% of the gross revenue on those trips, while "trip net revenue" was 23.9% of the gross revenue from these trips.[14] "Trip net cash flow" represents the additional flow of money to the business from taking a trip, while "trip net revenue" represents economic profit at the trip level and thus is the best measure of net economic benefits.

The estimated short-term change in red grouper landings and economic effects that may occur in Action 4 under **Sub-alternatives 2a** through **2d** in comparison to **Alternative 1 (No Action)** are shown in **Table 4.4.2.1** using the assumption of *no change* in the spawning season closure for red grouper (Action 3, Alternative 1 (No Action)) and in **Table 4.4.2.2** incorporating the assumption of *a change* in the spawning season closure using Preferred Sub-alternative 2a in Action 3. The anticipated short-term change in gross revenue, net cash flow, and net revenue from **Preferred Sub-alternative 2d** under the assumption of Preferred Sub-alternative 2a in Action 3 is -$17,725, -$7,445, and -$4,236 respectively. Assuming that vessels do not mitigate for lost landings by either making more trips and/or shifting effort to other species, **Alternative 1 (No Action)** is expected to have the lowest direct negative economic effects, followed by **Preferred Sub-alternative 2d**, **Sub-alternative 2c**, **Sub-alternative 2b**, and **Sub-alternative 2a**.

Table 4.4.2.1. Estimated change in commercial landings, gross revenue, net cash flow, and net revenue for **Alternative 2** of **Action 4** *without* a change to the spawning season closure ((Action 3, Alterative 1(No Action)) in comparison to status quo (**Alternative 1**(**No Action**)) (2017 dollars). Preferred sub-alternative is indicated in bold.

Sub-alternative	Estimated change in commercial landings (lbs gw)	Estimated change in gross revenue	Estimated change in net cash flow	Estimated change in net revenue
Sub-Alternative 2a	-15,966	-$74,242	-$31,182	-$17,744
Sub-Alternative 2b	-11,780	-$54,775	-$23,006	-$13,091
Sub-Alternative 2c	-6,964	-$32,381	-$13,600	-$7,739
Pref. Sub-Alternative 2d	**-4,366**	**-$20,302**	**-$8,527**	**-$4,852**

Table 4.4.2.2. Estimated change in commercial landings, gross revenue, net cash flow, and net revenue for **Alternative 2** of **Action 4** *with* a change to the spawning season closure ((Action 3, Pref. Sub-alternative 2a) in comparison to status quo (**Alternative 1**(**No Action**)) (2017 dollars). Preferred sub-alternative is indicated in bold.

Sub-alternative	Estimated change in commercial landings (lbs gw)	Estimated change in gross revenue	Estimated change in net cash flow	Estimated change in net revenue
Sub-Alternative 2a	-13,646	-$63,453	-$26,650	-$15,165
Sub-Alternative 2b	-10,053	-$46,748	-$19,634	-$11,173
Sub-Alternative 2c	-5,970	-$27,762	-$11,660	-$6,635
Pref. Sub-Alternative 2d	**-3,812**	**-$17,725**	**-$7,445**	**-$4,236**

In computing these values, commercial landings from 2015 through 2017 in lbs ww provided in **Table 4.4.1.1** and **Table 4.4.1.2** were converted to lbs gw using a conversion factor of 1.18 (SEDAR 53, 2017).

[14] Trip net cash flow is gross revenue minus the variable costs for fuel, bait, ice, groceries, miscellaneous, and hired crew. Trip net revenue is gross revenue minus the above variable costs for fuel, bait, ice, groceries, miscellaneous, hired crew, as well as the opportunity cost of the owner's time as captain.

After applying this conversion factor, the three-year average commercial red grouper landings of 50,815 lbs gw was considered the baseline in calculating the estimated marginal decrease in landings for **Table 4.4.1.1** and 44,025 lbs gw was considered the baseline in calculating the estimated marginal decrease in landings for **Table 4.4.1.2**. Additionally, to calculate the representative gross revenue of the difference between the baseline landings and projected landings, an ex-vessel price of $4.65 (2017 dollars) per pound (gw) was applied, which is the average ex-vessel price per pound (gw) of red grouper over the past three years of available data (2015-2017) (SEFSC-SSRG Socioeconomic Panel v.7 as accessed April 30, 2019). Inflation adjustments were made using the annual gross domestic product implicit price deflator provided by the U.S. Bureau of Economic Analysis.

4.4.3 Social Effects

Commercial fishermen in the communities identified in **Section 3.4** would likely be those affected by a change in the red grouper commercial trip limit. However, it is likely that fishermen who have targeted red grouper in recent years also target other species and would be able to adjust their businesses to adapt to regulatory changes. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being reached, but trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away.

Commercial landings of red grouper in the South Atlantic are low and the commercial ACL has not been met in recent years (**Table 3.2.2**). While a trip limit may help to slow the rate of harvest by restricting landings for larger vessels, it is likely that establishing a trip limit under **Alternative 2** would have minimal effects on commercial fishermen and associated communities as few trips land more than 75 lbs gw of red grouper (**Figure 4.4.1.1**). **Sub-alternative 2a** would result in the largest reduction in landings and **Preferred Sub-alternative 2d** would result in the lowest reduction in landings. When combined with Action 3/**Preferred Sub-alternative 2a** those reductions are estimated to be 31% and 8.7%, respectively (**Table 4.4.1.1**). However, none of the alternatives are anticipated to result in landings that would exceed the ACL and result in a shorter season. The absence of a trip limit under **Alternative 1 (No Action)** would likely have little effect on commercial fishermen in the short term but could result in negative effects in the future if some commercial vessels began targeting red grouper at higher levels. Slowing the rate of harvest and contributing to rebuilding goals for red grouper would be expected to contribute to the sustainability of harvest and the health of the red grouper stock and provide for long term social benefits.

4.4.4. Administrative Effects

Alternative 1 (No Action) would not change the administrative environment from its current state. Currently, there is a commercial quota monitoring system in place for red grouper that is utilized to monitor landings against the commercial ACL. **Preferred Alternative 2** and its sub-alternatives would establish a commercial trip limit for red grouper, which may slow the rate that landings would reach the ACL, and lengthen the season should landings near the ACL. Of the two alternatives (and sub-alternatives) considered for modifying the trip limit for red grouper, **Alternative 1 (No Action)** and **Alternative 2** (and its sub-alternatives) would impose similar administrative burdens on NMFS. From 2012 through 2018, the ACL for red grouper has not been met prior to the end of the fishing year. If a commercial trip limit for red grouper is implemented under **Preferred Alternative 2** and its sub-alternatives, then the total South Atlantic landings of red grouper estimated to be reduced is between 8 and 32% (**Table H-8)**. As a result, no in-season closures for commercial South Atlantic red grouper were projected for the 2018, 2019, and 2020 fishing years for each of the proposed commercial trip limit alternatives (**Appendix H**). When in combination with the modification of the red grouper seasonal

spawning prohibition restrictions proposed under **Actions 2** and **3,** and a trip limit implemented under **Action 4 Preferred Alternative 2**, it is expected that the fishers would still not meet the ACL prior to the end of the fishing year, similarly to **Alternative 1 (No Action)**. Therefore, if total commercial effort for red grouper remains consistent, it is likely the ACL would not be reached prior to the end of the fishing year. Therefore, ongoing monitoring of the commercial quota would still be required, but NMFS would likely not need to prepare and issue fishery closure notices, and enforcement personnel would not have to monitor the closures, but they would need to monitor the trip limits. As with all new management measures, rule-making, education and outreach would be required under **Preferred Alternative 2** and its sub-alternatives. Therefore, an administrative burden on NMFS would be greatest with **Preferred Alternative 2a, 2b, 2c** and **2d**, followed by **Alternative 1** (**No Action**) with the least administrative burden.

Chapter 5. South Atlantic Council's Choice for the Preferred Alternatives

5.1 Action 1. Revise the Rebuilding Schedule for Red Grouper

5.1.1 Snapper Grouper Advisory Panel (AP) Comments and Recommendations

The Snapper Grouper AP discussed Regulatory Amendment 30 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) during their October 17-19, 2018, meeting and offered the following:

The AP discussed potential issues negatively affecting red grouper recruitment. Some members felt that harmful algae blooms in the Gulf of Mexico and South Atlantic as well as increasing predation from lionfish may be contributing factors that are leading to low recruitment.

5.1.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP received an overview of the framework amendment during their May 23-24, 2019, meeting. The Law Enforcement AP had no comments or recommendations.

Alternatives*

1 No Action. The current rebuilding schedule is set at the maximum time period allowed to rebuild (T_{max}). This is equal to 10 years with the rebuilding time period ending in 2020. 2011 was Year 1.

2. Alternative 2. Revise the rebuilding schedule to equal the shortest possible time period to rebuild in the absence of fishing mortality (T_{min}). This would equal 5 years with the rebuilding time period ending in 2024. 2020 would be Year 1.

3. Alternative 3. Revise the rebuilding schedule to equal 8 years with the rebuilding time period ending in 2026. 2019 would be Year 1.

4. Preferred Alternative 4. Revise the rebuilding schedule to equal the maximum time period allowed to rebuild (T_{max}). This would equal 10 years with the rebuilding time period ending in 2028. 2019 would be Year 1.

* Preferred indicated in bold.

5.1.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

The SSC received an overview of the regulatory amendment during their April 9-11, 2019, meeting. The SSC had no comments or recommendations.

5.1.4 Public Comments and Recommendations

Public hearings for Regulatory Amendment 30 were held on October 3, 2018, at the South Atlantic Fishery Management Council's (South Atlantic Council) October 2018 meeting. Public comments were accepted in person on October 3, 2018, or on the South Atlantic Council's online public comment form from August 31, 2018, through October 4, 2018. No comments were received on this action during that timeframe. Two public comments were received at the South Atlantic Council's December 2018 meeting that were in support of the South Atlantic Council's preferred alternatives for all actions in the amendment.

5.1.5 South Atlantic Council's Conclusions

In discussion of this action, the South Atlantic Council noted that the red grouper stock has seen low recruitment in recent years and that the lack of stock rebuilding may largely be due to ecosystem-related factors. Thus, it would be prudent to extend the time period beyond the shortest time period to rebuild (T_{min}). A longer time period for the stock to rebuild better accommodates the uncertainty relative to stock productivity and allows time where the ecosystem factors that are thought to be affecting recruitment to potentially change in a favorable manner or at least to become better understood by fisheries managers. The longest allowable time period (T_{max}) was chosen in an attempt to better manage for the uncertainty in recruitment.

Further, while the rebuilding schedule and the harvest level associated with the rebuilding schedule are closely linked, it is the harvest level that results in direct effects on a fishery, including how quickly a stock rebuilds. In Abbreviated Framework Amendment 1, the South Atlantic Council reduced the total, commercial, and recreational ACLs based on the acceptable biological catch recommendation from the South Atlantic Council's SSC. Implementation of the regulatory changes in Abbreviated Framework Amendment 1 ended overfishing and reestablished the path for rebuilding the stock consistent with the preferred rebuilding schedule contained in this document. Based on the projections in **Appendix C**, the stock should begin to rebuild with the existing catch limits implemented via Abbreviated Framework Amendment 1. This is true under the rebuilding schedules in both **Alternative 3** and **Preferred Alternative 4**. Given that recruitment appears to be the primary factor currently affecting rebuilding and the projections upon which the schedules are based assumed long term average recruitment, the South Atlantic Council has selected the longer rebuilding schedule to account for the possibility that future recruitment might be lower than assumed in the projections.

The South Atlantic Council concluded that **Preferred Alternative 4** best meets the purpose to modify the rebuilding schedule for red grouper based on the results of the most recent stock assessment. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and other applicable law.

5.1.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

The Vision Blueprint for the Snapper Grouper Fishery (Vision Blueprint) was approved by the South Atlantic Council in December 2015 and is intended to inform management of the snapper grouper fishery through 2020. As such, the Vision Blueprint serves as a "living document" to help guide future management, guides the development of new amendments that address priority objectives and strategies, illustrates actions that could be developed through the regular amendment process, builds on stakeholder input, and how the South Atlantic Council envisions future management of the fishery. The Vision Blueprint is organized into four South Atlantic Snapper Grouper strategic goal areas: (1) Science; (2) Management; (3) Communication; and (4) Governance. Each goal area has a set of objectives, strategies, and actions.

This action in this framework amendment would address Goal 4, Strategy 1.1- *Support an efficient decision making process for development of management measures for the snapper grouper fishery.* Choosing the maximum allowable time period for red grouper to rebuild (10 years) according to scientific information, allows for the highest probability of success for rebuilding and while allowing for flexibility in the red grouper portion of the snapper grouper fishery.

5.2 Action 2. Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

5.2.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP discussed Regulatory Amendment 30 during their October 17-19, 2018, meeting and offered the following:

The AP commented that a six-month spawning season closure for red grouper from January through June would be punitive for recreational fishermen in North Carolina. The for-hire industry in south Florida and the Keys would also be negatively affected if the extension of the existing spawning season closure were implemented in that area. Nonetheless, the AP recommended conducting analyses to apply the closure for red grouper in federal waters off the entire South Atlantic for both the commercial and recreational sectors for the months of January through June, rather than solely off the coast of North Carolina and South Carolina. The AP expressed concern about access to other shallow-water groupers possibly diminishing in the future due to regulatory actions aimed at red grouper.

Alternatives*

1. No Action. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney).

2. Preferred Alternative 2. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Revise the timing of these restrictions only for red grouper in the exclusive economic zone off North Carolina and South Carolina as follows:

Preferred Sub-alternative 2a. January – May (five months)

Sub-alternative 2b. February – May (four months)

Sub-alternative 2c. March – June (four months)

Sub-alternative 2d. January – June (six months)

* Preferred indicated in bold.

The AP approved the following motion regarding this action

MOTION: INCLUDE ALL 4 STATES IN SUB-ALTERNATIVE 2D (FOR RED GROUPER ONLY) FOR THE RECREATIONAL (ACTION 2) AND COMMERCIAL (ACTION 3) SECTORS. APPROVED BY AP (11 IN FAVOR, 5 ABSTENTIONS)

5.2.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP received an overview of the framework amendment during their May 23-24, 2019, meeting. The Law Enforcement AP had no comments or recommendations.

5.2.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their April 9-11, 2019, meeting. The SSC had no comments or recommendations.

5.2.4 Public Comments and Recommendations

Prior to and during development Regulatory Amendment 30, multiple public comments were received by the South Atlantic Council expressing concern over the health of the red grouper stock and prolonged spawning activity occurring past the end of the shallow-water grouper spawning season closure in April. These comments occurred during the South Atlantic Council's Snapper Grouper Visioning process, with South Atlantic Council members when discussing red grouper with the public, and during development of Regulatory Amendment 30. The comments were largely provided by fishermen from the Carolinas. There was also stakeholder feedback that red grouper spawn earlier in the year in the southern part of the South Atlantic Council's jurisdiction.

Public hearings for Vision Blueprint Recreational Regulatory Amendment 26, which is where Action 2 was previously developed, were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11, 2018. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. Below is a summary of comments on Action 2:

- One commenter from the Florida Keys maintained that every grouper caught during the full moon in April is in spawning condition. Consider extending the closure through May.
- One commenter from Wilmington, North Carolina stated that shallow water groupers (and hogfish) in North Carolina spawn in the May-June timeframe. Consider adjusting spawning closure accordingly, but give fishermen an alternative, healthy fishery to pursue during that closure such as 2 gag per person. Gag rarely are found where the other shallow-water groupers are in the area where he fishes.
- One commenter from Cape Hatteras, North Carolina expressed support for extending the closure on red grouper through May.
- One commenter from Florida said that the spawning season closure could be revised to incorporate the months of May and June, and potentially drop January and/or February.

Public hearings for Regulatory Amendment 30 were held on October 3, 2018, at the South Atlantic Council's October 2018 meeting. Public comments were accepted in person on October 3, 2018, or on the South Atlantic Council's online public comment form from August 31, 2018, through October 4, 2018. No comments were received on this action during that timeframe. Two public comments were received at the South Atlantic Council's December 2018 meeting that were in support of the South Atlantic Council's preferred alternatives for all actions in the amendment.

5.2.5 South Atlantic Council's Conclusions

Extending the recreational sector spawning season closure for red grouper was previously considered in Vision Blueprint Recreational Regulatory Amendment 26 to the Snapper Grouper FMP. This action was moved to Regulatory Amendment 30 to the Snapper Grouper FMP at the South Atlantic Council's June 2018 meeting to consolidate all management actions being considered for the red grouper portion of the snapper grouper fishery into one amendment.

The South Atlantic Council had previously received several comments from fishermen in the Carolinas expressing concern over the red grouper stock and that they were catching fish in spawning condition past the end of the shallow water grouper spawning season closure in April. These comments were received during the South Atlantic Council's Snapper Grouper Visioning process, by South Atlantic Council members when discussing red grouper with the public, and during development of Regulatory Amendment 30. Although some similar comments were received from fishermen in Florida, the public

comments were largely limited to fishermen in the Carolinas rather than throughout the South Atlantic region. There was also stakeholder feedback that red grouper spawn earlier in the year in the southern part of the South Atlantic Council's jurisdiction and may be mostly covered by the current spawning season closure in that area. This notion is supported by studies of spawning activity for red grouper in the South Atlantic region that indicate spawning occurring from January through May off of east Florida and spawning occurring from February through June off of the Carolinas (**Figure 2.2.1**, **Table 3.2.1**, Burgos et al., 2007; McGovern et al., 2002). Additionally, the red grouper stock has been experiencing multiple years of low recruitment as evidenced by the most recent stock assessment.

In response to public comments from the Carolinas and concerns over recruitment, the South Atlantic Council chose to consider extending the spawning season closure for red grouper in the exclusive economic zone (EEZ) off the Carolinas for an additional month to help protect a portion of the stock and promote better recruitment. Not only is this decision supported by public comment, there is scientific evidence suggesting that the red grouper stock off North Carolina and South Carolina may constitute geographically isolated subpopulations, and therefore, life history parameters may differ from other areas (Burgos et al., 2007). The South Atlantic Council also noted that extending the spawning season closure in the EEZ solely off the Carolinas adds equity to the distribution of spawning protection for red grouper amongst the states in the South Atlantic region, as harvest would be prohibited for red grouper during four of the five months that the species are documented to spawn off of East Florida and the Carolinas respectively (**Figure 2.2.1**, **Table 3.2.1**, Burgos et al., 2007; McGovern et al., 2002). Additionally, it was noted by the South Atlantic Council that there are very minimal landings of red grouper in Georgia which would preclude the need to extend the closure in the EEZ off that state.

The South Atlantic Council concluded that **Preferred Alternative 2, Sub-alternative 2a** best meets the purpose to protect the spawning red grouper stock while minimizing adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.2.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

The Vision Blueprint for the Snapper Grouper Fishery (Vision Blueprint) was approved by the South Atlantic Council in December 2015 and is intended to inform management of the snapper grouper fishery through 2020. As such, the Vision Blueprint serves as a "living document" to help guide future management, guides the development of new amendments that address priority objectives and strategies, illustrates actions that could be developed through the regular amendment process, builds on stakeholder input, and how the South Atlantic Council envisions future management of the fishery. The Vision Blueprint is organized into four South Atlantic Snapper Grouper strategic goal areas: (1) Science; (2) Management; (3) Communication; and (4) Governance. Each goal area has a set of objectives, strategies, and actions.

The action in this framework amendment would address Goal 2, Strategy 1.3 *Consider use of alternative sub-regional management strategies that are not quota-based*. Extending the spawning season closure for red grouper specifically in the EEZ off the Carolinas directly addresses the Priority Action under this strategy to "*use staggered spawning season closures to address latitudinal differences in spawning activity.*"

5.3 Action 3. Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

5.3.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP discussed Regulatory Amendment 30 during their October 17-19, 2018, meeting and offered the following:

The AP commented that a six-month spawning season closure for red grouper from January through June would be punitive for recreational fishermen in North Carolina. The for-hire industry in south Florida and the Keys would also be negatively affected if this closure were implemented in that area. Nonetheless, the AP recommended conducting analyses to apply the closure for red grouper in federal waters off the entire South Atlantic for both the commercial and recreational sectors for the months of January through June, rather than solely off the coast of North Carolina and South Carolina. The AP expressed concern about access to other Shallow Water Groupers possibly diminishing in the future due to regulatory actions aimed at red grouper.

The AP approved the following motion regarding this action:

MOTION: INCLUDE ALL 4 STATES IN SUB-ALTERNATIVE 2D (FOR RED GROUPER ONLY) FOR THE RECREATIONAL (ACTION 2) AND COMMERCIAL (ACTION 3) SECTORS. APPROVED BY AP (11 IN FAVOR, 5 ABSTENTIONS)

Alternatives*

1. No Action. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Additionally, during January through April, no person may sell or purchase any shallow-water grouper harvested from or possessed in the South Atlantic exclusive economic zone.

2. Preferred Alternative 2. During January through April, no person may fish for, harvest, or possess in or from the South Atlantic exclusive economic zone any shallow-water grouper (gag, black grouper, scamp, red grouper, yellowfin grouper, yellowmouth grouper, red hind, rock hind, graysby, or coney). Additionally, during January through April, no person may sell or purchase any shallow-water grouper harvested from or possessed in the South Atlantic exclusive economic zone. Revise the timing of these restrictions only for red grouper in the exclusive economic zone off North Carolina and South Carolina as follows:

Preferred Sub-alternative 2a. January – May (five months)
Sub-alternative 2b. February – May (four months)
Sub-alternative 2c. March – June (four months)
Sub-alternative 2d. January – June (six months)

* Preferred indicated in bold.

5.3.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP received an overview of the framework amendment during their May 23-24, 2019, meeting. The Law Enforcement AP had no comments or recommendations.

5.3.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their April 9-11, 2019, meeting. The SSC had no comments or recommendations.

5.3.4 Public Comments and Recommendations

Prior to and during development of Regulatory Amendment 30, multiple public comments were received by the South Atlantic Council expressing concern over the health of the red grouper stock and prolonged spawning activity occurring past the end of the shallow water grouper spawning season closure in April. These comments occurred during the South Atlantic Council's Snapper Grouper Visioning process, with Council members when discussing red grouper with the public, and during development of Regulatory Amendment 30. The comments were largely provided by fishermen from the Carolinas. There was also stakeholder feedback that fish spawned earlier in the year in the southern part of the South Atlantic Council's jurisdiction.

Public hearings for Vision Blueprint Commercial Regulatory Amendment 27, which is where Action 3 was previously developed, were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. Below is a summary of comments on Action 3:

- One commenter from North Carolina thought that red grouper should be managed as a bycatch fishery until the stock rebounds. He suggested no changes to the spawning season closure and a 100-pound trip limit. Extending the spawning closure for one species could result in increased regulatory discards as fishermen target legal grouper.
- Two commenters in North Carolina stated support for the preferred and suggest a small trip limit (200 pounds) to help rebuild red grouper.
- One commenter expressed concern about conflicting regulations in the Carolinas versus Georgia/Florida. He suggested no changes to the seasonal closure and a 100-pound bycatch limit.
- One commenter from Florida said that the spawning season closure could be revised to incorporate the months of May and June, and potentially drop January and/or February.

Public hearings for Regulatory Amendment 30 were held on October 3, 2018, at the South Atlantic Council's October 2018 meeting. Public comments were accepted in person on October 3, 2018, or on the South Atlantic Council's online public comment form from August 31, 2018, through October 4, 2018. No comments were received on this action during that timeframe. Two public comments were received at the South Atlantic Council's December 2018 meeting that were in support of the South Atlantic Council's preferred alternatives for all actions in the amendment.

5.3.5 South Atlantic Council's Conclusions

Extending the commercial sector spawning season closure for red grouper was previously considered in Vision Blueprint Commercial Regulatory Amendment 27 to the Snapper Grouper FMP. This action was moved to Regulatory Amendment 30 to the Snapper Grouper FMP at the South Atlantic Council's June 2018 meeting to consolidate all management actions being considered for the red grouper portion of the snapper grouper fishery into one amendment.

The South Atlantic Council had previously received several comments from fishermen in the Carolinas expressing concern over the red grouper stock and that they were catching fish in spawning condition past the end of the shallow water grouper spawning season closure in April. These comments were received during the South Atlantic Council's Snapper Grouper Visioning process, by South Atlantic Council members when discussing red grouper with the public, and during development of Regulatory Amendment 30. Although some similar comments were received from fishermen in Florida, the public

comments were largely limited to fishermen in the Carolinas rather than throughout the South Atlantic region. There was also stakeholder feedback that red grouper spawn earlier in the year in the southern part of the South Atlantic Council's jurisdiction and may be mostly covered by the current spawning season closure in that area. This notion is supported by studies of spawning activity for red grouper in the South Atlantic region that indicate spawning occurring from January through May off of east Florida and spawning occurring from February through June off of the Carolinas (**Figure 2.2.1**, **Table 3.2.1**, Burgos et al., 2007; McGovern et al., 2002). Additionally, the red grouper stock has been experiencing multiple years of low recruitment as evidenced by the most recent stock assessment.

In response to public comments from the Carolinas and concerns over recruitment, the South Atlantic Council chose to consider extending the spawning season closure for red grouper in the EEZ off the Carolinas for an additional month to help protect a portion of the stock and promote better recruitment. Not only is this decision supported by public comment, there is scientific evidence suggesting that the red grouper stock off North Carolina and South Carolina may constitute geographically isolated subpopulations, and therefore, life history parameters may differ from other areas (Burgos et al., 2007). The South Atlantic Council also noted that extending the spawning season closure in the EEZ solely off the Carolinas adds equity to the distribution of spawning protection for red grouper amongst the states in the South Atlantic region, as harvest would be prohibited for red grouper during four of the five months that the species are documented to spawn off of East Florida and the Carolinas respectively (**Figure 2.2.1**, **Table 3.2.1**, Burgos et al., 2007; McGovern et al., 2002). Additionally, it was noted by the South Atlantic Council that there are very minimal landings of red grouper in Georgia which would preclude the need to extend the closure in the EEZ off that state.

The South Atlantic Council also discussed how the sale and purchase prohibition for red grouper would relate to the proposed extension of the spawning season closure off the Carolinas. The South Atlantic Council clarified their intent that sale and purchase of red grouper harvested in the EEZ off the Carolinas by federally permitted vessels in May would be prohibited in all South Atlantic states. Sale and purchase of red grouper harvested in the EEZ off Georgia or Florida by federally permitted vessels during May would be allowed in all South Atlantic states.

The South Atlantic Council concluded that **Preferred Alternative 2, Sub-alternative 2a** best meets the purpose to protect the spawning red grouper stock while minimizing adverse social and economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.3.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

The Vision Blueprint for the Snapper Grouper Fishery (Vision Blueprint) was approved by the South Atlantic Council in December 2015 and is intended to inform management of the snapper grouper fishery through 2020. As such, the Vision Blueprint serves as a "living document" to help guide future management, guides the development of new amendments that address priority objectives and strategies, illustrates actions that could be developed through the regular amendment process, builds on stakeholder input, and how the South Atlantic Council envisions future management of the fishery. The Vision Blueprint is organized into four South Atlantic Snapper Grouper strategic goal areas: (1) Science; (2) Management; (3) Communication; and (4) Governance. Each goal area has a set of objectives, strategies, and actions.

The action in this framework amendment would address Goal 2, Strategy 1.3 *Consider use of alternative sub-regional management strategies that are not quota-based*. Extending the spawning season closure for red grouper specifically in the EEZ off the Carolinas directly addresses the Priority Action under this strategy to "*use staggered spawning season closures to address latitudinal differences in spawning activity.*"

5.4 Action 4. Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone

5.4.1 Snapper Grouper AP Comments and Recommendations

The Snapper Grouper AP discussed Vision Blueprint Regulatory Amendment 27, which included changes to red grouper management before Regulatory Amendment 30 was developed and approved the following motion during their April 11-13, 2018, meeting:

MOTION: RECOMMEND THAT THE COUNCIL CONSIDER A BYCATCH COMMERCIAL TRIP LIMIT FOR RED GROUPER
APPROVED BY AP (UNANIMOUS)

The Snapper Grouper AP discussed Regulatory Amendment 30 during their October 17-19, 2018, meeting and offered the following:

Alternatives*

1. No Action. There is no commercial trip limit for red grouper harvested in the South Atlantic exclusive economic zone.

2. Establish a commercial trip limit for red grouper harvested in the South Atlantic exclusive economic zone:
Sub-alternative 2a. 75 pounds gutted weight.
Sub-alternative 2b. 100 pounds gutted weight.
Sub-alternative 2c. 150 pounds gutted weight.
Sub-alternative 2d. 200 pounds gutted weight.

* Preferred indicated in bold.

While no motion was passed, some AP members noted that a trip limit for the commercial sector may not be effective overall in reducing harvest since that sector is already only harvesting a small portion of the ACL. However, a low trip limit may disproportionately affect fishermen who "specialize" on red grouper in some areas, such as in the Florida Keys.

5.4.2 Law Enforcement AP Comments and Recommendations

The Law Enforcement AP received an overview of the framework amendment during their May 23-24, 2019, meeting. The Law Enforcement AP had no comments or recommendations.

5.4.3 SSC Comments and Recommendations

The SSC received an overview of the framework amendment during their April 9-11, 2019, meeting. The SSC had no comments or recommendations.

5.4.4 Public Comments and Recommendations

Public hearings for Vision Blueprint Regulatory Amendment 27, which encompassed changes to red grouper management before Regulatory Amendment 30 was developed, were held on May 8-10, 2018, via webinar and listening stations in North Carolina, South Carolina, and Florida. The public comment period was from April 24 through May 11. Comments were also accepted on the South Atlantic Council's online public comment form through June 8, 2018. Below is a summary of comments on Action 4:

- One commenter from North Carolina thought that red grouper should be managed as a by-catch fishery until the stock rebounds. He suggested no changes to the spawning season closure and a 100-pound trip limit. Extending the spawning closure for one species could result in increased regulatory discards as fishermen target legal grouper.

- Two commenters in North Carolina stated support for the preferred (in Action 3) and suggest a small trip limit (200 pounds) to help rebuild the fishery.
- One commenter expressed concern about conflicting regulations in the Carolinas vs. Georgia/Florida. He suggested no changes to the seasonal closure and a 100-pound bycatch limit.

Public hearings for Regulatory Amendment 30 were held on October 3, 2018, at the South Atlantic Council's October 2018 meeting. Public comments were accepted in person on October 3, 2018, or on the South Atlantic Council's online public comment form from August 31, 2018, through October 4, 2018. No comments were received on this action during that timeframe. Two public comments were received at the South Atlantic Council's December 2018 meeting that were in support of the South Atlantic Council's preferred alternatives for all actions in the amendment.

5.4.5 South Atlantic Council's Conclusions

Several public comments were received suggesting implementation of a commercial trip limit for red grouper to help with stock rebuilding. The South Atlantic Council considered options that would be intended as an incidental trip limit for red grouper as the fish are encountered when fishing for other species. The South Atlantic Council initially considered choosing a 100 pound gutted weight (lbs gw) trip limit as their preferred alternative, however decided against this trip limit as it may be particularly prohibitive for commercial participants fishing in South Florida and the Florida Keys. The South Atlantic Council chose a 200 lbs gw trip limit to balance improved conservation of the red grouper stock with the economic needs of participants fishing in the southern part of the region.

The South Atlantic Council concluded that **Preferred Alternative 2, Sub-alternative 2d** best meets the need to help rebuild the red grouper stock while minimizing adverse socio-economic effects. The preferred alternative also best meets the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

5.4.6 How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

The Vision Blueprint for the Snapper Grouper Fishery (Vision Blueprint) was approved by the South Atlantic Council in December 2015 and is intended to inform management of the snapper grouper fishery through 2020. As such, the Vision Blueprint serves as a "living document" to help guide future management, guides the development of new amendments that address priority objectives and strategies, illustrates actions that could be developed through the regular amendment process, builds on stakeholder input, and how the South Atlantic Council envisions future management of the fishery. The Vision Blueprint is organized into four South Atlantic Snapper Grouper strategic goal areas: (1) Science; (2) Management; (3) Communication; and (4) Governance. Each goal area has a set of objectives, strategies, and actions.

The action in this framework amendment would address Goal 2, Strategy 3.*1 Consider development of management approaches that assist fishery-dependent businesses to operate efficiently and profitably*. While implementing commercial trip limits may negatively affect some participants in the red grouper portion of the fishery, the South Atlantic Council chose a 200 lbs gw trip limit, which will not be constraining on the majority of commercial trips landing red grouper in the South Atlantic region. Setting the trip limit at this level balances the need for conservation of the red grouper stock with preserving the economic opportunities of commercial snapper grouper participants.

Chapter 6. Cumulative Effects

6.1 Affected Area

The immediate impact area would be the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West, which is also the South Atlantic Fishery Management Council's (South Atlantic Council) area of jurisdiction. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. The ranges of affected species are described in **Chapter 3**. For the actions found in Regulatory Amendment 30 (Regulatory Amendment 30) to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), the direct and indirect effects analysis includes an analysis of data from 2015 through 2017. Additionally, the cumulative effects analysis includes an analysis of actions and events dating back to 1983 when the original Snapper Grouper FMP was implemented, and through what is expected to take place in the reasonably foreseeable future.

6.2 Past, Present, and Reasonably Foreseeable Actions Impacting the Affected Area

Fishery managers implemented the first significant regulations pertaining to snapper grouper species in 1983 through the Original Snapper Grouper FMP (SAFMC 1983). Listed below are other past, present, and reasonably foreseeable actions occurring in the South Atlantic region. These actions, when added to the proposed management measures, may result in cumulative effects on the biophysical and socio-economic environment. The history of management for red grouper can be found in **Section 1.6**, and the complete history of management of the snapper grouper fishery can be found in **Appendix D (History of Management)**.

Past Actions

Amendment 17B to the Snapper Grouper FMP, which became effective January 31, 2011, in part, modified red grouper management measures as needed to limit harvest to the annual catch limit (ACL) or annual catch target (ACT); updated the framework procedure for specification of total allowable catch; and specified ACLs, ACTs, and accountability measures (AM), where necessary, for nine species undergoing overfishing (snowy grouper, black grouper, black sea bass, red grouper, vermilion snapper, gag, speckled hind, warsaw grouper, golden tilefish).

In 2010, a Southeast Data, Assessment, and Review (SEDAR) benchmark assessment (SEDAR 19) was completed for South Atlantic red grouper. Based on the results of SEDAR 19, the National Marine Fisheries Service (NMFS) determined that red grouper was undergoing overfishing (fish are being removed too quickly from the population) and was overfished (the number of fish in the water is too low). In response, the South Atlantic Council developed, and NMFS implemented, management measures to end overfishing of red grouper through Amendment 24 to the Snapper Grouper FMP (SAFMC 2011b). Amendment 24 specified a 10-year rebuilding plan that began in 2011, with a projected end date of 2020. Amendment 24 also set the ACL equal to the acceptable biological catch (ABC) recommended by the South Atlantic Council's Science and Statistical Committee (SSC). Amendment 24 became effective July 11, 2012.

Regulatory Amendment 15 to the Snapper Grouper FMP, became effective September 12, 2013, in part, modified the gag commercial ACL and AM to remove the requirement that all other shallow water groupers (black grouper, red grouper, scamp, red hind, rock hind, graysby, coney, yellowmouth grouper, and yellowfin grouper) be prohibited from harvest in the South Atlantic when the gag commercial ACL is met or is projected to be met.

The Generic Dealer Reporting Amendment, which became effective on August 7, 2014, established one dealer permit for the Gulf of Mexico and South Atlantic regions and increased the reporting frequency requirements for species managed by the South Atlantic Council and Gulf of Mexico Fishery Management Council. This amendment was expected to improve fisheries data collection, through more timely and accurate dealer reporting, and streamline the dealer permit system.

Amendment 29 to the Snapper Grouper FMP, which became effective on July 1, 2015, updated the South Atlantic Council's ABC control rule to incorporate methodology for determining the ABC of "Only Reliable Catch Stocks," adjusted ABCs for the affected unassessed species, specified ACLs for seven species based on the updated ABCs, and modified management measures for gray triggerfish.

Amendment 34 to the Snapper Grouper FMP (included in the Generic AM and Dolphin Allocation Amendment), in part, modified AMs for snapper grouper species to make them more consistent with AMs already implemented for other species and other FMPs. The regulations became effective on February 22, 2016.

Amendment 35 to the Snapper Grouper FMP, which became effective on June 22, 2016, was implemented to remove four species from the Snapper Grouper FMP (black snapper, dog snapper, mahogany snapper, and schoolmaster), and clarified regulations implementing the golden tilefish longline endorsement.

Amendment 36 to the Snapper Grouper FMP, which became effective on July 31, 2017, was implemented to establish new Spawning Special Management Zones to protect spawning areas for snapper grouper species.

The status of the red grouper stock in the South Atlantic was updated in February 2017, with data through 2015, that indicated the stock was overfished and undergoing overfishing (SEDAR 53). On September 27, 2017, the South Atlantic Council received a letter from NMFS stating that red grouper were overfished, undergoing overfishing, and not making adequate rebuilding progress (**Appendix B**). The Magnuson-Stevens Fisheries Conservation and Management Act requires the implementation of measures such to end overfishing immediately and revise or implement a rebuilding plan within two years of notification. The South Atlantic Council developed Abbreviated Framework Amendment 1 (SAFMC 2017) to the Snapper Grouper FMP, which became effective August 27, 2018, to end overfishing of red grouper immediately through a revised ACL based on the ABC recommendation from the South Atlantic Council's SSC.

Present Actions

The Vision Blueprint Recreational Regulatory Amendment 26 (Regulatory Amendment 26) for the Snapper Grouper FMP would remove the recreational minimum size limit for deep-water species, modify the recreational minimum size limit for gray triggerfish off east Florida, and modify the bag limit for the 20-Fish aggregate. The South Atlantic Council approval Regulatory Amendment 26 for review by the Secretary of Commerce (Secretary) at their December 2018 meeting.

The Vision Blueprint Recreational Regulatory Amendment 27 (Regulatory Amendment 27) for the Snapper Grouper FMP considers actions to modify commercial regulations for blueline tilefish, snowy grouper, greater amberjack, red porgy, vermilion snapper, almaco jack, Other Jacks Complex (lesser amberjack, almaco jack, and banded rudderfish), queen snapper, silk snapper, blackfin snapper, and gray triggerfish. Actions include modifying fishing seasons, trip limits, and minimum size limits. The South Atlantic Council approved Regulatory Amendment 27 for review by the Secretary at the September 2018 South Atlantic Council meeting.

The South Atlantic Council developed Abbreviated Framework Amendment 2 to the Snapper Grouper FMP to adjust the ACLs for vermilion snapper and black sea bass based on the results of the most recent SEDAR stock assessment for those species and the subsequent ABC recommendations from the South Atlantic Council's SSC. Public hearings and South Atlantic Council approval for Secretarial review took place at the September 2018 South Atlantic Council meeting. The proposed rule published on February 19, 2019 (84 FR 4758), and the comment period closed on March 6, 2019. The final rule published on April 9, 2019, and regulations became effective on May 9, 2019.

Reasonably Foreseeable Future Actions

Amendment 42 to the Snapper Grouper FMP includes alternatives to add sea turtle release gear to the regulations for the commercial snapper grouper sector. The amendment also considers modifications to the snapper grouper framework so the South Atlantic Council may more quickly modify sea turtle and other protected resources release gear and handling requirements in the future. The South Atlantic Council approved the amendment for Secretarial review at their March 2019 meeting.

The South Atlantic Council reviewed options at their June 2018 meeting for Regulatory Amendment 29 to the Snapper Grouper FMP, which contains actions pertaining to best fishing practices (e.g., descending devices) and powerhead regulations in a framework amendment to expedite development (these actions were previously included in Amendment 43 to the Snapper Grouper FMP). The framework amendment was approved for scoping at the June 2018 meeting and is scheduled to be approved for Secretarial review at the September 2019 South Atlantic Council meeting.

At the June 2018 meeting, the South Atlantic Council reviewed Amendment 45 to the Snapper Grouper FMP (included in the Comprehensive ABC Control Rule Amendment) Options Paper and comments, and approved the document for scoping in late 2018. The amendment would modify the ABC control rule, specify an approach for determining the acceptable risk of overfishing and the probability of rebuilding success for overfished stocks, allow phase-in of ABC changes, and allow carry-over of unharvested catch. Development of the amendment will continue in 2019 and 2020.

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit and reporting (e.g., MyFishCount App). Development of this amendment is currently on hold.

Regulatory Amendment 31 to the Snapper Grouper FMP (included in the Comprehensive Recreational AM Amendment) could include actions to revise recreational AMs to allow more flexibility in managing the recreational sector. The amendment is under development.

Expected Impacts from Past, Present, and Future Actions

In recent years, participants in the snapper grouper commercial sector and associated businesses have experienced some negative economic and social impacts due to changes in ACLs, and early closures during the fishing years. Factors such as distance to fishing grounds, and weather/temperature, affect availability of some species to the commercial fleets in different parts of the South Atlantic Council's jurisdiction.

The proposed actions in Regulatory Amendment 30 are not expected to result in significant cumulative adverse biological or socio-economic effects (refer to **Chapter 4**). The measures proposed in Regulatory Amendment 30 are intended to revise the rebuilding schedule based on the results of the most recent stock assessment, modify recreational and commercial fishing seasons, and commercial trip limits for the red grouper portion of the snapper grouper fishery. The actions are expected to rebuild the red grouper stock; and achieve optimum yield while minimizing, to the extent practicable, adverse social and economic effects for commercial and recreational fishermen in the South Atlantic Region.

The action to revise the red grouper rebuilding schedule does not impose direct biological or economic effects, as it does not directly constrain harvest or fishing effort. There can be indirect economic effects that occur due to a rebuilding schedule, as the length of the rebuilding period selected can determine how stringent management measures should be; with shorter rebuilding periods requiring more stringent management measures that may create negative short-term economic effects for a species. In the long-term, a shorter rebuilding period may allow the benefits of a rebuilt stock to be incurred more quickly. Conversely, longer rebuilding periods would require less stringent short-term management measures, but long-term benefits may accrue later.

The proposed actions to consider modifying the seasonal prohibition on recreational and commercial harvest, possession, sale, and purchase of red grouper in the exclusive economic zone (EEZ) off South Carolina and North Carolina, are intended to better align the prohibition on harvest and possession with when red grouper are spawning. This may increase protection of spawning red grouper which would result in beneficial biological effects to the stock.

Specifying trip limits for red grouper may help prevent a directed fishery while allowing some retention to prevent discarding and help the stock rebuild. However, trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away. Yet, a longer open season could be beneficial to the commercial fleet and to end users (restaurant owners, fish houses, and consumers) by improving consistency of availability. The likely cumulative socioeconomic effects would be improved commercial fishing opportunities, and benefits to associated businesses and communities.

When combined with the impacts of past, present, and future actions affecting the snapper grouper fishery, specifically for red grouper, minor cumulative impacts are likely to accrue, such as monitoring ACLs for the commercial and recreational sector, and socio-economic benefits associated with improved management strategies. However, these cumulative impacts are not expected to rise to a level of significance.

6.3 Consideration of Climate Change and Other Non-Fishery Related Issues

Climate Change

Global climate changes could have significant effects on South Atlantic fisheries, though the extent of these effects on the snapper grouper fishery is not known at this time. The Environmental Protection Agency's climate change webpage (https://www.epa.gov/climate-indicators/marine-species-distribution), and NOAA's Office of Science and Technology climate webpage (https://www.st.nmfs.noaa.gov/ecosystems/climate/index), provides background information on climate change, including indicators which measure or anticipate effects on oceans, weather and climate, ecosystems, health and society, and greenhouse gases. The United Nations Intergovernmental Panel on Climate Change's Fifth Assessment Report also provides a compilation of scientific information on climate change (November 2, 2014). Those findings are summarized below.

Ocean acidification, or a decrease in surface ocean pH due to absorption of anthropogenic carbon dioxide emissions, affects the chemistry and temperature of the water. Increased thermal stratification alters ocean circulation patterns, and causes a loss of sea ice, sea level rise, increased wave height and frequency, reduced upwelling, and changes in precipitation and wind patterns. Changes in coastal and marine ecosystems can influence organism metabolism and alter ecological processes such as productivity, species interactions, migration, range and distribution, larval and juvenile survival, prey availability, and susceptibility to predators. The "center of biomass," a geographical representation of each species' weight distribution, is being used to identify the shifting of fish populations. Warming sea temperature trends in the southeast have been documented, and animals must migrate to cooler waters, if possible, if water temperatures exceed survivable ranges (Needham et al. 2012). Harvesting and habitat changes also cause geographic population shifts. Changes in water temperatures may also affect the distribution of native and exotic species, allowing invasive species to establish communities in areas they may not have been able to survive previously. The combination of warmer water and expansion of salt marshes inland with sea-level rise may increase productivity of estuarine-dependent species in the short term. However, in the long term, this increased productivity may be temporary because of loss of fishery habitats due to wetland loss (Kennedy et al. 2002). The numerous changes to the marine ecosystem may cause an increased risk of disease in marina biota. An increase in the occurrence and intensity of toxic algae blooms will negatively influence the productivity of keystone animals, such as corals, and critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002; IPCC 2014).

Climate change may impact snapper grouper species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. In the near term, it is unlikely that the management measures contained in Regulatory Amendment 30 would compound or exacerbate the ongoing effects of climate change on snapper grouper species.

Weather Variables

Hurricane season is from June 1 to November 30, and accounts for 97% of all tropical storm activity affecting the Atlantic basin. These storms, although unpredictable in their annual occurrence, can devastate areas when they occur. Although these effects may be temporary, those fishing-related businesses whose profitability is marginal may go out of business if a hurricane strikes. Other variables

might change the marine environment during and after a major storm, and fish may be negatively affected causing fish kills[15] which have been observed from changes in salinity, low dissolved oxygen, or other variables.

Deepwater-Horizon Oil Spill

On April 20, 2010, an explosion occurred on the Deepwater Horizon MC252 oil rig, resulting in the release of an estimated 4.9 million barrels of oil into the Gulf of Mexico (Gulf). In addition, 1.84 million gallons of Corexit 9500A dispersant were applied as part of the effort to constrain the spill. The cumulative effects from the oil spill and response may not be known for several years. The oil spill affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the Deepwater Horizon MC252 oil spill on the physical environment are expected to be significant and may be long-term. Oil is dispersed on the surface, and because of the heavy use of dispersants, oil is also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed onto shore in several areas of the Gulf, as well as non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are more persistent in the environment and can be transported hundreds of miles. Oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. Zooplankton that feed on algae could also be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow.

The highest concern is that the oil spill may have impacted spawning success of species that spawn in the summer months, either by reducing spawning activity or by reducing survival of the eggs and larvae. Effects on the physical environment, such as low oxygen, could lead to impacts on the ability of larvae and post-larvae to survive, even if they never encounter oil. In addition, effects of oil exposure may create sub-lethal effects on the eggs, larva, and early life stages. The stressors could potentially be additive, and each stressor may increase the susceptibility to the harmful effects of the other. The oil from the spill site was not detected in the South Atlantic region and does not likely pose a threat to the South Atlantic species addressed in this amendment. However, the effects of the oil spill on fish species would be taken into consideration in future SEDAR assessments. Indirect and inter-related effects on the biological and ecological environment of the fisheries in concert with the Deepwater Horizon MC252 oil spill are not well understood. Changes in the population size structure could result from shifting fishing effort to specific geographic segments of populations, combined with any anthropogenically induced natural mortality that may occur from the impacts of the oil spill. The impacts on the food web from phytoplankton, to zooplankton, to mollusks, to top predators may be significant in the future.

Harmful algal blooms (HAB)[16]

HABs, which are also referred to as "red tide," occurs along the Gulf of Mexico and South Atlantic coasts, and are very common along Texas and Florida. These HABs result from the rapid growth of microscopic algae, and some produce toxins that have harmful effects on fish, marine mammals, birds, and people. In Florida and Texas, red tide is primarily caused by the harmful algae species *Karenia brevis.* The blooms can also cause large fish kills and discolored water along the coast that may last

[15] https://myfwc.com/research/saltwater/health/abnormalities/
[16] https://myfwc.com/research/redtide/ and https://oceanservice.noaa.gov/news/redtide-florida/

weeks or a year, often subsiding and reoccurring. Fish die rapidly from the neurotoxic effects of the red tide which enter their bloodstream through the gills. Because the fish die so quickly, these toxins do not have time to build up in their tissue. During 2017 through 2019, a persistent red tide affected portions of the Florida coast, including the Panhandle, southwest Florida, and the east coast of Florida.

6.4 Overall Impacts Expected from Past, Present, and Future Actions

The proposed actions are intended to modify the rebuilding schedule for red grouper based on the results of the most recent stock assessment; minimize regulatory discards; and extend protection for red grouper during the spawning season. The actions are expected to rebuild the red grouper stock, and achieve optimum yield while minimizing, to the extent practicable, adverse social and economic effects for commercial and recreational fishermen in the South Atlantic Region. The proposed management actions are summarized in **Chapter 2** of this document. Detailed discussions of the magnitude and significance of the impacts of the alternatives on the human environment appear in **Chapter 4** of this document. None of the impacts of the actions in this amendment, in combination with past, present, and future actions have been determined to be significant. Although several other management actions, in addition to this amendment, are expected to affect snapper grouper species, any additive effects, beneficial and adverse, are not expected to result in a significant level of cumulative impacts.

The proposed actions would not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places as these are not in the South Atlantic EEZ. These actions are not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific, cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the South Atlantic region. The U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the South Atlantic EEZ. The proposed actions are not likely to cause loss or destruction of these national marine sanctuaries because the actions are not expected to result in appreciable changes to current fishing practices. Additionally, the proposed actions are not likely to change the way in which the snapper grouper fishery is prosecuted; therefore, the actions are not expected to result in adverse impacts on health or human safety beyond the status quo.

6.5 Monitoring and Mitigation

Fishery-independent and fishery-dependent data comprise a significant portion of information used in stock assessments. Fishery-independent data are being collected through the Southeast Fishery Information Survey and the Marine Resources Monitoring Assessment and Prediction Program. The effects of the proposed actions are, and would continue to be, monitored through collection of commercial landings data by all the four states in the South Atlantic Region (Florida, Georgia, South Carolina, and North Carolina). NMFS would continue to monitor and collect information on snapper grouper species for stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. The proposed actions relate to the harvest of indigenous species in the Atlantic, and the activities/regulations being altered do not introduce non-indigenous species and are not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, these alternatives do not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

Chapter 7. List of Interdisciplinary Plan Team (IPT) Members

Table 7.1. List of interdisciplinary plan team members for the document

Name	Agency/Division	Title
Brian Cheuvront	SAFMC	Deputy Executive Director for Management
John Hadley	SAFMC	IPT Lead/Economist
Mike Errigo	SAFMC	Data analyst
Chip Collier	SAFMC	Data analyst
Myra Brouwer	SAFMC	Fishery Biologist
Christina Wiegand	SAFMC	Social Scientist
Mary Vara	SERO/SF	IPT Lead/Fishery Biologist
Rick DeVictor	SERO/SF	South Atlantic Branch Chief
Frank Helies	SERO/SF	Fishery Biologist
Nikhil Mehta	SERO/SF	Fishery Biologist/NEPA
Joelle Godwin	SERO/SF	Technical Writer and Editor
Alisha Gray-Dileone	SERO/SF	Data Analyst
Mike Jepson	SERO/SF	Social Scientist
Denise Johnson	NMFS/SERO/SF	Economist
Jennifer Lee	SERO/PR	Fishery Biologist
David Dale	SERO/HC	EFH Specialist
Noah Silverman	NMFS/SER	Regional NEPA Coordinator
Monica Smit-Brunello	NOAA GC	General Counsel
Shepherd Grimes	NOAA GC	General Counsel
Manny Antonaras	SERO/OLE	Criminal Investigator
Larry Perruso	SEFSC	Economist
Kyle Shertzer	NMFS/SEFSC	Fishery Biologist

NOAA=National Oceanic and Atmospheric Administration, NMFS = National Marine Fisheries Service,
SERO = Southeast Regional Office, SF = Sustainable Fisheries Division, PR = Protected Resources Division,
HC = Habitat Conservation Division, NEPA=National Environmental Policy Act; SEFSC=Southeast Fisheries Science Center, GC = General Counsel

Chapter 8. Agencies and Persons Consulted

Responsible Agency
NMFS, Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5301 (TEL)
(727) 824-5320 (FAX)

List of Agencies, Organizations, and Persons Consulted
SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
SAFMC Information and Education Advisory Panel
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
National Marine Fisheries Service
- -Washington Office
- -Southeast Regional Office
- -Southeast Fisheries Science Center

Chapter 9. References

Bielsa, L.M. and R.F. Labisky. 1987. Food habitats of blueline tilefish, Caulolatilus microps, and snowy grouper, Epinephelus niveatus, from the lower Florida Keys. Northeast Gulf Science.9(2):77-87.

Biggs, C., B. Erisman, W. Heyman, S.Kobara, N. Farmer, S. Lowerre-Barbieri, M. Karnauskas, and J. Brenner. (2018). Cooperative monitoring program for spawning aggregations in the Gulf of Mexico: Spawning Seasons. Version 2018.07. Available from GCOOS Web site: http://geo.gcoos.org/restore.

Bullock,L.H. and Smith G.B. 1991. Seabasses (Pisces: Serranidae). Florida Marine Research Institute, St. Petersburg, FL. Memoirs of the Hourglass Cruises. 243 p.

Burgos, J. M., Sedberry, G. R., Wyanski, D. M., and Harris, P. J. 2007. Life history of red grouper (*Epinephelus morio*) off the coasts of North Carolina and South Carolina. Bulletin of Marine Science, 80(1), 45-65.

Carter, D. W. and C. Liese. 2012. The Economic Value of Catching and Keeping or Releasing Saltwater Sport Fish in the Southeast USA. North American Journal of Fisheries Management 32(4): 613-625.

Coleman, F.C., C.C. Koenig, and L.A. Collins. 1996. Reproductive styles of shallow-water groupers (Pisces: Serranidae) in the eastern Gulf of Mexico and the consequences of fishing on spawning aggregations. Env. Biol. Fishes 47: 129-141.

Farmer, N.A., Heyman, W.D., Karnauskas, M., Kobara, S., Smart, T.I., Ballenger, J.C., et al. 2017. Timing and locations of reef fish spawning off the southeastern United States. PLoS ONE12(3): e0172968.

Heemstra, P.C., and J.E. Randall. 1993. FAO species catalogue. Groupers of the world (Family *Serranidae*, Subfamily *Epinephelinae*). An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date. FAO Fisheries Synopsis. No. 125, Vol. 16. Rome, FAO.

IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Jacob, S., P. Weeks, B. Blount, and M. Jepson. 2013. Development and evaluation of social indicators of vulnerability and resiliency for fishing communities in the Gulf of Mexico. Marine Policy 37:86-95.

Jepson, M. and L. L. Colburn. 2013. Development of social indicators of fishing community vulnerability and resilience in the U.S. Southeast and Northeast regions. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-F/SPO-129, 64 pp.

Johnson, G.D. and P. Keener. 1984. Aid to identification of American grouper larvae. Bull. Mar. Sci. 34(l): 106 134.

Jory, D.E. and D.S. Iversen. 1989. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (south Florida). Black, red and Nassau groupers. Biol. Rep. US Fish Wildlife Serv., 30 pp.

Kennedy, V.S., R.R. Twilley, J.A. Kleypas, J.H. Cowan, Jr., and S.R. Hare. 2002. Coastal and Marine Ecosystems & Global Climate Change: Potential Effects on U.S. Resources. Pew Center on Global Climate Change. 52 p.

MacIntyre, I.G. and J.D. Milliman. 1970. Physiographic features on the outer shelf and upper slope, Atlantic Continental Margin, southeastern United States. Geological Society of America Bulletin 81:2577-2598.

McGovern, J.C., J.M. Burgos, P.J. Harris, G.R. Sedberry, J.K. Loefer, O. Pashuk, and D. Russ. 2002. Aspects of the Life History of Red Grouper, *Epinephelus morio*, Along the Southeastern United States. MARFIN Final Report NA97FF0347.

Miller, G.C. and W.J. Richards. 1979. Reef fish habitat, faunal assemblages and factors determining distributions in the South Atlantic Bight. Proceedings of the Gulf and Caribbean Fisheries Institute 32:114-130.

Moe, M.A., Jr. 1969. Biology of the red grouper Epinephelus morio (Valenciennes) from the eastern Gulf of Mexico. Florida Department of Natural Resoures, Marine Resource Labratory Proffessor Paper Series 10:1-95.

Newton J. G., O. H. Pilkey, and J. O. Blanton. 1971. An Oceanographic Atlas of the Carolina and continental margin. North Carolina Dept. of Conservation and Development. 57 pp.

Needham, H., D. Brown, and L. Carter. 2012. Impacts and adaptation options in the Gulf coast. Report prepared for the Center for Climate and Energy Solutions. 38 pp.

NMFS. 2016. Endangered Species Act Section 7 consultation on the Continued Authorization of Snapper Grouper Fishing under the South Atlantic Snapper Grouper Fishery Management Plan (RFFMP) and Proposed Regulatory Amendment 16. Biological Opinion. December 1.

Overstreet, E., L. Perruso, C. Leise. 2018. Economics of the South Atlantic Snapper-Grouper Fishery-2016. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-SEFSC-730, 110 pp.

Parker, R.O., D.R. Colby and T.D. Willis. 1983. Estimated amount of reef habitat on a portion of the U.S. South Atlantic and Gulf of Mexico Continental Shelf. Bulletin of Marine Science 33:935-940.

SAFMC 1983. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.

SAFMC 1991. Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility

Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC 1998a. Amendment 11 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC 1998b. Amendment 9 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC 2006. Amendment 13C to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC 2008a. Amendment 15A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC 2008b. Amendment 15B to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Biological Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. 324 pp. plus appendices.

SAFMC 2009. Amendment 16 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC 2010. Amendment 17B to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. 406 pp. plus appendices.

SAFMC 2011a. Comprehensive Annual Catch Limit Amendment for the South Atlantic Region with Final Environmental Impact Statement, Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2011b. Amendment 24 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Regulatory Flexibility Analysis,

Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2011c. Comprehensive Ecosystem Based Amendment 2 with Final Environmental Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. 101 pp. with appendices.

SAFMC 2011d. Regulatory Amendment 9 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405

SAFMC 2012. Amendment 25 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2013. Regulatory Amendment 15 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2015. Generic Accountability Measures (AM) and Dolphin Allocation Amendment (including Amendment 34 to the Snapper Grouper FMP, Amendment 9 to the Golden Crab FMP, and Amendment 8 to the Dolphin and Wahoo FMP) with Final Environmental Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2016. Regulatory Amendment 25 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2017. Abbreviated Framework Amendment 1 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Regulatory Impact Review and Regulatory Flexibility Act Analysis. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2018. South Atlantic Fishery Management Council Fishery Ecosystem Plan II. http://safmc.net/fishery-ecosystem-plan-ii-introduction/.

SAFMC 2019a. Vision Blueprint Commercial Regulatory Amendment 27 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Regulatory Impact Review

and Regulatory Flexibility Act Analysis. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC 2019b. Vision Blueprint Recreational Regulatory Amendment 26 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Regulatory Impact Review and Regulatory Flexibility Act Analysis. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SEDAR 19. 2010. Stock Assessment Report. South Atlantic Red Grouper. Southeast Data, Assessment and Review, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. Available at: http://www.sefsc.noaa.gov/sedar/.

SEDAR 53. 2017. Stock Assessment Report. South Atlantic Red Grouper. Southeast Data, Assessment and Review, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. Available at: http://www.sefsc.noaa.gov/sedar/.

Appendix A. Glossary

Allowable Biological Catch (ABC): Maximum amount of fish stock than can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

ALS: Accumulative Landings System. NMFS database which contains commercial landings reported by dealers.

Biomass: Amount or mass of some organism, such as fish.

B_{MSY}: Biomass of population achieved in long-term by fishing at F_{MSY}.

Bycatch: Fish harvested in a fishery, but not sold or kept for personal use. Bycatch includes economic discards and regulatory discards, but not fish released alive under a recreational catch and release fishery management program.

Catch Per Unit Effort (CPUE): The amount of fish captured with an amount of effort. CPUE can be expressed as weight of fish captured per fishing trip, per hour spent at sea, or through other standardized measures.

Charter Boat: A fishing boat available for hire by recreational anglers, normally by a group of anglers for a short time period.

Cohort: Fish born in a given year. (Refer to year class.)

Control Date: Date established for defining the pool of potential participants in a given management program. Control dates can establish a range of years during which a potential participant must have been active in a fishery to qualify for a quota share.

Constant Catch Rebuilding Strategy: A rebuilding strategy where the allowable biological catch of an overfished species is held constant until stock biomass reaches B_{MSY} at the end of the rebuilding period.

Constant F Rebuilding Strategy: A rebuilding strategy where the fishing mortality of an overfished species is held constant until stock biomass reached B_{MSY} at the end of the rebuilding period.

Directed Fishery: Fishing directed at a certain species or species group.

Discards: Fish captured, but released at sea.

Discard Mortality Rate: The % of total fish discarded that do not survive being captured and released at sea.

Derby: Fishery in which the TAC is fixed and participants in the fishery do not have individual quotas. The fishery is closed once the TAC is reached, and participants attempt to maximize their harvests as quickly as possible. Derby fisheries can result in capital stuffing and a race for fish.

Effort: The amount of time and fishing power (i.e., gear size, boat size, horsepower) used to harvest fish.

Exclusive Economic Zone (EEZ): Zone extending from the shoreline out to 200 nautical miles in which the country owning the shoreline has the exclusive right to conduct certain activities such as fishing. In the United States, the EEZ is split into state waters (typically from the shoreline out to 3 nautical miles) and federal waters (typically from 3 to 200 nautical miles).

Exploitation Rate: Amount of fish harvested from a stock relative to the size of the stock, often expressed as a percentage.

F: Fishing mortality.

Fecundity: A measurement of the egg-producing ability of fish at certain sizes and ages.

Fishery Dependent Data: Fishery data collected and reported by fishermen and dealers.

Fishery Independent Data: Fishery data collected and reported by scientists who catch the fish themselves.

Fishery Management Plan: Management plan for fisheries operating in the federal produced by regional fishery management councils and submitted to the Secretary of Commerce for approval.

Fishing Effort: Usually refers to the amount of fishing. May refer to the number of fishing vessels, amount of fishing gear (nets, traps, hooks), or total amount of time vessels and gear are actively engaged in fishing.

Fishing Mortality: A measurement of the rate at which fish are removed from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Fishing Power: Measure of the relative ability of a fishing vessel, its gear, and its crew to catch fishes, in reference to some standard vessel, given both vessels are under identical conditions.

$F_{30\%SPR}$: Fishing mortality that will produce a static SPR = 30%.

$F_{45\%SPR}$: Fishing mortality that will produce a static SPR = 45%.

F_{OY}: Fishing mortality that will produce OY under equilibrium conditions and a corresponding biomass of B_{OY}. Usually expressed as the yield at 85% of F_{MSY}, yield at 75% of F_{MSY}, or yield at 65% of F_{MSY}.

F_{MSY}: Fishing mortality that if applied constantly, would achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}.

$F_{REBUILD}$: Fishing mortality rate that will rebuild the stock to SSB_{MSY} in the given amount of time with the given probability.

Fork Length (FL): The length of a fish as measured from the tip of its snout to the fork in its tail.

Framework: An established procedure within a fishery management plan that has been approved and implemented by NMFS, which allows specific management measures to be modified via regulatory amendment.

Gear restrictions: Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

Generation Time: In the context of the National Standard Guidelines, generation time is a measure of the time required for a female to produce a reproductively-active female offspring for use in setting maximum allowable rebuilding time periods.

Growth Overfishing: When fishing pressure on small fish prevents the fishery from producing the maximum poundage. Condition in which the total weight of the harvest from a fishery is improved when fishing effort is reduced, due to an increase in the average weight of fishes.

Gulf of Mexico Fishery Management Council (GMFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The GFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Headboat: A fishing boat that charges individual fees per recreational angler onboard.

Highgrading: Form of selective sorting of fishes in which higher value, more marketable fishes are retained, and less marketable fishes, which could legally be retained are discarded.

Individual Fishing Quota (IFQ): Fishery management tool that allocates a certain portion of the TAC to individual vessels, fishermen, or other eligible recipients.

Longline: Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. Gear is either fished on the bottom or in the water column.

Magnuson-Stevens Fishery Conservation and Management Act: Federal legislation responsible for establishing the fishery management councils and the mandatory and discretionary guidelines for federal fishery management plans.

Marine Recreational Information Program (MRIP): Survey operated by NMFS in cooperation with states that collects marine recreational data.

Maximum Fishing Mortality Threshold (MFMT): The rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized.

Maximum Sustainable Yield (MSY): The largest long-term average catch that can be taken continuously (sustained) from a stock or stock complex under average environmental conditions.

Minimum Stock Size Threshold (MSST): The biomass level below which a stock would be considered overfished.

Modified F Rebuilding Strategy: A rebuilding strategy where fishing mortality is changed as stock biomass increases during the rebuilding period.

Multispecies fishery: Fishery in which more than one species is caught at the same time and location with a particular gear type.

National Marine Fisheries Service (NMFS): Federal agency within NOAA responsible for overseeing fisheries science and regulation.

National Oceanic and Atmospheric Administration: Agency within the Department of Commerce responsible for ocean and coastal management.

Natural Mortality (M): A measurement of the rate at which fish are removed from a population by natural causes. Natural mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Optimum Yield (OY): The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Overfished: A stock or stock complex is considered overfished when stock biomass falls below the minimum stock size threshold (MSST) (e.g., current biomass < MSST = overfished).

Overfishing: Overfishing occurs when a stock or stock complex is subjected to a rate of fishing mortality that exceeds the maximum fishing mortality threshold (e.g., current fishing mortality rate > MFMT = overfishing).

Quota: % or annual amount of fish that can be harvested.

Recruitment (R): Number or percentage of fish that survives from hatching to a specific size or age.

Recruitment Overfishing: The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

Scientific and Statistical Committee (SSC): Fishery management advisory body composed of federal, state, and academic scientists, which provides scientific advice to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fisheries Management Council (South Atlantic Council): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The SAFMC develops fishery management plans for fisheries off North Carolina, South Carolina, Georgia, and the east coast of Florida.

Spawning Potential Ratio (Transitional SPR): Formerly used in overfished definition. The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR) of a fished stock divided by the SSBR of the stock before it was fished.

% Spawning Per Recruit (Static SPR): Formerly used in overfishing determination. The maximum spawning per recruit produced in a fished stock divided by the maximum spawning per recruit, which occurs under the conditions of no fishing. Commonly abbreviated as %SPR.

Spawning Stock Biomass (SSB): The total weight of those fish in a stock which are old enough to spawn.

Spawning Stock Biomass Per Recruit (SSBR): The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

Total Allowable Catch (TAC): The total amount of fish to be taken annually from a stock or stock complex. This may be a portion of the Allowable Biological Catch (ABC) that takes into consideration factors such as bycatch.

Total Length (TL): The length of a fish as measured from the tip of the snout to the tip of the tail.

Appendix B. Letter from NMFS SERO to SAFMC

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

F/SER25:FH

September 27, 2017

Dr. Michelle Duval, Chair
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
North Charleston, South Carolina 29405

Dear Dr. Duval:

NOAA Fisheries has determined management action is necessary for red grouper in the South Atlantic region as the stock is undergoing overfishing and is overfished, and is not making adequate rebuilding progress pursuant to section 304(e) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

In 2010, a Southeast Data, Assessment, and Review benchmark assessment (SEDAR 19) was completed for red grouper. SEDAR 19 determined that red grouper was undergoing overfishing and overfished. In response, the South Atlantic Fishery Management Council (Council) and NOAA Fisheries implemented management measures to end overfishing and begin a 10-year rebuilding plan that started in 2011. In February 2017, a standard assessment was completed, which indicated that the red grouper stock is currently undergoing overfishing and is overfished and cannot rebuild by 2020 (SEDAR 53). The Council's Scientific and Statistical Committee reviewed SEDAR 53 and determined that the assessment is based on the best scientific information available.

Following Council notification that a stock is undergoing overfishing and overfished and is not making adequate rebuilding progress, the Magnuson-Stevens Act requires the Council and NOAA Fisheries to prepare and implement a plan amendment and regulations within two years of the notice to end overfishing immediately and rebuild the affected stock.

NOAA Fisheries recommends that the Council revise the rebuilding plan for South Atlantic red grouper based on the results of SEDAR 53. Two recruitment scenarios were presented in the assessment: long-term (expected) recruitment and low recruitment. Due to the effects of possible episodic recruitment, the Council could consider using the expected recruitment scenario when revising the rebuilding plan and timeframe. Additionally, the Council could take a conservative approach by adopting new annual catch limits based on the low recruitment scenario to increase the likelihood of stock rebuilding.

I look forward to working with the Council to develop a plan to end overfishing and rebuild the red grouper stock.

Sincerely,

Roy E. Crabtree, Ph.D.
Regional Administrator

Cc: F/SEC - Bonnie Ponwith
F/SER2 - Jack McGovern
F/SER25 - Rick DeVictor

Appendix C. Red Grouper Projections

Red grouper revised projections prepared by the NMFS Southeast Fisheries Science Center, Issued November 2018. For the full report, please refer to http://safmc.net/download/Briefing%20Book%20Council%20Mtg%20Dec%202018/TAB%2005%20-%20Snapper%20Grouper/TAB05_A03c_Revised_Red_Grouper_Projections.pdf.

Red Grouper Projections

Prepared by NMFS Southeast Fisheries Science Center

Issued: November 2018

Introduction

In a memorandum dated June 23, 2017, from Gregg Waugh to Dr. Bonnie Ponwith, the SAFMC requested revised red grouper projections (Appendix 1). That request was fulfilled in a report from the NMFS SEFSC issued in August 2017. In a second memorandum dated October 30, 2018 from John Carmichael to Dr. Clay Porch, the SAFMC requested additional revised projections (Appendix 2). This report fulfills the second request. Specifically, the requested projection analyses included the following:

1. Yield and stock conditions to 2027 and 2029 based on fishing mortality rate of F=0, with recruitment based on long-term average recruitment.

2. Yield and stock conditions to 2027 and 2029 based on fishing mortality rate of F= $F_{REBUILD}$, with recruitment based on long-term average recruitment.

Methods

Except for modifications to accommodate the request, the projection methods were identical to those used in the SEDAR53 stock assessment of red grouper. In these revised analyses, fishing mortality rates take effect in 2020, and landings in 2016–2019 were fixed at levels requested in the memorandum (207,561 lb in 2016; 141,182 lb in 2017; 139,000 lb in 2018; and 150,000 lb in 2019; all in units of whole weight). For item 2 above, the $F_{REBUILD}$ scenario achieves stock recovery ($SSB>SSB_{MSY}$) with probability of at least 50% in the specified year.

- Scenario 1: F=0 with long-term average recruitment
- Scenario 2: F=$F_{REBUILD}$ with long-term average recruitment and stock recover (0.5 probability) in 2027
- Scenario 3: F=$F_{REBUILD}$ with long-term average recruitment and stock recovery (0.5 probability) in 2029

All projections were run through 2029. Note that the scenario based on F=0 to 2027 is contained within Scenario 1. Also, note that the value of $F_{REBUILD}$ differs between Scenarios 2 and 3.

Results

Results are tabulated in Tables 1–3, and presented graphically in Figures 1–5. In Scenario 2, $F_{REBUILD}=64\%F_{MSY}$, and in Scenario 3, $F_{REBUILD}=76\%F_{MSY}$.

Table 1. Scenario 1 projection results with F=0 starting in 2020 and long-term average recruitment. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), 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_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	323	265	0.11	0.12	885	844	19	19	208	208	32	28	52	50	0
2017	320	260	0.08	0.08	962	918	13	13	141	141	28	25	53	48	0
2018	327	267	0.06	0.07	1124	1072	15	14	139	139	27	24	56	51	0.002
2019	340	278	0.06	0.06	1358	1294	17	17	150	150	24	22	53	48	0.012
2020	354	288	0	0	1673	1585	0	0	0	0	0	0	0	0	0.05
2021	368	300	0	0	2096	1984	0	0	0	0	0	0	0	0	0.143
2022	381	317	0	0	2561	2420	0	0	0	0	0	0	0	0	0.283
2023	391	327	0	0	3054	2884	0	0	0	0	0	0	0	0	0.437
2024	398	334	0	0	3559	3360	0	0	0	0	0	0	0	0	0.58
2025	404	341	0	0	4065	3831	0	0	0	0	0	0	0	0	0.697
2026	408	348	0	0	4562	4304	0	0	0	0	0	0	0	0	0.788
2027	412	348	0	0	5044	4768	0	0	0	0	0	0	0	0	0.853
2028	414	354	0	0	5504	5213	0	0	0	0	0	0	0	0	0.901
2029	417	359	0	0	5941	5642	0	0	0	0	0	0	0	0	0.935

Figure C-1. Scenario 1 projection results with F=0 starting in 2020 and long-term average recruitment.

Table 2. Scenario 2 projection results with F= $F_{REBUILD}$ starting in 2020, long-term average recruitment, and stock recovery (0.5 probability) occurring in 2027. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), 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_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	323	265	0.11	0.12	885	844	19	19	208	208	32	28	52	50	0
2017	320	260	0.08	0.08	962	918	13	13	141	141	28	25	53	48	0
2018	327	267	0.06	0.07	1124	1072	15	14	139	139	27	24	56	51	0.002
2019	340	278	0.06	0.06	1358	1294	17	17	150	150	24	22	53	48	0.012
2020	354	288	0.08	0.08	1634	1547	29	28	257	251	35	30	77	66	0.041
2021	367	299	0.08	0.08	1906	1793	33	32	303	295	36	31	79	68	0.078
2022	376	313	0.08	0.08	2176	2039	37	36	348	339	37	32	81	71	0.134
2023	383	320	0.08	0.08	2435	2274	40	39	391	381	38	33	84	73	0.202
2024	388	324	0.08	0.08	2680	2497	43	42	431	419	39	34	85	76	0.275
2025	393	330	0.08	0.08	2906	2701	46	45	468	455	39	35	87	77	0.352
2026	396	335	0.08	0.08	3114	2893	48	47	502	488	40	35	88	78	0.427
2027	399	335	0.08	0.08	3302	3071	51	49	533	518	40	36	89	79	0.503
2028	401	341	0.08	0.08	3472	3236	52	51	560	545	40	36	89	80	0.573
2029	403	344	0.08	0.08	3623	3387	54	52	585	569	41	36	90	81	0.634

Figure C-2. Scenario 2 projection results with F=REBUILD starting in 2020, long-term average recruitment, and stock recovery (0.5 probability) occurring in 2027.

Table 3. Scenario 3 projection results with F= $F_{REBUILD}$ starting in 2020, long-term average recruitment, and stock recovery (0.5 probability) occurring in 2029. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), 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_{MSY}. The extension "b" indicates expected values (deterministic) from the base run; the extension "med" indicates median values from the stochastic projections.

Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.base(w)	D.med(w)	pr.reb
2016	323	265	0.11	0.12	885	844	19	19	208	208	32	28	52	50	0
2017	320	260	0.08	0.08	962	918	13	13	141	141	28	25	53	48	0
2018	327	267	0.06	0.07	1124	1072	15	14	139	139	27	24	56	51	0.002
2019	340	278	0.06	0.06	1358	1294	17	17	150	150	24	22	53	48	0.012
2020	354	288	0.09	0.1	1627	1539	34	33	303	296	42	36	91	78	0.04
2021	366	298	0.09	0.1	1872	1759	39	37	353	344	43	37	93	80	0.07
2022	375	312	0.09	0.1	2110	1974	43	41	400	389	44	38	95	83	0.112
2023	381	318	0.09	0.1	2335	2175	46	44	443	431	45	39	97	85	0.161
2024	386	322	0.09	0.1	2542	2362	49	47	483	469	45	40	99	88	0.215
2025	390	328	0.09	0.1	2731	2532	52	50	520	504	46	40	100	89	0.273
2026	394	333	0.09	0.1	2903	2690	54	52	553	536	46	41	102	91	0.333
2027	396	332	0.09	0.1	3056	2836	56	54	583	565	47	42	103	92	0.388
2028	398	338	0.09	0.1	3193	2970	58	56	609	591	47	42	103	93	0.448
2029	400	342	0.09	0.1	3313	3094	59	57	633	614	47	42	104	94	0.501

Figure C-3. Scenario 3 projection results with F=REBUILD starting in 2020, long-term average recruitment, and stock recovery (0.5 probability) occurring in 2029.

Appendix D. History of Management

Updated: 4/25/2019

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. The following table summarizes actions in each of the amendments to the original Snapper Grouper Fishery Management Plan (FMP), as well as some events not covered in amendment actions.

Table D-1. History of Management for the Snapper Grouper Fishery of the South Atlantic Region. The table includes the amendment number, year the document was submitted, major actions, rule-making publication information and effective dates of the actions. *Shaded rows indicate FMP Amendments

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Original Snapper Grouper FMP (1983)	08/31/83	PR: 48 FR 26843 FR: 48 FR 39463	-12" total length (TL) limit – red snapper, yellowtail snapper, red grouper, Nassau grouper; -8" limit – black sea bass; -4" trawl mesh size; -Gear limitations – poisons, explosives, fish traps, trawls; -Designated modified habitats or artificial reefs as Special Management Zones (SMZs).
Regulatory Amendment #1 (1987)	03/27/87	PR: 51 FR 43937 FR: 52 FR 9864	-Prohibited fishing in SMZs except with hand-held hook-and-line and spearfishing gear; -Prohibited harvest of goliath grouper in SMZs.
Amendment #1 (1988a)	01/12/89	PR: 53 FR 42985 FR: 54 FR 1720	-Prohibited trawl gear to harvest fish south of Cape Hatteras, NC and north of Cape Canaveral, FL; -Directed fishery defined as vessel with trawl gear and ≥200 lb s-g on board; -Established rebuttable assumption that vessel with s-g on board had harvested such fish in the exclusive economic zone (EEZ).
Regulatory Amendment #2 (1988b)	03/30/89	PR: 53 FR 32412 FR: 54 FR 8342	-Established 2 artificial reefs off Ft. Pierce, FL as SMZs.
Emergency Rule	8/3/90	55 FR 32257	-Added wreckfish to the fishery management unit (FMU); -Fishing year beginning 4/16/90; -Commercial quota of 2 million pounds; -Commercial trip limit of 10,000 pounds per trip.
Fishery Closure Notice	8/8/90	55 FR 32635	- Fishery closed because the commercial quota of 2 million pounds was reached.
Notice of Control Date	09/24/90	55 FR 39039	-Anyone entering federal wreckfish fishery in the EEZ off S. Atlantic states after 09/24/90 was not assured of future access if limited entry program developed.
Regulatory Amendment #3 (1989)	11/02/90	PR: 55 FR 28066 FR: 55 FR 40394	-Established artificial reef at Key Biscayne, FL as SMZ; -Fish trapping, bottom longlining, spear fishing, and harvesting of Goliath grouper prohibited in SMZ.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #2 (1990a)	10/30/90	PR: 55 FR 31406 FR: 55 FR 46213	-Prohibited harvest/possession of goliath grouper in or from the EEZ; -Defined overfishing for goliath grouper and other species.
Emergency Rule Extension	11/1/90	55 FR 40181	-Extended the measures implemented via emergency rule on 8/3/90.
Amendment #3 (1990b)	01/31/91	PR: 55 FR 39023 FR: 56 FR 2443	-Added wreckfish to the FMU; -Defined optimum yield (OY) and overfishing; -Required permit to fish for, land or sell wreckfish; -Required catch and effort reports from selected, permitted vessel; -Established control date of 03/28/90; -Established a fishing year for wreckfish starting April 16; -Established a process to set annual quota, with initial quota of 2 million pounds; provisions for closure; -Established 10,000 pound trip limit; -Established a spawning season closure for wreckfish from January 15 to April 15; -Provided for annual adjustments of wreckfish management measures.
Notice of Control Date	07/30/91	56 FR 36052	-Anyone entering federal snapper grouper fishery (other than for wreckfish) in the EEZ off S. Atlantic states after 07/30/91 was not assured of future access if limited entry program developed.
Amendment #4 (1991)	01/01/92	PR: 56 FR 29922 FR: 56 FR 56016	-Prohibited gear: fish traps except black sea bass traps north of Cape Canaveral, FL; entanglement nets; longline gear inside 50 fathoms; bottom longlines to harvest wreckfish; powerheads and bangsticks in designated SMZs off S. Carolina. -Defined overfishing/overfished and established rebuilding timeframe: red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, black sea bass, red porgy ≤ 10 years (year 1 = 1991); -Required permits (commercial & for-hire) and specified data collection regulations; -Established an assessment group and annual adjustment procedure (framework); -Permit, gear, and vessel id requirements specified for black sea bass traps; -No retention of snapper grouper spp. caught in other fisheries with gear prohibited in snapper grouper fishery if captured snapper grouper had no bag limit or harvest was prohibited. If had a bag limit, could retain only the bag limit; -8” TL limit – lane snapper; -10” TL limit – vermilion snapper (recreational only); -12” TL limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton,

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers; -20" TL limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers; -28" fork length (FL) limit – greater amberjack (recreational only); -36" FL or 28" core length – greater amberjack (commercial only); -Bag limits – 10 vermilion snapper, 3 greater amberjack -Aggregate snapper bag limit – 10/person/day, excluding vermilion snapper and allowing no more than 2 red snappers; -Aggregate grouper bag limit – 5/person/day, excluding Nassau and goliath grouper, for which no retention (recreational & commercial) is allowed; -Spawning season closure – commercial harvest greater amberjack > 3 fish bag prohibited in April; -Spawning season closure – commercial harvest mutton snapper >snapper aggregate prohibited during May and June; -Charter/headboats and excursion boat possession limits extended.
Amendment #5 (1992a)	04/06/92	PR: 56 FR 57302 FR: 57 FR 7886	For wreckfish: -Established limited entry system with individual transferable quotas (ITQs); -Required dealer to have permit; -Rescinded 10,000 lb. trip limit; -Required off-loading between 8 am and 5 pm; -Reduced occasions when 24-hour advance notice of offloading required for off-loading; -Established procedure for initial distribution of percentage shares of total allowable catch (TAC).
Emergency Rule	8/31/92	57 FR 39365	For Black Sea Bass (bsb): -Modified definition of bsb pot; -Allowed multi-gear trips for bsb; -Allowed retention of incidentally-caught fish on bsb trips.
Emergency Rule Extension	11/30/92	57 FR 56522	For Black Sea Bass: -Modified definition of bsb pot; -Allowed multi-gear trips for bsb; -Allowed retention of incidentally-caught fish on bsb trips.
Regulatory Amendment #4 (1992b)	07/06/93	FR: 58 FR 36155	-For Black Sea Bass: -Modified definition of bsb pot; -Allowed multi-gear trips for bsb; -Allowed retention of incidentally-caught fish on bsb trips.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Regulatory Amendment #5 (1992c)	07/31/93	PR: 58 FR 13732 FR: 58 FR 35895	-Established 8 SMZs off South Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed.
Amendment #6 (1993)	06/27/94	PR: 59 FR 9721 FR: 59 FR 27242	-Set up separate commercial TAC levels for golden tilefish and snowy grouper; -Established commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper; -Included golden tilefish in grouper recreational aggregate bag limits; -Prohibited sale of warsaw grouper and speckled hind; -100% logbook coverage upon renewal of permit; -Creation of the *Oculina* Experimental Closed Area; -Data collection needs specified for evaluation of possible future individual fishing quota system.
Amendment #7 (1994a)	01/23/95	PR: 59 FR 47833 FR: 59 FR 66270	-12" FL – hogfish; -16" TL – mutton snapper; -Required dealer, charter and headboat federal permits; -Allowed sale under specified conditions; -Specified allowable gear and made allowance for experimental gear; -Allowed multi-gear trips in NC; -Added localized overfishing to list of problems and objectives; -Adjusted bag limit and crew specs. for charter and head boats; -Modified management unit for scup to apply south of Cape Hatteras, NC; -Modified framework procedure.
Regulatory Amendment #6 (1994b)	05/22/95	PR: 60 FR 8620 FR: 60 FR 19683	-Established actions which applied only to EEZ off Atlantic coast of FL: Bag limits – 5 hogfish/person/day (recreational only), 2 cubera snapper/person/day > 30" TL; 12" TL – gray triggerfish.
Notice of Control Date	04/23/97	62 FR 22995	-Anyone entering federal black sea bass pot fishery off South Atlantic states after 04/23/97 was not assured of future access if limited entry program developed.
Interim Rule Request	1/16/98		-The South Atlantic Fishery Management Council (South Atlantic Council) requested all Amendment 9 measures except black sea bass pot construction changes be implemented as an interim request under the Magnuson-Stevens Act.
Action Suspended	5/14/98		-NMFS informed the South Atlantic Council that action on the interim rule request was suspended.
Emergency Rule Request	9/24/98		-South Atlantic Council requested Amendment 9 be implemented via emergency rule.
Amendment #8 (1997)	12/14/98	PR: 63 FR 1813 FR: 63 FR 38298	-Established program to limit initial eligibility for snapper grouper fishery: -Must have demonstrated landings of any species in the snapper grouper FMU in 1993, 1994, 1995 or 1996; and have held valid snapper grouper permit between 02/11/96 and 02/11/97;

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			-Granted transferable permit with unlimited landings if vessel landed ≥ 1,000 pounds (lb) of snapper grouper species in any of the years; -Granted non-transferable permit with 225 lb trip limit to all other vessels; -Modified problems, objectives, OY, and overfishing definitions; -Expanded the South Atlantic Council's habitat responsibility; -Allowed retention of snapper grouper species in excess of bag limit on permitted vessel with a single bait net or cast nets on board; -Allowed permitted vessels to possess filleted fish harvested in the Bahamas under certain conditions.
Request not Implemented	1/22/99		-NMFS informed the South Atlantic Council that the final rule for Amendment 9 would be effective 2/24/99; therefore they did not implement the emergency rule.
Regulatory Amendment #7 (1998a)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	-Established 10 SMZs at artificial reefs off South Carolina.
Amendment #9 (1998b)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	-Red porgy: 14" TL (recreational and commercial); 5 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April; -Black sea bass: 10" TL (recreational and commercial); 20 fish rec. bag limit; required escape vents and escape panels with degradable fasteners in bsb pots; -Greater amberjack: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lb; began fishing year May 1; prohibited coring; -Vermilion snapper: 11" TL (recreational), 12" TL commercial; -Gag: 24" TL (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April; -Black grouper: 24" TL (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April; -Gag and Black grouper: within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination); -All snapper grouper without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runner; -Vessels with longline gear aboard may only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Emergency Action	9/3/99	64 FR 48326	-Reopened the Amendment 8 permit application process.
Emergency Interim Rule	09/08/99, expired 08/28/00	64 FR 48324 and 65 FR 10040	-Prohibited harvest or possession of red porgy.
Amendment #10 Comprehensive Essential Fish Habitat Amendment (1998c)	07/14/00	PR: 64 FR 37082 and 64 FR 59152 FR: 65 FR 37292	-Identified essential fish habitat (EFH) and established habitat areas of particular concern (HAPC) for species in the snapper grouper FMU.
Amendment #11 Comprehensive Sustainable Fisheries Act Amendment (1998d)	12/02/99	PR: 64 FR 27952 FR: 64 FR 59126	-Maximum sustainable yield (MSY) proxy: goliath and Nassau grouper = 40% static spawning potential ratio (SPR); all other species = 30% static SPR; -OY: hermaphroditic groupers = 45% static SPR goliath and Nassau grouper = 50% static SPR;all other species = 40% static SPR -Overfished/overfishing evaluations: BSB: overfished (minimum stock size threshold (MSST)=3.72 mp, 1995 biomass=1.33 mp); undergoing overfishing (maximum fishing mortality threshold (MFMT)=0.72, F1991-1995=0.95) Vermilion snapper: overfished (static SPR = 21-27%) Red porgy: overfished (static SPR = 14-19%). Red snapper: overfished (static SPR = 24-32%) Gag: overfished (static SPR = 27%) Scamp: no longer overfished (static SPR = 35%) Speckled hind: overfished (static SPR = 8-13%) Warsaw grouper: overfished (static SPR = 6-14%) Snowy grouper: overfished (static SPR = 5-15%) White grunt: no longer overfished (static SPR = 29-39%) Golden tilefish: overfished (couldn't estimate static SPR) Nassau grouper: overfished (couldn't estimate static SPR) Goliath grouper: overfished (couldn't estimate static SPR) -overfishing level: goliath and Nassau grouper = F>F40% static SPR; all other species: = F>F30% static SPR Approved definitions for overfished and overfishing. MSST = [(1-M) or 0.5 whichever is greater]*B_{MSY}. MFMT = F_{MSY}.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #12 (2000a)	09/22/00	PR: 65 FR 35877 FR: 65 FR 51248	For Red porgy: -MSY=4.38 mp; OY=45% static SPR; MFMT=0.43; MSST =7.34 mp; rebuilding timeframe=18 years (1999=year 1); -no sale of red porgy during Jan-April; -1 fish bag limit; -50 lb. bycatch commercial trip limit May-December; -Modified management options and list of possible framework actions.
Regulatory Amendment #8 (2000b)	11/15/00	PR: 65 FR 41041 FR: 65 FR 61114	-Established 12 SMZs at artificial reefs off Georgia; revised boundaries of 7 existing SMZs off Georgia to meet CG permit specs; restricted fishing in new and revised SMZs.
Amendment #9 (1998b) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	-Commercial trip limit for greater amberjack.
Amendment #13A (2003)	04/26/04	PR: 68 FR 66069 FR: 69 FR 15731	-Extended for an indefinite period the regulation prohibiting fishing for and possessing snapper grouper species within the *Oculina* Experimental Closed Area.
Notice of Control Date	10/14/05	70 FR 60058	-Considered management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding wreckfish).
Amendment #13C (2006)	10/23/06	PR: 71 FR 28841 FR: 71 FR 55096	-End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006; 1. Snowy Grouper Commercial: -Quota = 151,000 lb gutted weight (gw) in year 1, 118,000 lb gw in year 2, and 84,000 lb gw in year 3 onwards. -Trip limit = 275 lb gw in year 1, 175 lb gw in year 2, and 100 lb gw in year 3 onwards; Recreational: -Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit; 2. Golden Tilefish Commercial: Quota of 295,000 lb gw, 4,000 lb gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lb gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1; Recreational: Limited possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit; 3. Vermilion Snapper Commercial: Quota of 1,100,000 lb gw; Recreational: 12” TL size limit. 4. Black Sea Bass

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			Commercial: Quota of 477,000 lb gw in year 1, 423,000 lb gw in year 2, and 309,000 lb gw in year 3 onwards; -Required use of at least 2" mesh for the entire back panel of black sea bass pots effective 6 months after publication of the final rule; -Required black sea bass pots be removed from the water when the quota is met; -Changed fishing year from calendar year to June 1 – May 31; Recreational: Recreational allocation of 633,000 lb gw in year 1, 560,000 lb gw in year 2, and 409,000 lb gw in year 3 onwards. Increased the minimum size limit from 10" to 11" in year 1 and to 12" in year 2; -Reduced recreational bag limit from 20 to 15 per person per day; -Changed fishing year from the calendar year to June 1 through May 31. 5. Red Porgy Commercial and recreational: -Retained 14" TL size limit and seasonal closure (retention limited to the bag limit); -Specified a commercial quota of 127,000 lb gw and prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April; -Increased commercial trip limit from 50 lb ww to 120 red porgy (210 lb gw) during May through December; -Increased recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	-Considered measures to limit participation in the snapper grouper for-hire sector.
Amendment #14 (2007)	2/12/09	PR: 73 FR 32281 FR: 74 FR 1621	-Established eight deepwater Type II marine protected areas (MPAs) to protect a portion of the population and habitat of long-lived deepwater snapper grouper species.
Amendment #15A (2008a)	3/14/08	73 FR 14942	- Established rebuilding plans and status determination criteria for snowy grouper, black sea bass, and red porgy.
Notice of Control Date	12/4/08	74 FR 7849	-Established a control date for the golden tilefish portion of the snapper grouper fishery in the South Atlantic.
Notice of Control Date	12/4/08	74 FR 7849	-Established control date for black sea bass pot sector in the South Atlantic.
Amendment #15B (2008b)	12/16/09, except for the amendments to § 622.18(c) was effective 11/16/2009; the	PR: 74 FR 30569 FR: 74 FR 58902	-Prohibited the sale of snapper-grouper harvested or possessed in the EEZ under the bag limits and prohibited the sale of snapper-grouper harvested or possessed under the bag limits by vessels with a Federal charter vessel/headboat permit for South Atlantic snapper-grouper regardless of where harvested;

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
	amendment to § 622.10(c) was effective 2/16/2010; and §§ 622.5, 622.8, and 622.18(b)(1)(ii) required OMB approval.		-Reduced the effects of incidental hooking on sea turtles and smalltooth sawfish; -Adjusted commercial permit renewal periods and transferability requirements; -Revised the management reference points for golden tilefish; -Implemented plan to monitor and assess bycatch; -Required a vessel that fished in the EEZ, if selected by NMFS, to carry an observer and install electronic logbook and/or video monitoring equipment provided by NMFS; -Established allocations for snowy grouper (95% commercial & 5% recreational); -Established allocations for red porgy (50% commercial & 50% recreational).
Amendment #16 (2009a)	7/29/09	PR: 74 FR 6297 FR: 74 FR 30964	-Specified status determination criteria for gag and vermilion snapper; For gag: -Specified interim allocations 51% commercial & 49% recreational; -Recreational and commercial shallow water grouper spawning closure January through April; -Directed commercial quota= 352,940 lb gw; -Reduced 5-fish aggregate grouper bag limit, including tilefish species, to a 3-fish aggregate; -Captain and crew on for-hire trips cannot retain the bag limit of vermilion snapper and species within the 3-fish grouper aggregate; For vermilion snapper: -Specified interim allocations 68% commercial & 32% recreational; -Directed commercial quota split Jan-June=315,523 lb gw and 302,523 lb gw July-Dec; -Reduced bag limit from 10 to 4 and a recreational closed season November through March; -Required possession of dehooking tools when catching snapper grouper species to reduce recreational and commercial bycatch mortality.
Amendment #19 Comprehensive Ecosystem-Based Amendment 1 (CE-BA1) (2009b)	7/22/10	PR: 75 FR 14548 FR: 75 FR 35330	-Amended coral, coral reefs, and live/hardbottom habitat FMP to establish deepwater coral HAPCs; -Created a "shrimp fishery access area" (SFAA) within the Stetson-Miami Terrace CHAPC boundaries; -Created allowable "golden crab fishing areas" with the Stetson-Miami Terrace CHAPC and Pourtales Terrace CHAPC boundaries.
Amendment #17A (2010a)	12/3/10 red snapper closure; circle	PR: 75 FR 49447 FR: 75 FR 76874	-Required use of non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural bait north of 28 deg. N latitude in the South Atlantic EEZ;

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
	hooks 3/3/2011		-Specified an annual catch limit (ACL) and an accountability measure (AM) for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL; -Specified a rebuilding plan for red snapper; -Specified status determination criteria for red snapper; -Specified a fishery-independent monitoring program for red snapper. -Implemented an area closure for snapper-grouper species.
Emergency Rule	12/3/10	75 FR 76890	-Delayed the effective date of the area closure for snapper grouper species implemented through Amendment 17A.
Amendment #17B (2010b)	1/31/11	PR: 75 FR 62488 FR: 75 FR 82280	-Specify ACL of 0 and prohibit fishing for speckled hind and warsaw grouper; -Prohibited harvest of 6 deepwater species seaward of 240 feet to curb bycatch of speckled hind and warsaw grouper (snowy grouper, blueline tilefish, yellowedge grouper, misty grouper, queen snapper, silk snapper). -Specify allocations (97% commercial, 3% recreational), ACLs and AMs for golden tilefish; -Modified management measures as needed to limit harvest to the ACL or ACT; -Updated the framework procedure for specification of total allowable catch; -Specified ACLs, ACTs, and AMs, where necessary, for 9 species undergoing overfishing (snowy grouper, black grouper, black sea bass, red grouper, vermilion snapper, gag, speckled hind, warsaw grouper, golden tilefish);
Notice of control date	1/31/11	76 FR 5325	Anyone entering federal snapper grouper fishery off S. Atlantic states after 09/17/10 was not assured of future access if limited entry program developed.
Regulatory Amendment #9 (2010a)	Bag limit: 6/22/11 Trip limits: 7/15/11	PR: 76 FR 23930 FR: 76 FR 34892	-Established trip limits for vermilion snapper and gag; -Increased trip limit for greater amberjack; - Set black sea bass recreational bag limit at 5 fish per person per day
Regulatory Amendment #10 (2010b)	5/31/11	PR: 76 FR 9530 FR: 76 FR 23728	-Eliminated closed area for snapper grouper species approved in Amendment 17A.
Regulatory Amendment #11 (2011c)	5/10/12	PR: 76 FR 78879 FR: 77 FR 27374	-Eliminated 240 ft harvest prohibition for six deepwater species (snowy grouper, blueline tilefish, yellowedge grouper, queen snapper, silk snapper, misty grouper);

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment # 25 Comprehensive Annual Catch Limit Amendment (2011d)	4/16/12	PR: 76 FR 74757 Amended PR: 76 FR 82264 FR: 77 FR 15916	-Reorganize FMUs to 6 complexes (deepwater, jacks, snappers, grunts, shallow-water groupers, porgies) (refer to final rule for species list); -Established acceptable biological catch (ABC) control rules and established ABCs, ACLs, and AMs for species not undergoing overfishing; -Established jurisdictional ABC allocations between the SAFMC and GMFMC for yellowtail snapper, mutton snapper, and black grouper; -Removed some species from South Atlantic FMU (Tiger grouper, black margate, blue-striped grunt, French grunt, porkfish, smallmouth grunt, queen triggerfish, crevalle, yellow jack, grass porgy, sheepshead, puddingwife); -Designated species as ecosystem component species (schoolmaster, ocean triggerfish, bank triggerfish, rock triggerfish, longspine porgy); -Specified allocations between the commercial and, recreational sectors for species not undergoing overfishing; -Limited the total mortality for federally managed species in the South Atlantic to the ACLs.
Amendment #24 (2011e)	7/11/12	PR: 77 FR 19169 FR: 77 FR 34254	-Rebuilding plan (including MSY, ACLs, AMs, and OY, and allocations) for red grouper.
Amendment #23 Comprehensive Ecosystem-based Amendment 2 (CE-BA2) (2011f)	1/30/12	PR: 76 FR 69230 FR: 76 FR 82183	-Designated the Deepwater MPAs as EFH-HAPCs; -Modify management measures for Octocoral; -Limit harvest of snapper grouper species in SC SMZs to the bag limit; -Modify sea turtle release gear; -Designated new EFP for pelagic Sargassum habitat.
Amendment #18A (2012a)	7/1/12	PR: 77 FR 16991 FR: 77FR3 2408	-Modified the rebuilding strategy, ABC , ACL, ACT for black sea bass; -Limited participation and effort in the black sea bass sector; -Modifications to management of the black sea bass pot sector; -Improved data reporting (accuracy, timing, and quantity of fisheries statistics).
Amendment #20A (2012b)	10/26/12	PR: 77 FR 19165 FR: 77 FR 59129	- Individual transfer quota (ITQ) program for wreckfish: -Defined and reverted inactive shares; -Redistributed reverted shares; -Established a share cap; -Established an appeals process.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Regulatory Amendment #12 (2012c)	10/9/12	PR: 77 FR 42688 FR: 77 FR 61295	-Revised the ACL and OY for golden tilefish; -Revised recreational AMs for golden tilefish;
Yellowtail snapper Emergency Rule	11/7/2012, through 5/6/2013	77 FR 66744	-Increased the commercial ACL for yellowtail snapper from 1,142,589 lb to 1,596,510 lb.
Amendment #18B (2013a)	5/23/13	PR: 77 FR 75093 FR: 77 FR 23858	For Golden Tilefish: -Limited participation and effort in the commercial sector through establishment of a longline endorsement; -Established eligibility requirements and allowed transferability of longline endorsement; -Established an appeals process; -Modified trip limits; -Specified allocations and ACLs for gear groups (longline:7 % and hook-and-line:25%);
Amendment #28 (2013b)	8/23/13	PR: 78 FR 25047 FR: 78 FR 44461	-Established regulations to allow harvest of red snapper in the South Atlantic (formula used to compute ACLs, AMs, fishing seasons).
Regulatory Amendment #13 (2013c)	7/17/13	PR: 78 FR 17336 FR: 78 FR 36113	-Revised the ABCs, ACLs (including sector ACLs), and ACTs for 37 species implemented by the Comprehensive ACL Amendment (refer to final rule for list of species). The revisions may prevent a disjunction between the established ACLs and the landings used to determine if AMs are triggered.
Regulatory Amendment #15 (2013d)	9/12/13	PR: 78 FR 31511 FR: 78 FR 49183	-Modified ACLs and OY for yellowtail snapper; -Modified the gag commercial ACL and AM to remove the requirement that all other shallow water groupers (black grouper, red grouper, scamp, red hind, rock hind, graysby, coney, yellowmouth grouper, and yellowfin grouper) are prohibited from harvest in the South Atlantic when the gag commercial ACL is met or projected to be met.
Regulatory Amendment #18 (2013e)	9/5/13	PR: 78 FR 26740 FR: 78 FR 47574	-Revised ACLs and OY for vermilion snapper; -Modified commercial trip limit for vermilion snapper; -Modified commercial fishing season and recreational closed season for vermilion snapper; -Revised ACLs and OY for red porgy.
Regulatory Amendment #19 (2013f)	ACL: 9/23/13 Pot closure: 10/23/13	PR: 78 FR 39700 FR: 78 FR 58249	-Specified ABC, and adjusted the ACL, recreational ACT and OY for black sea bass; -Implemented an annual closure on the use of black sea bass pots from November 1 to April 30.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #27 (2013g)	1/27/2014	PR:78 FR 78770 FR: 78 FR 57337	-Established the South Atlantic Council as the responsible entity for managing Nassau grouper throughout its range including federal waters of the Gulf of Mexico; -Modified the crew member limit on dual-permitted snapper grouper vessels; -Modified the restriction on retention of bag limit quantities of some snapper grouper species by captain and crew of for-hire vessels; -Minimized regulatory delay when adjustments to snapper grouper species' ABC, ACLs, and ACTs are needed as a result of new stock assessments; -Removed blue runner from snapper grouper FMP; -Addressed harvest of blue runner by commercial fishermen who do not possess a South Atlantic Snapper Grouper Permit.
Amendment #31 Joint South Atlantic and Gulf of Mexico Generic Headboat Reporting Amendment (2013h)	1/27/2014	PR: 78 FR 59641 FR: 78 FR 78779	-Required electronic reporting for headboat vessels at weekly intervals.
Blueline Tilefish Emergency Rule	4/17/2014 through 10/10/2014 or 4/18/2015	PR: 79 FR 21636 FR:79 FR 61262	-Removed the blueline tilefish portion from the deep-water complex ACL; -Established separate commercial and recreational ACLs and AMs for blueline tilefish.
Generic Dealer Amendment (2013i)	8/7/2014	PR: 79 FR 81 FR: 79 FR 19490	- Modified permitting and reporting requirements for seafood dealers who first receive fish managed by the SA and Gulf through eight FMPs.
Regulatory Amendment #14 (2014a)	12/8/2014	PR: 79 FR 22936 FR: 79 FR 66316	-Modified the commercial and recreational fishing year for greater amberjack; -Modified the commercial and recreational sector fishing years for black sea bass; -Modified the recreational AM for black sea bass; -Modified the recreational AM for vermilion snapper; -Modify the commercial trip limit for gag.
Regulatory Amendment # 21 (2014b)	11/6/2014	PR: 79 FR 44735 FR: 79 FR 60379	-Modified the definition of the overfished threshold (MSST) for red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #29 (2014c)	7/1/2015	NOA: 79 FR 69819 PR: 79 FR 72567 FR: 80 FR 30947	-Updated the ABC control rule to incorporate methodology for determining the ABC of unassessed species; -Adjusted the ABCs for fourteen unassessed snapper-grouper species (refer to final rule); -Adjusted the ACLs and ACTs for three species complexes and four snapper-grouper species based on revised ABCs; -Established ACLs for unassessed species; -Modified gray triggerfish minimum size limits; -Established a commercial split season and commercial trip limits for gray triggerfish.
Regulatory Amendment #20 (2014d)	8/20/2015	PR: 80 FR 18797 FR: 80 FR 43033	-Adjusted the recreational and commercial ACLs for snowy grouper; -Adjusted the rebuilding strategy; -Modified the commercial trip limit; -Modified recreational bag limit; -Modified the recreational fishing season.
Amendment #32 (2014e)	3/30/2015	PR: 80 FR 3207 FR: 80 FR 16583	-End overfishing of blueline tilefish; -Removed blueline tilefish from the deepwater complex; -Specified AMs, ACLs, recreational ACLs, commercial trip limit, adjust recreational bag limit for blueline tilefish; -Specified ACLs and revised the AMs for the recreational section of the deepwater complex (yellowedge grouper, silk snapper, misty grouper, queen snapper, sand tilefish, black snapper, and blackfin snapper);
Regulatory Amendment #22 (2015a)	9/11/2015, except for the amendments to §§ 622.190(b) and 622.193(r)(1) which were effective 8/12/2015	PR: 80 FR 31880 FR: 80 FR 48277	-Adjusted ACLs and OY for gag and wreckfish;
Amendment # 33 Dolphin Wahoo Amendment 7 and Snapper Grouper Amendment 33 (2015b)	12/28/2015	NOA:80 FR 55819 PR:80 FR 60601 FR:80 FR 80686	-Allowed dolphin and wahoo fillets to enter the U.S. EEZ after lawful harvest in The Bahamas; -Specified the condition of any dolphin, wahoo, and snapper-grouper fillets; -Described how the recreational bag limit is determined for any fillets; -Prohibited the sale or purchase of any dolphin, wahoo, or snapper-grouper recreationally harvested in The Bahamas; -Specified the required documentation to be onboard any vessels that have these fillets;

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			-Specified transit and stowage provisions for any vessels with fillets.
Amendment #34 Generic Accountability Measures and Dolphin Allocation Amendment (2015c)	2/22/2016	NOA:80 FR 41472 PR:80 FR 58448 FR:81 FR 3731	-Modified AMs for snapper-grouper species (golden tilefish, snowy grouper, gag, red grouper, black grouper, scamp, the shallow-water grouper complex (SASWG: red hind, rock hind, yellowmouth grouper, yellowfin grouper, coney, and graysby), greater amberjack, the jacks complex (lesser amberjack, almaco jack, and banded rudderfish), bar jack, yellowtail snapper, mutton snapper, the snappers complex (cubera snapper, gray snapper, lane snapper, dog snapper, and mahogany snapper), gray triggerfish, wreckfish (recreational sector), Atlantic spadefish, hogfish, red porgy, the porgies complex (jolthead porgy, knobbed porgy, whitebone porgy, scup, and saucereye porgy); -Modified the AM for commercial golden crab fishery; -Adjusted sector allocations for dolphin.
Notice of Control Date	6/15/16	76 FR 66244	-Fishermen entering the federal for-hire recreational sector for the Snapper Grouper fishery after June 15, 2016, will not be assured of future access should a management regime that limits participation in the sector be prepared and implemented.
Amendment #35 (2015d)	6/22/2016	NOA:81 FR 6222 PR:81 FR 11502 FR:81 FR 32249	-Removed black snapper, dog snapper, mahogany snapper, and schoolmaster from the Snapper-Grouper FMP; -Clarified regulations governing the use of Golden Tilefish Longline Endorsements.
Regulatory Amendment #16 (2016a)	12/29/2016 (closure) 1/30/2017 (gear markings)	NOI: 78 FR 72868 PR: 81 FR 53109 FR: 81 FR 95893	-Revise the area where fishing with black sea bass pots is prohibited from Nov.1-April 30. -Add additional gear marking requirements for black sea bass pot gear.
Regulatory Amendment #25 (2016b)	8/12/2016 except changes to blueline tilefish, effective 7/13/2016.	PR: 81 FR 34944 FR: 81 FR 45245	-Revised commercial and recreational ACL for blueline tilefish; -Revised the recreational bag limit for black sea bass; -Revised the commercial and recreational fishing year for yellowtail snapper.
Amendment #36 (2016d)	7/31/17	NOI: 82 FR 810 PR: 82 FR 5512 FR:82 FR 29772	-Established SMZs to enhance protection for snapper-grouper species in spawning condition including speckled hind and warsaw grouper.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #37 (2016c)	8/24/17	NOI: 80 FR 45641 NOA: 81 FR 69774 PR: 81 FR 91104 FR:82 FR 34584	-Modified the hogfish fishery management unit; -Specified fishing levels for the two South Atlantic hogfish stocks; -Established a rebuilding plan for the Florida Keys/East Florida stock; -Established/revised management measures for both hogfish stocks in the South Atlantic Region, such as size limits, recreational bag limits, and commercial trip limits.
Red Snapper Emergency Rule (2017a)	Effective 11/2/2017, through 11/31/2017. The recreational red snapper season opened on 11/3/2017, and closed on 11/6/2017; then reopened on 11/10/2017, and closed on 11/13/2017. The commercial red snapper season opened on 11/2/2017.	FR: 82 FR 50839	-Allowed for the limited harvest and possession of red snapper in 2017 by changing the process used to set the ACL, as requested by the South Atlantic Council; -These rules also announced the opening and closing dates of the 2017 recreational fishing season and the opening date for the 2017 commercial fishing season for red snapper
Golden Tilefish Interim Rule (2017b)	1/2/2018 through 7/1/2018 and 7/2/2018 through 1/3/2019	PR: 82 FR 50101 FR: 83 FR 65 FR EXT: 83 FR 28387	-Reduced the golden tilefish total ACL, the commercial and recreational sector ACLs, and the quotas for the hook-and-line and longline components of the commercial sector.
Amendment #41 (2017c)	2/10/2018	NOA:82 FR 44756 PR:82 FR 49167 FR:83 FR 1305	-Updated the MSY, ABC, ACL, OY, MSST; -Designated spawning months of April through June for regulatory purposes; -Revised management measures for mutton snapper including the minimum size limit (18 inches total length), recreational bag limit (five mutton snapper per person per day within the ten-snapper aggregate), and commercial trip limit (500 pounds whole weight during January through March and July through December; and during the April through June spawning season, of five mutton snapper per person per day, or five mutton snapper per person per trip, whichever is more restrictive).

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #43 (2017d)	7/26/2018	NOI:82 FR 1720 NOA: 83 FR 16282 PR:83 FR 22939 FR:83 FR35428	-Actions addressed overfishing of red snapper by specifying recreational and commercial ACLs beginning in 2018;
Amendment #39 (Generic Electronic For-Hire Reporting Amendment) (2017e)	TBD	NOA:83 FR 11164 PR:83 FR 14400	-Weekly electronic reporting for charter vessel operators with a federal for-hire permit; -Reduce the time allowed for headboat operators to complete electronic reports; -Requires location reporting by charter vessels with the same detail currently required for headboat vessels.
Abbreviated Framework Amendment 1: Red Grouper (2017f)	8/27/2018	PR:83 FR 14234 FR:83 FR35435	-Adjust the ACLs for South Atlantic red grouper in response to the results of the latest stock assessment.
Regulatory Amendment #28 (2018a)	1/4/2019	PR: 83 FR 48788 FR: 83 FR 62508	-Ended overfishing of golden tilefish by reducing the ACL based on the most recent stock assessment.
Abbreviated Framework Amendment 2 (2018b)	Effective 5/9/2019. The black sea bass recreational season notification is effective from 4/9/2019, until 12:01 a.m., local time, 4/1/2020	PR: 84 FR 4758 FR:84 FR 14021	-Adjusted the ACLs for South Atlantic vermilion snapper and black sea bass in response to the results of the latest stock assessments.
Regulatory Amendment #26 (Vision Blueprint Recreational)	TBD	TBD	-Establish deep-water species aggregate, establish recreational season for deep-water species, modify aggregate bag limit for deep-water species aggregate and 20-fish aggregate, reduce the minimum size limit for gray triggerfish off east FL (recreational) & remove the minimum size limit (recreational) for deep-water snappers (silk, queen, blackfin)
Regulatory Amendment #27 (Vision Blueprint Commercial)	TBD	TBD	-Commercial split seasons (snowy grouper, greater amberjack, red porgy), trip limit modifications (blueline tilefish, vermilion snapper), trip limit for Other Jacks Complex, minimum size limit (commercial only) for almaco jack; reduce minimum size limit for gray triggerfish off east FL & remove the minimum size (commercial) limit for deep-water snappers (silk, queen, blackfin)

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Regulatory Amendment #29	TBD	TBD	-Best fishing practices & powerheads
Regulatory Amendment #30	TBD	TBD	-Revise the rebuilding schedule for red grouper -Modify the seasonal prohibition on recreational and commercial harvest of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina -Establish a commercial trip limit for red grouper
Regulatory Amendment #32	TBD	N/A (On hold)	-Revise accountability measures for yellowtail snapper to reduce the possibility of in-season closures.
Amendment #42	TBD	TBD	-Modification to sea turtle release gear and SG framework
Amendment #45 ABC Control Rule	TBD	TBD	-Modify the ABC control rule; -Specify an approach for determining the acceptable risk of overfishing and the probability of rebuilding success for overfished stocks; -Allow phase-in of ABC changes; and -Allow carry-over of unharvested catch.
Recreational Accountability Measures	TBD	TBD	-Modify the recreational AMs for the recreational sector.

References:

SAFMC (South Atlantic Fishery Management Council). 1983. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1987. Regulatory Amendment 1 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1988a. Amendment 1 and Environmental Assessment and Regulatory Impact Review to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 63 pp.

SAFMC (South Atlantic Fishery Management Council). 1988b. Regulatory Amendment 2 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1989. Regulatory Amendment 3 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1990a. Amendment 2, to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1990b. Amendment 3, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1991. Amendment 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 200 pp.

SAFMC (South Atlantic Fishery Management Council). 1992a. Amendment 5 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1992b. Regulatory Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1992c. Regulatory Amendment 5 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1993. Amendment Number 6, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 155 pp.

SAFMC (South Atlantic Fishery Management Council). 1994a. Amendment 7, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 110 pp.

SAFMC (South Atlantic Fishery Management Council). 1994b. Regulatory Amendment 6 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1997. Amendment 8, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 124 pp.

SAFMC (South Atlantic Fishery Management Council). 1998a. Regulatory Amendment 7 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998b. Amendment 9, Final Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 246 pp.

SAFMC (South Atlantic Fishery Management Council). 1998c. Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (Amendment 10 to the Snapper Grouper Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1998d. Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and Other Required Provisions in Fishery Management Plans of the South Atlantic Region (Amendment 11 to the Snapper Grouper Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 151 pp.

SAFMC (South Atlantic Fishery Management Council). 2000a. Amendment Number 12, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 2000b. Regulatory Amendment 8 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 2003. Amendment 13A, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 2006. Amendment 13C, Final Environmental Assessment, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 631 pp.

SAFMC (South Atlantic Fishery Management Council). 2007. Amendment 14, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2008a. Amendment 15A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management

Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2008b. Amendment 15B, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2009a. Amendment 16, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2009b. Comprehensive Ecosystem Based Amendment 1, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for South Atlantic Region (Amendment 19 to the Snapper Grouper FMP). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. 286 pp.

SAFMC (South Atlantic Fishery Management Council). 2010a. Amendment 17A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2010b. Amendment 17B, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011a. Regulatory Amendment 9, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011b. Regulatory Amendment 10, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011c. Regulatory Amendment 11, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011d. Comprehensive Annual Catch Limit Amendment (Amendment 25 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011e. Amendment 24 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011f. Comprehensive Ecosystem Based Amendment 2, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. (Amendment 23 to the Snapper Grouper FMP). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2012a. Amendment 18A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2012b. Amendment 20A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2012c. Regulatory Amendment 12, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013a. Amendment 18B to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013b. Amendment 28 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region . South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013c. Regulatory Amendment 13 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region . South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013d. Regulatory Amendment 15 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region . South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013e. Regulatory Amendment 18 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region . South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013f. Regulatory Amendment 19 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013g. Amendment 27 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013h. Joint Headboat Reporting Amendment (Amendment 31). South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013i. Modifications to federally permitted seafood dealer reporting requirements. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014a. Regulatory Amendment 14 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014b. Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014c. Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014d. Regulatory Amendment 20 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014e. Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2015a. Regulatory Amendment 15 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2015b. Amendment 33 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2015c. Amendment 34 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2015d. Amendment 35 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2016a. Regulatory Amendment 16 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2016b. Regulatory Amendment 25 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2016c. Amendment 37 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2016d. Amendment 36 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2017a. Red Snapper Emergency Rule to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2017b. Golden Tilefish Interim Rule to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2017c. Amendment 41 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2017d. Amendment 43 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2017e. Amendment 39 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Modifications to Charter Vessel and Headboat Reporting Requirements (Generic For-hire Reporting Amendment). South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2017f. Abbreviated Framework Amendment 1: Red Grouper to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2018a. Regulatory Amendment 28 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2018b. Abbreviated Framework Amendment 2 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

Appendix E. Regulatory Impact Review (RIR)

Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest to satisfy our obligations under Executive Order (E.O.) 12866, as amended. In conjunction with the analysis of direct and indirect effects in the "Environmental Consequences" section of this Amendment, the RIR: 1) provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way. The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order (E.O.) 12866. In addition, the RIR provides some information that may be used in conducting an analysis of the effects on small entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the effects this regulatory action would be expected to have on the commercial sector of the South Atlantic snapper grouper fishery.

Problems and Objectives

The problems and objectives for the proposed actions are presented in **Section 1.4** of this amendment and are incorporated herein by reference.

Description of Fisheries

A description of the commercial and recreational sectors in the snapper grouper fishery of the South Atlantic region is provided in **Section 3.3** of this amendment and is incorporated herein by reference.

Effects of Management Measures

Action 1. Revise the Rebuilding Schedule for Red Grouper

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.1.2**. The following discussion summarizes the expected economic effects of the preferred South Atlantic Fishery Management Council (South Atlantic Council) option relative to the No Action alternative (i.e., the status quo).

A rebuilding schedule does not impose direct economic effects, as it does not directly constrain harvest or fishing effort. There are potential indirect economic effects that can occur due to a rebuilding schedule, as the length of the rebuilding period selected can determine how future, long term economic

benefits from an improved stock, such as improved catch rates and increased allowable catch limits may accrue; with shorter rebuilding periods potentially accruing benefits sooner than longer rebuilding periods. **Preferred Alternative 4** would provide the longest rebuilding period of 10 years and hence the lowest implied economic benefits.

Action 2. Modify the seasonal prohibition on recreational harvest and possession of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.2.2**. The following discussion summarizes the expected economic effects of the preferred South Atlantic Council option relative to the No Action alternative (i.e., the status quo).

In general, providing increased protection for spawning aggregations of red grouper that results in improvements in stock abundance and biomass would create indirect, long-term, positive economic effects presumably through the availability of increased numbers of fish in the future. However, there can be some direct, short-term negative economic effects as fewer fish would be available to harvest until the current red grouper population grows to the point where the biomass of harvestable fish increases.

Preferred Alternative 2 would modify the duration of the prohibition, specifically for red grouper in the exclusive economic zone (EEZ) off North Carolina and South Carolina. Increasing the duration of the red grouper prohibition or shifting the dates of the prohibition off the Carolinas (**Preferred Sub-alternative 2a**) would be expected to reduce landings of red grouper in the short-term and, consequently, consumer surplus (CS) as well. In relation to overall harvest, the projected marginal decrease from modifying the seasonal prohibition on recreational possession of red grouper in the EEZ off South Carolina and North Carolina is less than 1% of the total catch in the region, signaling a likely minimal impact on CS in the recreational sector. While the overall economic effects are expected to be minor, some CS may be lost on trips when red grouper are caught but must be discarded due to changes in the annual prohibition in **Preferred Sub-alternative 2a**. The anticipated short-term decrease in CS from **Preferred Sub-alternative 2a** is $4,219 (2017 dollars).

In addition to the described reductions in CS, there is the potential that angler demand for for-hire (charter and headboat) trips could decrease, creating the possibility of decreased booking rates and for-hire business net operating revenue (NOR). Due to the complex nature of angler behavior and the for-hire industry, it is not possible to quantify these potential economic effects with available data. As such, no estimates of the change in for-hire NOR are provided, although they may exist. The small change or marginal increase in the spawning season closure combined with relatively low catch rates of red grouper in the recreational sector and several other substitute grouper species being available, suggests that any short-term negative economic effects on the for-hire industry would be minimal.

Long-term indirect economic benefits in the form of potentially greater future harvest rates and corresponding CS would be expected to occur if the modified prohibition on red grouper off North Carolina and South Carolina provides enhanced protection to spawning fish and biological benefits for the red grouper stock. **Preferred Sub-alternative 2a** would provide these long-term, potentially positive economic effects.

Action 3. Modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the Exclusive Economic Zone off South Carolina and North Carolina

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.3.2**. The following discussion summarizes the expected economic effects of the preferred South Atlantic Council option relative to the No Action alternative (i.e., the status quo).

In general, providing increased protection for spawning aggregations of red grouper that results in improvements in stock abundance and biomass would create indirect, long-term, positive economic effects presumably through the availability of increased numbers of fish in the future. However, there can be some direct, short-term negative economic effects as fewer fish would be available to harvest until the current red grouper population grows to the point where the biomass of harvestable fish increases.

Increasing the duration of the red grouper prohibition or shifting the dates of the prohibition off the Carolinas (**Preferred Sub-alternative 2a**) would be expected to reduce landings of red grouper and consequently gross revenue, net cash flow, and net revenue as well. The anticipated short-term change in gross revenue, net cash flow, and net revenue from **Preferred Sub-alternative 2a** is -$31,573, -$13,261, and -$7,546 respectively (2017 dollars).

In addition to the reductions in ex-vessel value stated above, changes in the open season for red grouper may have varying effects on individual harvesters that fish off of North Carolina and South Carolina. These would depend on each harvester's profit maximization strategy, their dependence on red grouper, their seasonal fishing behavior, and their ability to adapt to the changing regulations. Unfortunately, these individual-level economic effects cannot be quantified with available data.

Long-term indirect economic benefits in the form of greater future harvest rates and corresponding revenue would be expected to occur if the modified prohibition on red grouper off North Carolina and South Carolina provides enhanced protection to spawning fish and biological benefits for the red grouper stock. **Preferred Sub-alternative 2a** would provide these long-term, potentially positive economic effects.

Action 4. Establish a commercial trip limit for red grouper harvested in the South Atlantic Exclusive Economic Zone

A detailed analysis and discussion of the expected economic effects of the proposed action is included in **Section 4.4.2**. The following discussion summarizes the expected economic effects of the preferred South Atlantic Council option relative to the No Action alternative (i.e., the status quo).

Generally, trip limits are not considered to be economically efficient because they require an increase in the number of trips and associated trip costs to land the same amount of fish. However, the negative economic effects of this inefficiency can be offset by price support resulting from the supply limitations and the lengthening of seasons. Given the annual catch limit (ACL) for red grouper that restricts maximum harvest to sustainable levels, the alternative with the fewest number of trips that have to stop retaining red grouper because the trip limit has been reached would result in the least amount of direct negative economic effects, assuming the season does not close.

The sub-alternatives of **Preferred Alternative 2** set commercial trip limits for red grouper. The lower the trip limit, the more likely some commercial vessels will experience direct negative economic effects from reduced revenue from red grouper. The majority of commercial trips landing red grouper record fewer than 75 pounds gutted weight of the species, indicating that there will be no direct economic effects

that occur from the sub-alternatives of **Preferred Alternative 2** on many commercial trips that take place in the South Atlantic Region. Trip limits on red grouper may however reduce profitability for commercial vessels on some trips through a reduction in revenue and efficiency. Cumulatively, the commercial landings of red grouper are expected to decrease along with gross revenue, net cash flow, and net revenue. The anticipated short-term change in gross revenue, net cash flow, and net revenue from **Preferred Sub-alternative 2d** under the assumption of Preferred Sub-alternative 2a in Action 3 is -$17,725, -$7,445, and -$4,236 respectively (2017 dollars).

Public Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources which can be expressed as costs associated with the regulations. Costs to the private sector are discussed in the effects of management measures. Estimated public costs associated with this action include:

South Atlantic Council costs of document preparation, meetings, public hearings, and information dissemination	$20,000
NMFS administrative costs of document preparation, meetings and review	$20,000
TOTAL	$40,000

The estimate provided above does not include any law enforcement costs. Any enforcement duties associated with this action would be expected to be covered under routine enforcement costs rather than an expenditure of new funds. The South Atlantic Council and NMFS administrative costs directly attributable to this amendment and the rulemaking process would be incurred prior to the effective date of the final rule implementing this amendment.

Net Benefits of Regulatory Action

In terms of net benefits, actions identified to increase CS are also expected to increase net economic benefits, with the opposite effect for actions that decrease CS. It is important to specify the time period being considered when evaluating benefits and costs. According to OMB's FAQs regarding Circular A-4,[17] "When choosing the appropriate time horizon for estimating costs and benefits, agencies should consider how long the regulation being analyzed is likely to have resulting effects. The time horizon begins when the regulatory action is implemented and ends when those effects are expected to cease. Ideally, analysis should include all future costs and benefits. Here as elsewhere, however, a 'rule of reason' is appropriate, and the agency should consider for how long it can reasonably predict the future and limit its analysis to this time period. Thus, if a regulation has no predetermined sunset provision, the agency will need to choose the endpoint of its analysis on the basis of a judgment about the foreseeable future."

For current purposes, the reasonably "foreseeable future" is considered to be the next 5 years. There are two primary reasons for considering the next 5 years the appropriate time period for evaluating the benefits and costs of this regulatory action rather than a longer (or shorter) time period. First, this

[17] See p. 4 at https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/OMB/circulars/a004/a-4_FAQ.pdf

regulatory action does not include a predetermined sunset provision. Second, based on the history of management in the snapper-grouper fishery in the South Atlantic, regulations such as those considered in this amendment are often revisited within 5 years or so.

The analyses of the net changes in economic benefits indicates an annual decrease of $16,001 (2017 dollars). In discounted terms and over a 5-year time period, the total net present value of this change in net economic benefits is -$65,607 using a 7% discount rate and -$73,280 using a 3% discount rate (2017 dollars). The estimated non-discounted public costs resulting from the regulation are $40,000 (2017 dollars). The costs resulting from the amendment and the associated rulemaking process should not be discounted as they will be incurred prior to the effective date of the final rule.

Based on the quantified economic effects, this regulatory action is expected to decrease net benefits to the Nation. Over a 5-year time period, the quantified change in net economic benefits is expected to be -$105,607 using a 7% discount rate and -$113,280 using a 3% discount rate (2017 dollars).

Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: 1) an annual effect of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; 2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; 3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, these actions have been determined to not be economically significant for the purposes of E.O. 12866.

Appendix F. Initial Regulatory Flexibility Analysis (IRFA)

Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA does not contain any decision criteria; instead, the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of the alternatives contained in the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) or amendment (including framework management measures and other regulatory actions) and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the Snapper Grouper FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. In addition to analyses conducted for the regulatory impact review, an initial regulatory flexibility analysis provides: (1) a description of the reasons why action by the agency is being considered; (2) a succinct statement of the objectives of and legal basis for the proposed rule; (3) an identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; (4) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; (5) a description of the projected reporting, record-keeping, and other compliance requirements of the rule, including an estimate of the classes of small entities that will be subject to the requirements of the report or record; and (6) a description of significant alternatives to the proposed rule which accomplish the stated objectives of applicable statues and which minimize any significant economic impact of the proposed rule on small entities.

Statement of the need for, objective of, and legal basis for the proposed rule.

The need for and objectives of, the proposed action are presented in Section 1.5 and are incorporated herein by reference. The Magnuson-Stevens Act provides the statutory basis for this proposed rule.

Identification of federal rules which may duplicate, overlap or conflict with the proposed rule.

No federal rules have been identified that duplicate, overlap or conflict with the rule.

Description and estimate of the number of small entities to which the proposed action would apply

The rule concerns commercial and recreational fishing for red grouper in the South Atlantic exclusive economic zone (EEZ). Both anglers (recreational fishers) and commercial fishing businesses would be directly affected by this rule; however, anglers are not considered small entities as that term is defined in 5 U.S.C. 601(6), whether fishing from for-hire fishing, private or leased vessels. Therefore, estimates of the number of anglers affected by the rule and impacts on them are not provided here. For-hire fishing businesses would be indirectly affected, and because the effects on for-hire fishing businesses are indirect, they fall outside the scope of the RFA.

The rule would directly apply to businesses that operate in the commercial fishing industry (NAICS code 11411) and particularly, those that operate commercial fishing vessels that harvest red grouper in the South Atlantic EEZ. Any commercial fishing vessel that harvests red grouper in those waters must have either a valid trip-unlimited or trip-limited (225 lbs) snapper grouper permit that is specifically assigned to that vessel. The permit is a limited access permit.

From 2013 through 2017, an annual average of 694 vessels had a snapper grouper permit: 573 trip-unlimited and 121 trip-limited permit (National Marine Fisheries Service [NMFS] SERO). From 2015 through 2017, those annual averages are 680 vessels: 563 with trip-unlimited and 117 with 225-lb permit. Approximately 73% to 74% of the permits are held by entities residing in Florida (Table F-1). Entities residing in the southeast coastal states combine to hold approximately 99% of the permits. More recently as of March 3, 2019, there were 639 vessels with the permit: 531 vessels with a trip-unlimited permit and 108 with a trip-limited permit.

Table F-1. Number of snapper grouper permits by southeast coastal state, 2013-2017. Source: NMFS SERO Permit Counts.

Year	FL	GA	NC	SC	Other	Total
2013	533	6	120	52	10	721
2014	522	6	120	53	8	709
2015	508	7	116	52	9	692
2016	496	8	115	52	10	681
2017	479	7	123	53	6	668
2013-2017 Average	508	7	119	52		694
2015-2017 Average	494	7	118	52		680

Most vessels with the permit do not report landings of red grouper. From 2013 through 2017, an annual average of 225 (32.4%) of the 694 permitted vessels reported red grouper landings, and the number that do has declined. From 2015 through 2017, an annual average of 210 vessels (30.9%) of the 680 permitted vessels landed red grouper (**Figure F-1**). Larger percentages of permitted North Carolina and South Carolina vessels land red grouper than permitted Florida and Georgia vessels (**Table F-2**). On average, approximately half of the permitted South Carolina vessels report landing red grouper while less than a third of the Florida and Georgia vessels do so. Note that there are permitted vessels that land red grouper in more than one state or combined Florida/Georgia.

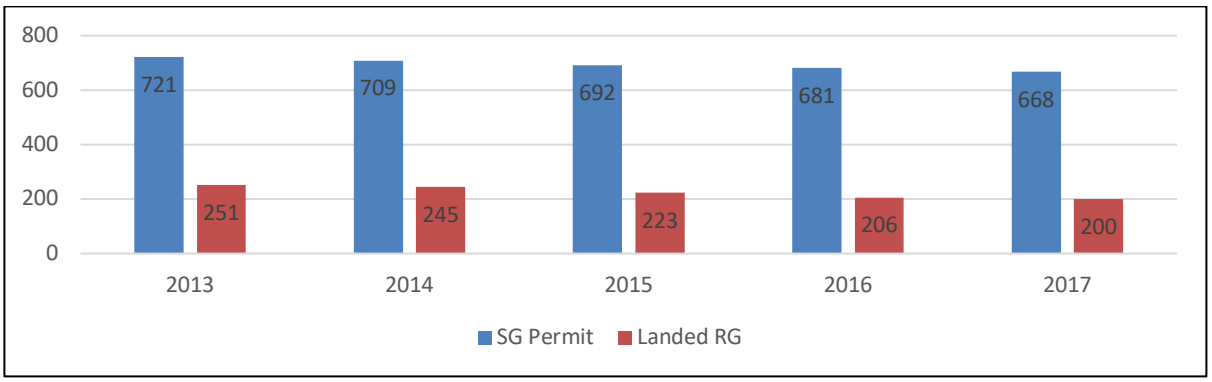

Figure F-1. Numbers of vessels with snapper grouper permit and those with permit that landed red grouper, 2013 - 2017. Source: NMFS SERO Permit Counts for number with permits and SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019) for number of vessels with reported red grouper landings.

Table F-2. Numbers of vessels with snapper grouper (SG) permit and those that landed red grouper (RG), and percentage of permitted vessels that landed red grouper by southeast coastal state, 2013-2017.

Year	FL & GA[1]			NC			SC		
	SG Permits	Landed RG	Percent Landed RG	SG Permits	Landed RG	Percent Landed RG	SG Permits	Landed RG	Percent Landed RG
2013	539	154	28.6%	120	70	58.3%	52	31	59.6%
2014	528	162	30.7%	120	58	48.3%	53	28	52.8%
2015	515	145	28.2%	116	53	45.7%	52	26	50.0%
2016	504	129	25.6%	115	54	47.0%	52	24	46.2%
2017	486	127	26.1%	123	50	40.7%	53	23	43.4%
2013-2017 Average	**514**	**143**	**27.8%**	**119**	**57**	**48.0%**	**52**	**26**	**50.4%**
2015-2017 Average	**502**	**134**	**26.6%**	**118**	**52**	**44.4%**	**52**	**24**	**46.5%**

Source: NMFS SERO Permit Counts for number with permits and SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019) for number of vessels with reported red grouper landings.

1. Number of Florida and Georgia vessels are combined to avoid disclosure of confidential information.

Because of the declining trend in the number of permitted vessels that land red grouper, this analysis uses for comparative purposes the 5-year and 3-year averages of permitted vessels that land red grouper annually. From 2013 through 2017, an annual average of 225 permitted vessels landed red grouper, whereas from 2015 through 2017, that average is 210 (**Table F-3**). Average annual dockside revenue from red grouper per vessel also declined: from $1,200 to $948 (**Table F-4**).

Table F-3. Red grouper landings (lbs gw) and number of permitted vessels that reported red grouper landings , 2013 – 2017.

Year	RG Landings	Vessels with RG Landings
2013	98,726	251
2014	74,462	245
2015	58,530	223
2016	38,064	206
2017	32,771	200
2013-2017 Average	**60,511**	**225**
2015-2017 Average	**43,122**	**210**

Source: NMFS SERO Permit Counts for number with permits and SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019) for number of vessels with reported red grouper landings.

Table F-4. Total dockside revenue (2017$) from red grouper landings and average dockside revenue (2017$) from red grouper per vessel, 2013 – 2017.

Year	Total RG Revenue	Average RG Revenue per Vessel
2013	$443,041	$1,765
2014	$340,939	$1,392
2015	$272,981	$1,224
2016	$179,637	$872
2017	$149,690	$748
2013-2017 Average	**$277,258**	**$1,200**
2015-2017 Average	**$200,769**	**$948**

Source: NMFS SERO Permit Counts for number with permits and SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019) for number of vessels with reported red grouper landings, and BEA for GDP implicit price deflator.

The businesses that own the 210 to 225 vessels primarily operate in, but not necessarily exclusively in, the commercial fishing industry. For RFA purposes only, NMFS has established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing (see 50 CFR 200.2). A business primarily engaged in commercial fishing (NAICS code 11411) is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including affiliates), and has combined annual receipts not in excess of $11 million for all its affiliated operations worldwide. The average annual total revenue for a vessel that lands red grouper is substantially less than that. None of the permitted vessels that landed red grouper from 2013 through 2017 had annual revenue close to or greater than $11 million. Hence, it is expected all of the businesses with permitted vessels that land red grouper annually are small.

Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule

The actions would not impose additional reporting or record-keeping requirements on small businesses. **Action 1** would change the rebuilding schedule and the impact would be indirect and dependent on subsequent action.

Currently, fishing for and possession of red grouper or any other shallow water grouper species in or from the South Atlantic EEZ is prohibited from January through April. Additionally, no person can sell or purchase red grouper or any other shallow water grouper harvested from or possessed in the South Atlantic EEZ during those months. **Action 2**, **Preferred Sub-alternative 2a**, would add to that ban a prohibition on recreational fishing for and possession of red grouper in federal waters off the Carolinas in May. Its impacts on for-hire fishing businesses are indirect, and therefore beyond the scope of the RFA.

Action 3, **Preferred Sub-alternative 2a**, would add to the current January through April ban by prohibiting commercial fishing for and possession of red grouper in federal waters off the Carolinas in May. It would also prohibit the sale and purchase of red grouper harvested from or possessed in the South Atlantic EEZ off the Carolinas in May. The following analysis assumes all red grouper harvested from federal waters off the Carolinas are landed in the Carolinas.

From 2013 through 2017, an average of 12,477 lbs gw of red grouper were landed every May in the Carolinas and those landings were made by an average of 55 vessels and 106 trips. Average landings and trips in May are substantially smaller from 2013 through 2017: 6,956 lbs landed by 48 vessels that made 86 trips (**Table F-6**). May landings tend to be the highest monthly landings of red grouper in the Carolinas.

Table F-6. Landings of red grouper (lbs gw) in the Carolinas in May and numbers of vessels and trips with those landings, 2013-2017.

Year	RG Landings	Trips	Vessels	Average RG Landings per Vessel
2013	27,452	150	70	392
2014	14,067	122	60	234
2015	10,512	115	60	175
2016	5,840	76	44	133
2017	4,515	68	39	116
2013-2017 Average	**12,477**	**106**	**55**	**210**
2015-2017 Average	**6,956**	**86**	**48**	**141**

Source: SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019).

Action 3, **Preferred Sub-alternative 2a**, would eliminate from 6,956 lbs gw (2015 – 2017) to 12,477 (2013-2017) lbs gw of red grouper landed in May, and the average annual loss per vessel would range from 141 lbs gw (2015 – 2017) to 210 lbs gw (2013 – 2017). From 2013 through 2017, the average dockside price (2017 $) of red grouper is $4.60, whereas from 2015 through 2017, it is $4.65. At that

price, **Action 3**, **Preferred Sub-alternative 2a**, would reduce the average Carolinas vessel's annual dockside revenue from $649 to $977 (**Table F-7**).

Table F-7. Estimates of average annual loss of landings (lbs gw) and revenue (2017 $) per North Carolina and South Carolina vessel from **Action 3**, **Preferred Sub-alternative 2a**.

Years	Average Loss RG Landings per vessel	Average Price	Average Revenue Loss
2013 - 2017	210	$4.65	$977
2015-2017	141	$4.60	$649

There are considerable differences between the average North and South Carolina vessels that land red grouper. In May, from 2013 through 2017 the average North Carolina vessel lands 235 lbs gw of red grouper whereas the average South Carolina vessel lands 144 lbs gw (**Table F-8**). Similarly, from 2015 through 2017, the average North Carolina and South Carolina vessels land 155 lbs gw and 108 lbs gw, respectively, in May.

Table F-8. Landings (lbs gw) of red grouper in North Carolina and South Carolina in May and numbers of vessels with those landings, 2013-2017.

Year	NC RG Landings	NC Vessels	Average RG Landings per Vessel	SC RG Landings	SC Vessels	Average RG Landings per Vessel
2013	22,011	50	440	5,441	20	272
2014	12,209	45	271	1,858	15	124
2015	8,065	44	183	2,447	16	153
2016	4,795	34	141	1,045	10	105
2017	3,656	26	141	859	13	66
2013-2017 Average	**10,147**	**40**	**235**	**2,330**	**15**	**144**
2015-2017 Average	**5,507**	**35**	**155**	**1,450**	**13**	**108**

Source: SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019).

At the average price of $4.65 from 2013 through 2017, the average North Carolina vessel would lose $977 (2017 $) in May annually, whereas the average South Carolina vessel's annual revenue would decrease by $649 in May annually (**Table F-9**).

Table F-9. Estimates of average annual loss of landings (lbs gw) and revenue (2017 $) per vessel from **Action 3**, **Preferred Sub-alternative 2a** on North Carolina and South Carolina vessels.

State	Average Loss RG Landings (2013-2017)	Average Price (2013-2017)	Average Revenue Loss (2013-2017)	Average Loss RG Landings (2015-2017)	Average Price (2015-2017)	Average Revenue Loss (2015-2017)
North Carolina	235	$4.65	$977	155	$4.60	$713
South Carolina	144	$4.65	$649	108	$4.60	$497

Preliminary estimates from 2013 through 2017 data indicate the average North Carolina and South Carolina vessels that land red grouper have total annual revenue (2017 $) of $53,541 and $88,941, respectively. From 2015 through 2017, those average annual revenues are $55,936 and $86,945, respectively. **Action 3, Preferred Sub-alternative 2a**, would reduce the average North Carolina vessel's annual revenue by 1.3% to 1.8% for those that land red grouper in May. It would also reduce the average South Carolina vessel's annual revenue by 0.6% to 0.7% for those that land red grouper in May.

Table F-10. Relative impacts from loss of revenue (2017$) of **Action 3, Preferred Sub-alternative 2a** per vessel, on North Carolina and South Carolina vessels.

State	2013-2017 Average Revenue Loss	2013-2017 Average Revenue	Percentage Revenue Reduced	2015-2017 Average Loss	2015-2017 Average Revenue Loss	Percentage Revenue Reduced
North Carolina	$977	$53,541	1.8%	$713	$55,936	1.3%
South Carolina	$649	$88,941	0.7%	$497	$86,945	0.6%

There is presently no trip limit that restricts landings of red grouper except the vessels with a trip-limited (225 lbs) permit are limited to 225 lbs gw of combined landings of snapper grouper species. **Action 4** (**Preferred Sub-alternative 2d**) would establish a commercial trip limit of 200 lbs gw for red grouper harvested in the South Atlantic EEZ when and where fishing for red grouper is allowed. As explained above, commercial fishing for red grouper in the South Atlantic EEZ is prohibited from January through April, and **Action 3, Preferred Sub-alternative 2a**, would prohibit commercial fishing for red grouper in federal waters off the Carolinas in May. Hence, the 200-lb limit imposed by **Action 4**, **Preferred Sub-alternative 2d**, would apply from June through December in the South Atlantic EEZ off the Carolinas and from May through December in the South Atlantic EEZ off Georgia and Florida.

Both the number and percentage of trips that landed over 200 lbs gw of red grouper in the Carolinas from June through December declined from 2013 to 2017 (**Table F-11**). From 2013 through 2017, an annual average of 37 trips landed over 200 lbs gw, whereas from 2015 through 2017, that average was 15.

Table F-11. Number of trips by permitted vessels that landed red grouper and those over 200 lbs gw of red grouper in North Carolina and South Carolina from June through December and percentage of trips with over 200 lbs gw of red grouper, 2013 - 2017.

Year	All Trips Landed RG	Trips with Over 200 Lbs gw RG	Percentage Trips with Over 200 Lbs gw RG
2013	458	67	14.6%
2014	547	71	13.0%
2015	296	31	10.5%
2016	285	11	3.9%
2017	224	3	1.3%
2013-2017 Average	**362**	**37**	**8.7%**
2015-2017 Average	**268**	**15**	**5.2%**

Source: SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019).

Collectively, from 2013 through 2017, the average annual 37 trips from June through December that landed over 200 lbs gw of red grouper collectively landed 10,853 lbs gw of red grouper, for an average of 307 lbs gw per trip (**Table F-12**). From 2015 through 2017, an average of 15 trips landed over 200 lbs gw of red grouper collectively landed 4,806 lbs gw for an average of 317 lbs gw per trip during those months. During both time periods, 9 vessels made those trips.

Table F-12. Number of trips with landings over 200 lbs gw of red grouper in North Carolina and South Carolina from June through December, total landings (lbs gw) of red grouper by those trips, and average red grouper landings per trip for those trips with over 200 lbs gw, 2013 - 2017.

Year	Trips with Over 200 Lbs gw RG	RG Landings	Average RG Landings per Trip with Over 200 Lbs gw RG
2013	67	24,253	362
2014	71	15,593	220
2015	31	10,468	338
2016	11	2,899	264
2017	3	1,051	350
2013-2017 Average	**37**	**10,853**	**307**
2015-2017 Average	**15**	**4,806**	**317**

Source: SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019).

Action 4, **Preferred Sub-alternative 2d** would reduce those average landings by 107 to 117 lbs gw per trip and with dockside values of $498 to $538 (**Table F-13**). Those losses represent less than 1% of average annual revenues for North Carolina and South Carolina vessels (**Table F-14**).

Table F-13. Estimates of average annual losses of landings (lbs gw) and dockside revenue (2017$) per North Carolina and South Carolina vessel.

Average Loss RG Landings (2013-2017)	Average Price (2013-2017)	Average Revenue Loss (2013-2017)	Average Loss RG Landings (2015-2017)	Average Price (2015-2017)	Average Revenue Loss (2015-2017)
107	$4.65	$498	117	$4.60	$538

Table F-14. Relative impacts from loss of revenue (2017$) of **Action 4, Preferred Sub-alternative 2d**, on North Carolina and South Carolina vessels by state of landings.

State	2013-2017 Average Loss	2013-2017 Average Revenue	Percentage Revenue Reduced	2015-2017 Average Loss	2015-2017 Average Revenue	Percentage Revenue Reduced
North Carolina	$498	$53,541	0.93%	$538	$55,936	0.96%
South Carolina	$498	$88,941	0.56%	$538	$86,945	0.62%

Action 4, **Preferred Sub-alternative 2d**, would establish a trip limit of 200 lbs gw from May through December in federal waters off Florida and Georgia. From 2013 through 2017 and 2015 through 2017, an annual average of 7 trips by 3 permitted vessels landed over 200 lbs gw of red grouper in Florida through Georgia from May through December (**Table F-15**). From 2013 through 2017, those 7 trips collectively landed an average of 3,617 lbs gw of red grouper, for an average of 517 lbs gw per trip, whereas from 2015 through 2017 they collectively landed an average of 3,670 lbs gw, for an average of 524 lbs gw per trip . **Action 4**, **Preferred Sub-alternative 2d**, would reduce average landings (2013 through 2017) of 7 trips from 517 to 200 lbs gw: a decrease of 317 lbs gw per trip and 2,219 lbs gw for the combined 7 trips. The 3 vessels would lose an average of 740 lbs gw of red grouper annually. **Action 4, Preferred Sub-alternative 2d**, would reduce average landings (2015 through 2017) by 324 lbs gw per trip and 2,268 lbs gw for the combined trips. The 3 vessels would lose an average of 756 lbs gw of red grouper annually. At average prices of $4.65 and $4.60, the 3 Florida/Georgia vessels would have losses of annual dockside revenue ranging from $3,441 to $3,478 (**Table F-16**).

Table F-15. Number of combined Florida and Georgia trips that landed red grouper and those with over 200 lbs gw of red grouper from May through December, and percentage of trips with over 200 lbs gw.

Year	All Trips that Landed RG	Trips with Over 200 Lbs gw RG	Percentage of Trips with Over 200 Lbs gw RG
2013	506	5	1.0%
2014	629	8	1.3%
2015	520	6	1.2%
2016	413	7	1.7%
2017	445	8	1.8%
2013-2017 Average	**503**	**7**	**1.4%**
2015-2017 Average	**459**	**7**	**1.6%**

Source: SEFSC Socioeconomic Panel Data (Version 7) accessed by the SEFSC Online Economic Query System (March 2019).

Table F-16. Average annual loss of landings (lbs gw) and dockside revenue (2017$) for Florida/Georgia vessels.

State	Average Loss RG Landings (2013-2017)	Average Price (2013-2017)	Average Revenue Loss (2013-2017)	Average Loss RG Landings (2015-2017)	Average Price (2015-2017)	Average Revenue Loss (2015-2017)
Florida/Georgia	740	$4.65	$3,441	756	$4.60	$3,478

Preliminary estimates of the average annual revenue for a Florida and Georgia vessel that lands red grouper are $52,365 (2013-2017) and $53,695 (2015-2017). The average annual losses represent figures represents approximately 6.5% to 6.6% of the average Florida & Georgia's vessel total annual revenue from 2013 through 2017 and from 2015 through 2017; however, these 3 vessels have higher than average total annual revenues.

Description of significant alternatives

Action 3, Preferred Sub-alternative 2a, would add May to the current 4-month January through April ban on fishing for or possessing red grouper in federal waters off the Carolinas. In addition to the status quo, three other alternatives to Action 3 were considered but not selected. Two alternatives would change the timing of the 4-month prohibition in federal waters off the Carolinas: from either February through May (Sub-alternative 2b) or March through June (Sub-alternative 2c). Sub-alternative 2b could have a smaller adverse economic impact on small businesses than **Preferred Sub-alternative 2a** because it would allow landings in January. However, snapper grouper fishing off the Carolinas tends to be at its lowest during the winter months. Sub-alternative 2c would likely have a larger adverse economic impact on small businesses than the **Preferred Sub-alternative 2a** because the prohibition would go deeper into the red grouper season that is in federal waters off the Carolinas. Sub-alternative 2d, with a 6-month January through June prohibition would have the largest adverse economic impact.

Currently there is no limit on landings of red grouper from federal waters, although vessels with a trip-limited permit cannot land more than 225 lbs gw of red grouper and other snapper grouper species. **Action 4**, **Preferred Sub-alternative 2d**, would set a trip limit of 200 lbs gw when landings are allowed. In addition to the status quo, three other sub-alternatives, which would have established smaller trip limits, were considered but not selected: Sub-alternatives 2a (75 lbs), 2b (100 lbs gw) and 2c (150 lbs gw). Action 4, Sub-alternatives 2a, 2b and 2c, would have a larger adverse economic impact on small businesses than **Preferred Sub-alternative 2d**.

Appendix G. Other Applicable Laws

1.1 Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Among other things under the APA, the National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect, with some exceptions. Regulatory Amendment 30 (Regulatory Amendment 30) to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) complies with the provisions of the APA through the South Atlantic Fishery Management Council's (South Atlantic Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this amendment will have a request for public comments, which complies with the APA, and upon publication of the final rule, unless the rule falls within an APA exception, there will be a 30-day wait period before the regulations are effective.

1.2 Information Quality Act (IQA)

The IQA (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the IQA. Regulatory Amendment 30 uses the best available information and made a broad presentation thereof. The information contained in this document was developed using best available scientific information. Therefore, this document is in compliance with the IQA.

1.3 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal CZMA of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The South Atlantic Council believes the actions in this amendment are consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina. Pursuant to Section 307 of the CZMA, this determination will be submitted to the responsible state agencies who

administer the approved Coastal Zone Management Programs in the States of Florida, South Carolina, Georgia, and North Carolina.

1.4 Endangered Species Act (ESA)

The ESA of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies must ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NMFS to consult with the appropriate administrative agency (itself for most marine species, and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are "not likely to adversely affect" threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat.

On December 1, 2016, NMFS completed its most recent formal consultation on the snapper grouper fishery of the South Atlantic Region. In the resulting biological opinion (2016 Opinion), NMFS concluded that the snapper grouper fishery's continued authorization is not likely to jeopardize the continued existence of the North Atlantic Right Whale, loggerhead sea turtle Northwest Atlantic distinct population segments (DPS), leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper.

Additionally, since publication of the 2016 Opinion, NMFS has published two additional final listing rules. On January 22, 2018, NMFS listed the giant manta ray (*Manta birostris*) as threatened under the ESA, effective February 21, 2018. On January 30, 2018, NMFS listed the oceanic whitetip shark (*Carcharinus longimanus*) as threatened under the ESA, effective March 1, 2018. In a June 11, 2018, memo NMFS documented ESA Section 7(a)(2) and Section 7(d) determinations for allowing the continued authorization of fishing managed by the Snapper Grouper FMP, during reinitiation of ESA consultation on this fishery, for its effects on the giant manta ray and the oceanic whitetip shark. Based on the analysis, NMFS determined that allowing the proposed action to continue during the reinitiation period will not violate Section 7(a)(2) or 7(d). This Section 7(a)(2) determination is only applicable to the proposed action during the reinitiation period and does not address the agency's long-term obligation to ensure its actions are not likely to jeopardize the continued existence of any listed species or destroy or adversely modify critical habitat.

NMFS concluded that the proposed action is not likely to adversely affect designated critical habitat or other ESA-listed species in the South Atlantic Region. Refer to **Section 3.2.5 (Protected Species**) for summary information on species, or DPSs of species, protected by federal law that may occur in the exclusive economic zone (EEZ) of the South Atlantic Region, or the analyses ("Section 7 consultations") conducted by NMFS to evaluate the potential adverse

effects from the South Atlantic snapper grouper fishery on species and critical habitat protected under the ESA.

1.5 Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the federal government and the states, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this document and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 12612 is not necessary.

1.6 Executive Order 12962: Recreational Fisheries

E.O. 12962 requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods. Additionally, the Order establishes a seven-member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The National Recreational Fisheries Coordination Council also is responsible for developing, in cooperation with federal agencies, states and tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this document are consistent with the directives of E.O. 12962.

1.7 Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this document are consistent with the directives of E.O. 13089.

1.8 Executive Order 13158: Marine Protected Areas (MPAs)

E.O. 13158 was signed on May 26, 2000, to strengthen the protection of U.S. ocean and coastal resources through the use of Marine Protected Areas. The E.O. defined MPAs as "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local

laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources."
The alternatives considered in this document are consistent with the directives of E.O. 13158.

1.9 Marine Mammal Protection Act (MMPA)

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs. Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted." A conservation plan is then developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries; and studies of pinniped-fishery interactions. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; and Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery, are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans. The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline), which targets snapper grouper species are listed as part of a Category III fishery in the final List of Fisheries (LOF) for 2018 and proposed LOF for 2019 (83 FR 5349, February 7, 2018, and 83 FR 53422, October 23, 2018, respectively) because there have been no documented interactions between these gear and marine mammals. The black sea bass pot component of the South Atlantic snapper grouper fishery is part of the Atlantic mixed species trap/pot fishery, a Category II fishery, in the final LOF for 2018 and proposed LOF for 2019 (83 FR 5349, February 7, 2018, and 83 FR 53422, October 23, 2018, respectively). The Atlantic mixed species trap/pot fishery designation was created in 2003 (68 FR 41725, July 15, 2003), by combining several separately listed trap/pot fisheries into a single group. This group was designated Category II as a precaution because of known interactions

between marine mammals and gear similar to those included in this group. Prior to this consolidation, the black sea bass pot fishery in the South Atlantic was a part of the "U.S. Mid-Atlantic and Southeast U.S. Atlantic Black Sea Bass Trap/Pot" fishery (Category III). There has never been a documented interaction between marine mammals and black sea bass trap/pot gear in the South Atlantic. The actions in the Environmental Assessment (EA) for Regulatory Amendment 30 to the Snapper Grouper FMP are not expected to negatively impact the provisions of the MMPA.

1.10 National Environmental Policy Act (NEPA)

This document has been written and organized in a manner that meets NEPA requirements, and thus is a consolidated NEPA document, including an EA, as described in NOAA Administrative Order (NAO) 216- 6A, Section 7.

Purpose and Need for Action

The purpose and need for this action are described in **Chapter 1**.

Alternatives

The alternatives for this action are described in **Chapter 2**.

Affected Environment

The affected environment is described in **Chapter 3**.

Impacts of the Alternatives

The impacts of the alternatives on the environment are described in **Chapter 4**.

1.11 National Marine Sanctuaries Act (NMSA)

Under the NMSA (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of NOAA. The NMSA provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The three sanctuaries in the South Atlantic EEZ are the USS Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries.

The alternatives considered in this document are not expected to have any adverse impacts on the resources managed by the National Marine Sanctuaries.

1.12 Paperwork Reduction Act (PRA)

The purpose of the PRA is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The PRA requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public. Actions in this document are not expected to affect PRA.

1.13 Small Business Act (SBA)

Enacted in 1953, the SBA requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the SBA are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training, and counseling, and access to sole source and limited competition federal contract opportunities, to help firms achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

1.14 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Fishery Conservation and Management Act to require that a FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions. No vessel would be forced to participate in South Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment. No concerns have been raised by South Atlantic fishermen or by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions.

Appendix H. Data Analysis

Introduction

The South Atlantic Fishery Management Council (South Atlantic Council) manages red grouper from federal waters at the Virginia/North Carolina border through the Atlantic side of the Florida Keys under the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP). Regulatory Amendment 30 (Regulatory Amendment 30) to the Snapper Grouper FMP contains actions to address rebuilding of the red grouper population.

1.1 Recreational Data Analyses of Action 2 (Recreational Seasonal Prohibition) Analysis

Analysis

The South Atlantic Council chose to focus on actions that would reduce harvest of potentially spawning adults off North and South Carolina. Fishermen in those states have indicated red grouper continue to spawn in May and June following the January through April spawning season closure. The final rule for Abbreviated Framework Amendment 1 to the Snapper Grouper FMP implemented a recreational annual catch limit (ACL) of 77,840 pounds whole weight (lbs ww) starting in 2018 (**Table H-1**) based on the results of SEDAR 53 (2017), which is the latest red grouper stock assessment. The recreational ACL remains at 56% of the total ACL based on Amendment 24 (SAFMC 2011). The recommended ACLs are a reduction from the previous recreational ACL, which was 436,800 lbs ww. Based on the previous recreational ACL, the recreational sector has not caught the ACL since 2012 and rarely exceeded harvesting greater than 30% of the limit. However, the recreational landings exceeded the recreational ACL implemented through the final rule for Abbreviated Framework Amendment 1 during 2015 to 2017.

The analysis described below estimates the potential effects of the proposed recreational management measure on recreational harvest of red grouper in the South Atlantic Region. Recreational management measure alternatives under Action 2 include an adjustment to the seasonal prohibition of red grouper.

Table H-1. Annual recreational red grouper annual catch limit (ACL) in lbs ww recommended in Abbreviated Framework Amendment 1 to the Snapper Grouper FMP.

Year	Recreational ACL (lbs ww)
2018	77,840
2019	84,000
2020 until modified	90,720

Table H-2. Recreational red grouper landings in the South Atlantic Region, 2015 to 2017.

Year	Recreational Landings (lbs ww)
2015	203,937
2016	198,614
2017	141,067

Source: MRIP SEFSC Recreational ACL Database [August 9, 2018]

Data

Red grouper landings data from 2015 to 2017 were provided by the National Marine Fisheries Service (NMFS) using the Marine Recreational Information Program (MRIP) Southeast Fisheries Science Center (SEFSC) Recreational ACL Database [August 9, 2018]. The spreadsheet includes landings in number and whole weight of fish by wave and state for charter boats, headboats, and private vessels. The landings data for charter boats and private vessels were collected through the MRIP and headboat data were collected through the Southeast Region Headboat Survey (SRHS). MRIP data were not adjusted for the two new calibrations (Fishing Effort Survey (FES) and Access Point Angler Intercept Survey (APAIS) because the recommended ACL values in Abbreviated Framework Amendment 1 did not include these calibrations. The weight of fish collected through MRIP was estimated using the weight estimation procedure created by the SEFSC.

Data sets from MRIP and SRHS were investigated to determine potential effects of seasonal prohibition on the number of released red grouper. Previously released fish could be added catch due to opening of January (**Alternative 2, Sub-Alternative 2b**) and February (**Alternative 2, Sub-Alternative 2c**). However, there were no reported releases of red grouper in January and February off North Carolina and South Carolina in MRIP and SRHS data sets from 2015 to 2017 (personal communication with NMFS, Fisheries Statistics Division, 7/12/2018 and personal communication with NMFS, Southeast Region Headboat Survey, 7/13/2018).

Landings data were limited for red grouper in both surveys. In some waves, landings data from the SRHS are confidential. Landings data from the SRHS were aggregated with MRIP landings by two-month period (waves) to prevent confidentiality issues. The landings in the January/February and March/April were still confidential and combined landings were averaged to display average percent of landings by month.

To determine season length based on the sub-alternatives, daily catch rates were developed for each two-month period. The catch rates were summed by the number of open days in each wave until the new ACL was met. This was done for each year and an average closure date was calculated based on the closure date for 2015 to 2017. The season length was compared to the ACL for 2019 (84,000 lbs ww) since this is the earliest year the ACL could be in place.

Results

Landings of red grouper occur throughout the year. The highest typically occurred in November and December followed by May and June (**Figure H-1**). The lowest landings[18] occurred from January through April.

[18]The current shallow-water grouper spawning season prohibition occurs from January through April. However, there is minimal catch when the season is closed due to bycatch.

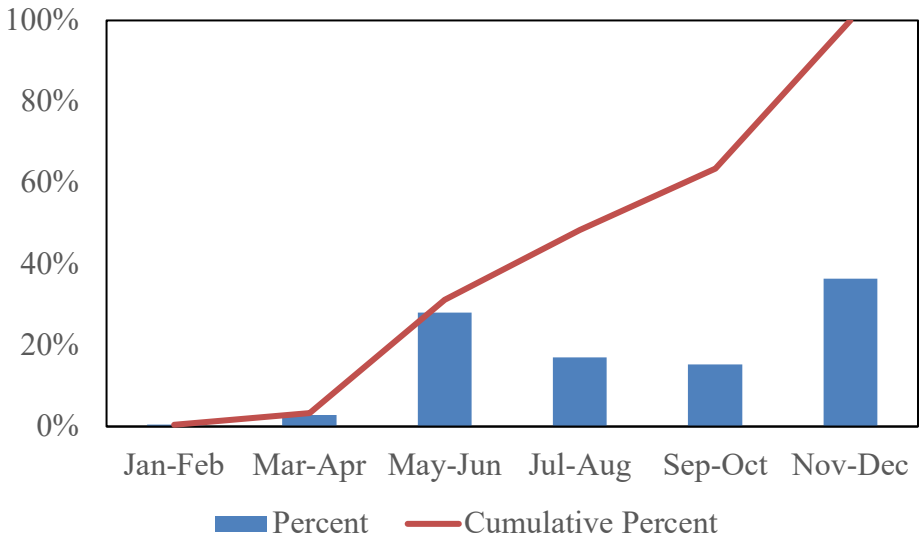

Figure H-1. Percent and cumulative percent of red grouper landings by wave for the South Atlantic recreational sector (charter boat, headboat, and private vessels) from 2015 to 2017.

Landings were predicted to be reduced by closing different months off North and South Carolina by less than 1% for each of the sub-alternatives (**Table H-3**). Since no red grouper were reported as being released, no fish were added back to the catch for potentially opening January or February (only two months that would potentially re-open). **Sub-Alternatives 2c** and **2d** had the greatest reduction in catch. Reductions under all the scenarios were less than 1% of the landings.

Table H-3. Projected recreational red grouper landings (lbs ww) that would have occurred 2015 -2017 under the proposed alternatives and sub-alternatives by modifying the recreational seasonal prohibition for red grouper.

Alternatives	Projected Landings (lbs ww)
Alternative 1 (No Action)	181,206
Sub-Alternative 2a (Jan-May)	**180,913**
Sub-Alternative 2b (Feb-May)	180,913
Sub Alternative 2c (Mar-Jun)	180,620
Sub Alternative 2d (Jan-Jun)	180,620

The projected landings for all alternatives and sub-alternatives exceed the proposed ACL from Abbreviated Framework Amendment 1. However, if the ACL is met or exceeded, accountability measures (AMs) would be triggered, resulting in an in-season AM closure, or post-seasonal AM overage payback. Based on the average landings from 2015 to 2017, an in-season closure due to reaching the ACL would be necessary in August in 2019 and September in 2020 and beyond (**Figure H-2**). Because the difference between each of the alternatives was less than 1,000 lbs ww, the sub-alternatives differed very little from the status quo. The sub-alternatives were predicted to increase the season by one day up to a week. When single years were compared to the proposed ACLs, the closure months ranged from June to November.

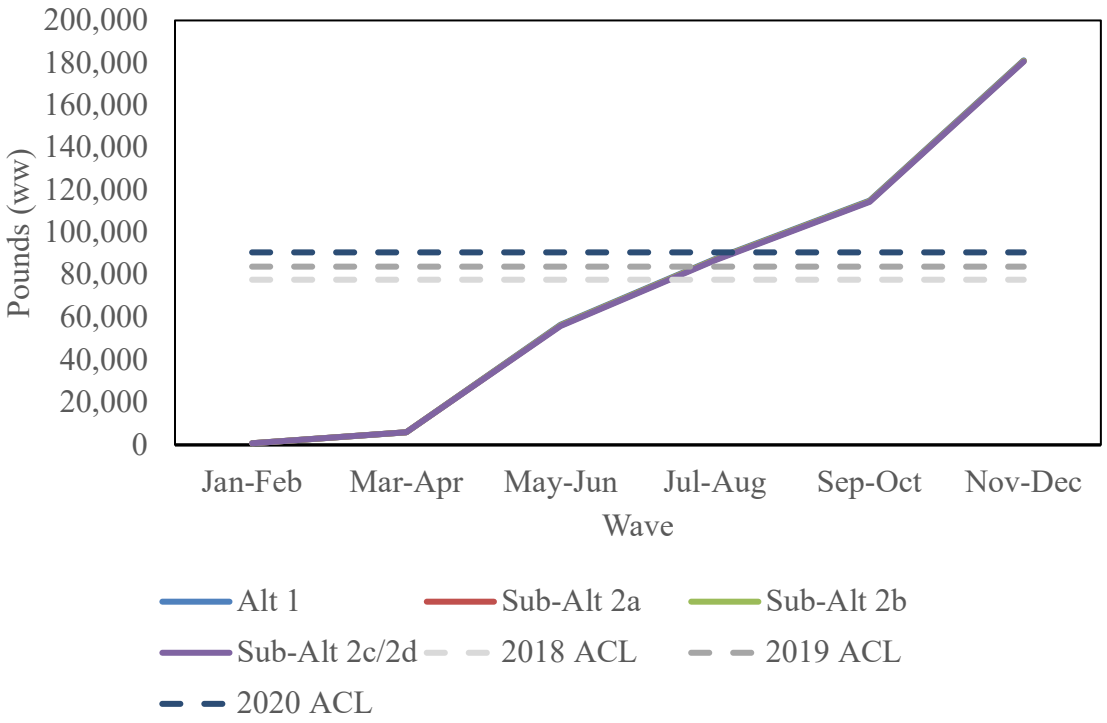

Figure H-2. Projected cumulative recreational red grouper landings (lbs ww) under the proposed alternatives and sub-alternatives and the proposed recreational red grouper ACL from 2018, 2019, and 2020 and beyond.

1.2 Commercial Data Analyses of Action 3 (Commercial Seasonal Prohibition) and Action 4 (Commercial Trip Limit)

1.2.1 Action 3: Commercial Seasonal Prohibition Analysis

Since 2012, landings for the commercial sector have not reached their sector ACL. Abbreviated Framework Amendment 1, which addresses red grouper in the South Atlantic, reduced the ACLs for South Atlantic red grouper in response to the results of the latest assessment (SEDAR 53 2017). Additionally, Action 3 of Regulatory Amendment 30 is proposing a modification to the seasonal prohibition on commercial harvest, possession, sale and purchase of red grouper in the exclusive economic zone (EEZ) off South Carolina and North Carolina (**Table H-4**). The analysis described below investigates changes to landings from the potential regulation changes and how these actions might impact the commercial sector's likelihood of meeting or exceeding the ACL.

Table H-4. South Atlantic red grouper commercial season prohibition alternatives stated in Action 3 of Regulatory Amendment 30. Preferred Alternatives are indicated in bold.

Action 3 Alternatives:	**Season prohibition:**
Alternative 1	January – April
Alternative 2	January – April in FL and GA only
SubAlternative 2A	Jan – May in NC and SC only
SubAlternative 2B	Feb – May in NC and SC only
SubAlternative 2C	Mar – June in NC and SC only
SubAlternative 2D	Jan – June in NC and SC only

Final commercial landings for 2007-2009 and 2014-2017 were provided by the SEFSC on October 23, 2018 (**Table H-5**). South Atlantic commercial red grouper landings from 2015, 2016, 2017, and average 2015-2017 are summarized in **Figure H-3**. Average landings from 2015-2017 were used as a proxy for future landings. The months of Jan-Apr were closed to all shallow-water grouper through final rule for Amendment 16 to the Snapper Grouper FMP (SAFMC 2009) on July 29, 2009, and therefore future landings are assumed to be either zero or negligible during these months for Florida and Georgia. Backfilling landings for North Carolina and South Carolina for the January-April closed time period was required to provide an estimate of landings during this period if commercial harvest for red grouper was open. Estimates of predicted landings for the January-April time period are based on the mean ratios of January–April to May from 2007-2009, and ranged between 38 and 69% of May landings. These years were used because they were the last three that were completely open for red grouper. For example, the January to May mean ratio was 38.38% and applied to the 2015-2017 mean landings in May (7,935 lbs ww) resulted in projected landings of 3,047 lbs ww for January for North Carolina and South Carolina. Landings in the January-April period are projected to be relatively high; however, this analytical approach does not account for the potential redistribution of peak effort to May following the implementation of the January-April closure in 2009, nor does it account for potential declines in catch rates in the May-December period if commercial harvest for red grouper opened earlier in the calendar year. Thus, it is likely the projected landings presented in **Figure H-3** are an upper bound for what might be caught if the closure months were modified.

Table H-5. Commercial red grouper landings in the South Atlantic Region, 2015 to 2017.

Year	Commercial Red Grouper Landings (lbs ww)
2015	97,717
2016	52,770
2017	44,813

Source: SEFSC Commercial ACL Database [October 23, 2018]

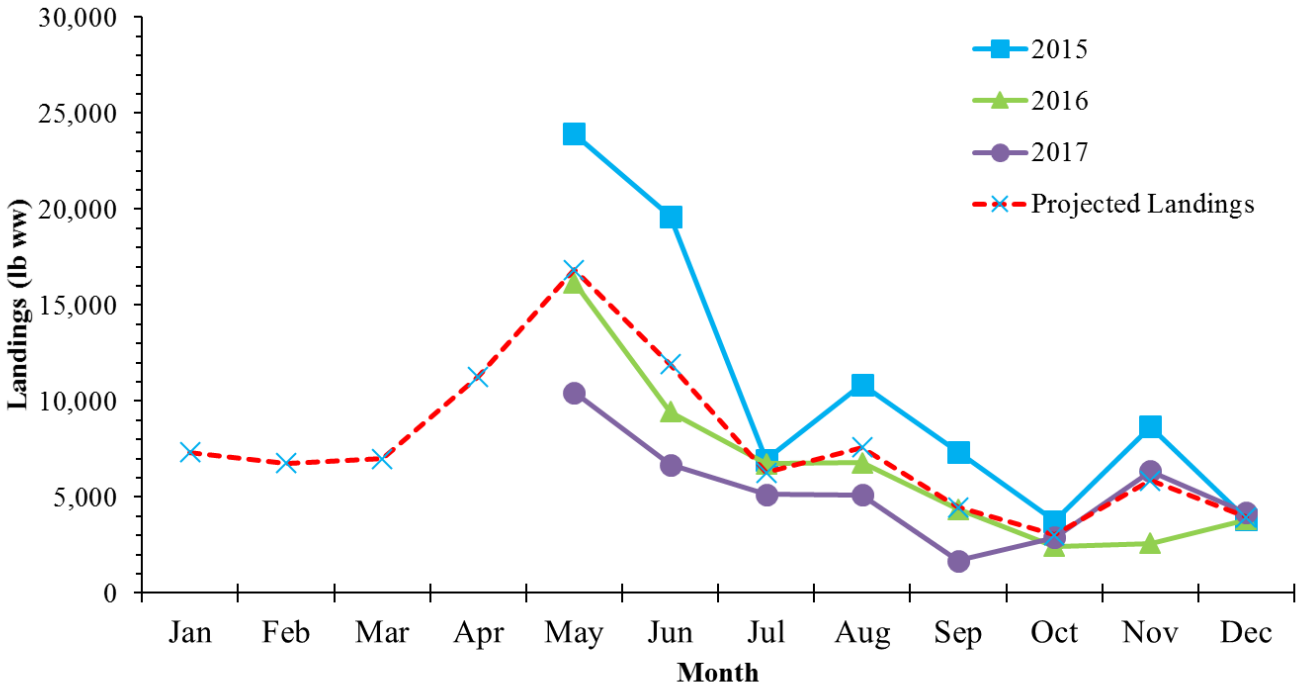

Figure H-3. South Atlantic red grouper commercial landings (lb ww) by month for 2015-2017. Landings for the months of Jan-Apr were removed since these months are closed to all shallow-water grouper through Amendment 16 (SAFMC 2009), and therefore future landings are assumed to be either zero or negligible. To produce Projected Landings, average landings from 2015-2017 are used. Projected January through April landings (for North Carolina and South Carolina) were estimated using May landings, and the ratio was determined from historic landings from 2007-2009. No predictions were made for Florida and Georgia landings in January through April because none of the alternatives of Action 3 propose opening the red grouper portion of the fishery during this period in these states.

The ACLs implemented under Abbreviated Framework Amendment 1 are 61,160 lbs ww for 2018, 66,000 lbs ww for 2019, and 71,280 lbs ww for 2020 and later years. In recent years, the commercial landings have declined each year (**Table H-5, Figure H-3**), with 44,813 lbs ww being landed in 2017, which was well below the 2017 ACL of 343,200 lbs ww, or any of the revised commercial ACLs implemented under Abbreviated Framework Amendment 1. North Carolina and South Carolina made up 46% of the South Atlantic red grouper average landings. If the South Atlantic Council decides to modify the seasonal prohibition on commercial harvest, possession, sale and purchase of red grouper in the EEZ off South Carolina and North Carolina, then the total South Atlantic landings of red grouper would be affected, and may impact whether the ACLs implemented under Abbreviated Framework Amendment 1 are reached. All Action 3 alternatives being considered in this amendment, including Alternative 1 (No Action), would result in no seasonal closures, because projected landings are below the ACLs (**Table H-6; Figure H-4**).

Table H-6. Projected South Atlantic red grouper commercial landings for each Action 3 Alternative. Landings were estimated from the average 2015-2017 commercial landings. Preferred alternatives are indicated in bold.

Action 3 Alternatives	Projected Landings (lb ww)
Alternative 1 (No Action)	59,962
Sub-Alternative 2a	**51,950**
Sub-Alternative 2b	55,026
Sub-Alternative 2c	50,531
Sub-Alternative 2d	44,443

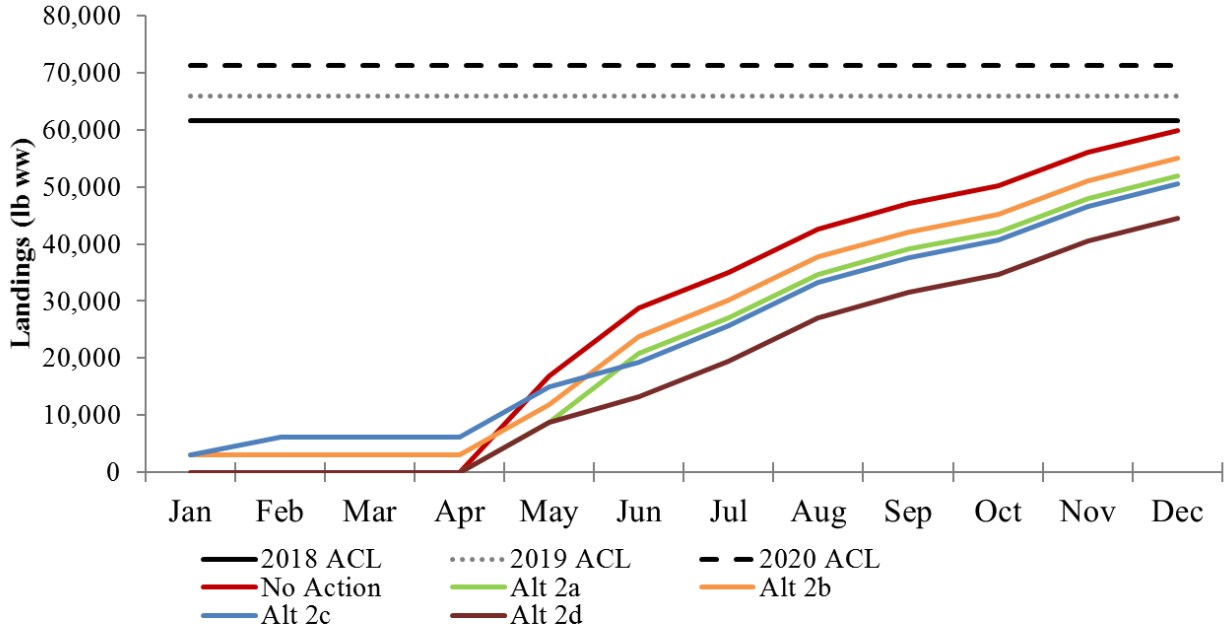

Figure H-4. Predicted South Atlantic red grouper commercial landings (lbs ww) by month with the commercial ACLs stated in the Abbreviated Framework Amendment 1 to predict South Atlantic red grouper commercial closure dates.

1.2.2 Action 4: Commercial Trip Limit Analysis

Regulatory Amendment 30 proposes a commercial trip limit for red grouper harvested in the South Atlantic EEZ. **Table H-7** provides the trip limit alternatives proposed in Action 4.

Table H-7. South Atlantic red grouper commercial trip limit alternatives stated in Action 4 of Regulatory Amendment 30.

Action 4 Alternatives:	Trip Limit:
Alternative 1 (No Action)	No commercial trip limit
Sub-Alternative 2a	75 lbs gw
Sub-Alternative 2b	100 lbs gw
Sub-Alternative 2c	150 lbs gw
Sub-Alternative 2d	200 lbs gw

Landings data for South Atlantic red grouper by trip level were obtained from the Southeast SEFSC commercial logbook datasets (6/31/2018). Future landings were determined from taking a three-year average of the three most recent years (2015-2017) of complete data, as the most recent data are believed to be the best approximation of future landings. Between 2015 and 2017, a total of 2,447 commercial trips harvested at least one pound of red grouper, and 80% of those commercial trips landed 75 lbs gw or less of red grouper. Therefore, only 20% of the commercial trips would be affected by this action **(Figure H-5)**. If the South Atlantic Council decides to apply a commercial trip limit for red grouper, then the total South Atlantic landings of red grouper would be reduced between 8 and 32% (**Table H-8)**. As a result, no in-season closures for commercial South Atlantic red grouper were projected for the 2018, 2019 and 2020 proposed ACLs for each of the five proposed commercial trip limit alternatives.

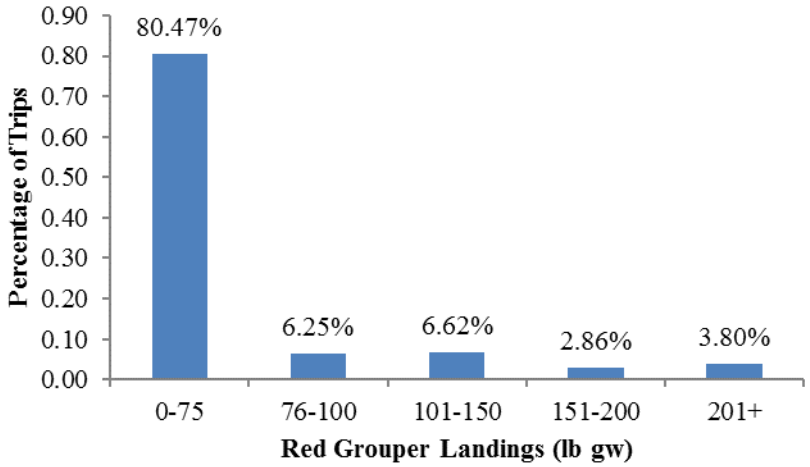

Figure H-5. Distribution of South Atlantic red grouper commercial trips within each landing bin. Predicted commercial landings came from the average 2015-2017 commercial landings.

Table H-8. Projected South Atlantic red grouper commercial landings for each Action 4 Alternatives. Landings were estimated from the average 2015-2017 commercial landings. Note: Alternatives do not assume Action 3 alternatives are included.

Action 4 Alternatives:	Predicted Landings (lb ww)	Percent Reduction from Alternative 1 (No Action)
No Action (No trip limit)	59,962	0%
Alternative 2A (75 lbs gw)	41, 122	31.4%
Alternative 2B (100 lbs gw)	46,062	23.2%
Alternative 2C (150 lbs gw)	51,745	13.7%
Alternative 2D (200 lbs gw)	54,810	8.6%

1.2.3 Actions 3 and 4 combined: Commercial Seasonal Prohibition and Commercial Trip Analysis

If the South Atlantic Council decides to implement the Action 3 **Preferred Sub-Alternative 2a** (Jan – Apr season prohibition in Florida and Georgia and a January – May season prohibition in North Carolina and South Carolina) in conjunction with the Action 4 trip limit alternatives, then the landings of South Atlantic commercial red grouper would be further reduced (**Table H-9)**. Both actions together result in total landings that are further reduced to 51,950 lbs ww with no trip limit, and continue to decline with Action 4 Sub-alternatives 2a-2d (**Table H-9)**. As a result, no in-season closures for commercial South Atlantic red grouper were projected for the 2018, 2019 and 2020 proposed ACLs for each of the five proposed commercial trip limit alternatives because none of the ACLs were predicted to be met or exceeded.

Table H-9. Projected South Atlantic red grouper commercial landings combined with a January through May closed season for North Carolina and South Carolina (Action 3, preferred Sub-Alternative 2a) for each Action 4 Alternative. Landings were estimated from the average 2015-2017 commercial landings.

Action 4 Alternatives:	Predicted Landings (lb ww)	Percent Reduction from Alternative 1 (No Action)
No Action (No trip limit)	51,950	0%
Alternative 2A (75 lbs gw)	35,848	31.0%
Alternative 2B (100 lbs gw)	40,087	22.8%
Alternative 2C (150 lbs gw)	44,905	13.6%
Alternative 2D (200 lbs gw)	47,452	8.7%

The reliability of these results is 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 a 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.

References:

SEDAR. 2017. SEDAR 53 – South Atlantic Red Grouper Assessment Report. SEDAR, North Charleston SC. 159 pp. available online at: http://sedarweb.org/sedar-53.

Appendix I. Bycatch Practicability Analysis

Background

The Magnuson-Stevens Fishery Conservation and Management Act at §3(2) defines bycatch as "fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch-and-release fishery management program." Economic discards are fish that are discarded because they are undesirable to the harvester. Economic discards generally includes certain species, sizes, and/or sexes with low or no market value. Regulatory discards are fish that are required by regulation to be discarded, such as minimum size limit requirements or exceeding a trip limit. National Marine Fisheries Service (NMFS) outlines at 50 CFR §600.350(d) (3) (i) ten factors that should be considered in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable.

1. Population effects for the bycatch species.
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
4. Effects on marine mammals and birds.
5. Changes in fishing, processing, disposal, and marketing costs.
6. Changes in fishing practices and behavior of fishermen.
7. Changes in research, administration, and enforcement costs and management effectiveness.
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources.
9. Changes in the distribution of benefits and costs.
10. Social effects.

The Fishery Management Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

The South Atlantic Fishery Management Council (South Atlantic Council) manages Snapper Grouper stocks in federal waters from the Florida Keys to the Virginia/North Carolina border. In Regulatory Amendment 30 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), the South Atlantic Council has proposed revising the rebuilding schedule for red grouper for the commercial and recreational sectors in the Exclusive Economic Zone (EEZ) off North and South Carolina. The framework amendment also includes an action to establish a commercial trip limit for red grouper harvested in the South Atlantic EEZ. The red grouper stock is still considered overfished and undergoing overfishing, and therefore these proposed management measures are intended to address the need improve the rebuilding progress. In the South Atlantic, most snapper

grouper species are harvested with hook-and-line gear. Red grouper are indirectly harvested during trips targeting other stocks; for this reason, uncertainty in the historical data is often high.

1.1 Population Effects for the Bycatch Species

Commercial Discards

Currently, commercial discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in the snapper grouper fishery. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Commercial discards were estimated by month using the Southeast Fisheries Science Center (SEFSC) Commercial Logbook and Supplemental Discard Logbook (accessed May 2017) to develop a discard rate in numbers of fish per unit of effort, by species, gear, and region, and expand that rate to the total effort in the fishery by gear and region. Note that a randomly selected comprehensive observer program is not available in the South Atlantic, thus estimation of commercial discards is reliant upon self-reported data.

From 2015 through 2017, the red grouper commercial sector had a mean annual discard rate of 677 individuals (**Table I-1**), which was low compared to the average annual landings for those 3 years (65,100 lbs ww). However, it is difficult to compare the ratio of commercial landings to discards because commercial landings are reported in pounds whole weight and discards are reported in numbers of fish (N). Red grouper discard data in conjunction with the trip co-occurrence analyses indicates fishers are likely able to selectively harvest red grouper.

In addition to the number of self-reported discards per trip and gear, the SEFSC Supplemental Discard Logbook attempts to quantify the reason why discarding occurs using four codes.

1) Regulation – Not legal size: Animals that would have been sold, however local or federal size limits forbid it.
2) Regulation – Out of season: Animals that would have been sold, however the local or federal fishing season is closed.
3) Regulation – Other: Animals that would have been sold, however a local or federal regulation other than size or season, forbids it (Other than size or season; i.e., protected species, not properly permitted).
4) Market conditions: Animals that have no market value (rotten, damaged).

Fishers can specify multiple reasons for a species discarded on the same trip and gear. More information on the discard logbook is available here https://www.sefsc.noaa.gov/fisheries/logbook.htm.

The discard logbook only contains self-reported discards from a 20% sub-sample by region and gear fished; thus, it may not be representative of the entire snapper grouper fishery. Of the four codes described above, only regulations (i.e., not legal size or out of season) were the reason selected, based on the number of self-reported discards (**Table I-2**). Efforts to align any seasonal or quota closures for red grouper could be beneficial in reducing discards, but probably minimally. The regulation 'not legal size' was the most common reason selected (76.95%). Since red grouper has a relatively low estimated release mortality rate (SEDAR 53 (2017) recommended a South Atlantic red grouper commercial release

mortality base estimate of 20% (sensitivity range: 10-30%), a high percentage of released fish likely survive resulting in minimal long-term population effects from a minimum size limit. Still, a minimum size limit could potentially benefit the stock by increasing spawning potential (larger fish are more fecund) and therefore remains an effective management measure to achieve reductions in harvest to keep landings below the annual catch limit (ACL).

Table I-1. Mean annual South Atlantic commercial landings and estimates of discards for red grouper from 2015 through 2017. Mean commercial landings are in pounds (lbs) whole weight (ww). Discards represent numbers of fish (N).

Mean Landings (lbs ww)	Mean Discards (N)
65,100	677

Sources: Commercial landings data from SEFSC Commercial ACL Dataset (October 23, 208) with discard estimates expanded from the SEFSC Supplemental Commercial Discard Logbook (May 2018). The number of trips from 2015 through 2017 is available in Table D-1.

Table I-2. The number of commercial trips with discards reported to the Supplemental Discard Logbook in the South Atlantic from 2015 through 2017 and percentage of unexpanded discards for each discard reason out of the total number of self-reported discards.

Number of Trips	Not Legal Size	Out of Season	Other Regulations	Market Conditions
82	76.95%	23.05%	0%	0%

Sources: SEFSC Supplemental Commercial Discard Logbook (May 2018). Note the logbook only contains self-reported discards from a 20% sub-sample by region and gear fished thus may not be representative of the entire fishery. The analysis was limited to species with greater than 1,000 expanded discards reported on average annually from table D-2.

Recreational Discards

For the recreational sector, estimates of the number of recreational discards from 2015 through 2017 were available from the Marine Recreational Information Program (MRIP) and the SEFSC headboat survey. The MRIP system classifies recreational catch into three categories:

- Type A - Fishes that were caught, landed whole, and available for identification and enumeration by the interviewers.
- Type B - Fishes that were caught but were either not kept or not available for identification:
    - Type B1 - Fishes that were caught and filleted, released dead, given away, or disposed of in some way other than Types A or B2.
    - Type B2 - Fishes that were caught and released alive.

Recent improvements have been made to the MRIP recreational survey, formerly called Marine Recreational Fisheries Statistics Survey. Beginning in 2013, the Access Point Angler Intercept Survey was introduced to remove potential bias in the sampling process. Changes to the effort survey are also underway, transitioning from the Coastal Household Telephone Survey to a more effective mail-based system, as well as using license and registration information. Other improvements have been and will be made to the MRIP survey that should result in better estimates of recreational catches and the variances around those estimates. Harvest from headboats was monitored by the NMFS SEFSC Beaufort Laboratory. Collection of discard data began in 2004. Daily catch records (trip records) were filled out by the headboat operators, or in some cases by NMFS-approved headboat samplers based on personal communication with the captain or crew. Headboat trips were subsampled for data on species lengths and weights. Biological samples (scales, otoliths, spines, reproductive tissues, and stomachs) were obtained

as time allowed. Lengths of discarded fish were occasionally obtained but these data were not part of the headboat database.

From 2015 through 2017, the mean annual South Atlantic recreational landings and discards in numbers of fish were calculated for headboat, MRIP charter (Type B1 + B2), and MRIP private angling (Type B1 + B2; including shore) sectors (**Table I-3**).

$$\text{Discard ratio} = \left(\frac{Discards}{Landings} * 100\right)$$

High numbers of discards were reported on average annually by the recreational sector harvesting red grouper in the South Atlantic from 2015 through 2017 (**Table I-3**). The discard ratio of red grouper was highest in the headboat sector, with a 369% ratio, and similar in the private angling sector. The highest annual average landings in numbers of fish from 2015 through 2017 were seen in the private angling sector (17,904 fish) followed by the charter boat (4,815 fish) and headboat sectors (2,086 fish; **Table I-3**).

Table I-3. Mean annual South Atlantic recreational landings and discards for red grouper from 2015 through 2017. Headboat and MRIP (charter and private) landings and discards are in numbers of fish.

HEADBOAT			CHARTER			PRIVATE		
Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)
2,086	7,691	369%	4,815	10,535	219%	17,904	65,523	366%

Source: MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads; SEFSC Headboat Logbook CRNF files (March 2017).

Commercial trip co-occurrence

Red grouper could be directly impacted by actions included in Regulatory Amendment 30. **Table I-4** lists the species most often landed with red grouper on the same trip in the South Atlantic using SEFSC commercial logbook data. The analysis was done by isolating all commercial logbook trips that reported at least one pound landed for red grouper using data from 2015 through 2017 in the South Atlantic. Next, on the same trips, the numbers of trips in which other species were also landed were used to provide a percentage of trip co-occurrence. Red grouper had co-occurring species landed on the same trip on no more than 40% of the trips, with red porgy and scamp being the most frequent at 39.8% and 39.6%, respectively. These analyses are limited to co-occurrence of landings and do not contain any information on species that were discarded at-sea. Other studies have incorporated data from the Reef Fish Observer Program in the Gulf of Mexico and an independent sampling program that may provide more comprehensive analyses, but these are focused on the Gulf of Mexico and not the South Atlantic (Farmer et al. 2016; Pulver et al. 2016).

Table I-4. The number of commercial trips where at least one pound of red grouper was landed, and the top three species caught on the same trips in the South Atlantic for all gear types from 2015 through 2017, including the percentage of trip co-occurrence for species one through three.

Species of Interest	Number of Trips	Species One	Species Two	Species Three
Red Grouper	2,511	Red Porgy (39.8%)	Scamp (39.6%)	Gag (36.4%)

Source: Southeast Fisheries Science Center Commercial Logbook (May 2018).

Recreational trip co-occurrence

Red grouper can be directly impacted by actions included in Regulatory Amendment 30. **Tables I-5 through I-7** lists the species most often captured (landed or discarded) on the same intercept or trip in the South Atlantic using MRIP data from 2013 through 2017 for private anglers and charter boat intercepts or SEFSC headboat survey data from 2015 through 2017. Five years was used for private anglers and charter boat intercepts to obtain a minimum of 50 trips captured. The analyses first isolated all recreational intercepts or headboat trips that reported at least one red grouper captured from 2013 through 2017 in the South Atlantic. Next, on the same intercepts or headboat trips, the number of other species that were also reported captured were used to provide a percentage of trip co-occurrence. For example, if on the 6,059 MRIP headboat intercepts that captured red grouper, 5,121 also reported yellowtail snapper captured, then the percentage of trip co-occurrence between these two species was 84.5% (5,121/6,059). Also note that MRIP methods focus on measuring the catch of all species coast-wide. Therefore, trip co-occurrence derived from MRIP data may contain common inshore species such as spotted seatrout.

For the private angling sector, red grouper had trip co-occurrence with mutton snapper (21.7%), gray snapper (21.2%), yellowtail snapper (21.2%) (**Table I-5**). Similar co-occurrences were present in the charter sector with high co-occurrence with mutton snapper (55.2%), yellowtail snapper (47.8%), and white grunt (46.3%) (**Table I-6**). There were many more headboat sector trips available for analyses than either charter or private angling trips (**Table I-7**). Red grouper had high trip co-occurrence on headboat trips with yellowtail snapper (84.5%), mutton snapper (72.4%), and white grunt (64.4%).

Trip co-occurrence analyses using data from the headboat sector are likely more robust than analyses derived from MRIP data due to the number of intercepts or trips available for most species from 2015 through 2017. Additionally, more fish are being captured on average per intercept or trip than the other sectors due to the number of anglers typically fishing. Other studies have incorporated Reef Fish Observer Program and independent sampling program data that may provide additional insights, but are focused on the Gulf of Mexico and not the South Atlantic (Farmer et al. 2016; Pulver et al. 2016).

Table I-5. The species of interest, the number of private angling intercepts where at least one species of interest as captured, and the top three species caught on the same private angling intercepts in the South Atlantic from 2013 through 2017 including the percentage of intercept co-occurrence for species one through three.

Species of Interest	Intercepts	Species One	Species Two	Species Three
Red Grouper	184	Mutton Snapper (21.7%)	Gray Snapper (21.2%)	Yellowtail Snapper (21.2%)

Source: MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads.

Table I-6. The species of interest, the number of charter intercepts where at least one species of interest as captured, and the top three species caught on the same charter intercepts in the South Atlantic from 2013 through 2017 including the percentage of intercept co-occurrence for species one through three.

Species of Interest	Intercepts	Species One	Species Two	Species Three
Red Grouper	67	Mutton Snapper (55.2%)	Yellowtail Snapper (47.8%)	White Grunt (46.3%)

Source: MRIP Survey Data available at https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/downloads.

Table I-7. The number of headboat trips where at least one pound of red grouper was landed, and the top three species caught on the same trips in the South Atlantic for all gear types from 2015 through 2017, including the percentage of trip co-occurrence for species one through three.

Species of Interest	Intercepts	Species One	Species Two	Species Three
Red Grouper	6,059	Yellowtail Snapper (84.5%)	Mutton Snapper (72.4%)	White Grunt (64.6%)

Source: SEFSC Headboat Logbook CRNF files (March 2017).

Release Mortality Rates

Generally, release mortality is highly correlated with depth for snapper grouper species, with highest mortality among fish captured in deep water (Campbell et al. 2014; Pulver 2017; Rudershausen et al. 2014; Stephen and Harris 2010; Wilson and Burns 1996). Red grouper can be captured over a broad depth range or transition to different depth zones throughout their life history, so release mortality rates can be highly variable. Recent Southeast Data, Assessment, and Review (SEDAR) assessments include estimates of release mortality rates based on published study and industry input. Stock assessment reports can be found at http://sedarweb.org/. A South Atlantic red grouper commercial release mortality base estimate of 20% (sensitivity range: 10-30%) was recommended in SEDAR 53 (2017). It was noted after the assessment that 20% might be too low an estimate for red grouper based on other research and the most recent assessment in the Gulf of Mexico (Pulver 2017; SEDAR 42 2015).

Expected Impacts on Bycatch for the Proposed Actions

Action 1 would be to revise the rebuilding schedule for red grouper. Bycatch and discards should remain the same.

Action 2 would modify the seasonal prohibition on recreational harvest and possession of red grouper in the EEZ off South Carolina and North Carolina. A high number of discards were reported on average annually (83,749 total) by the recreational sector for red grouper. The discard ratio of red grouper was highest in the headboat sector, with a 369% ratio, and similar in the private angling sector. Bycatch and discards could increase or remain the same by modifying the seasonal prohibition on recreational harvest and possession of red grouper depending on fishing effort. If the prohibition is extended further into the summer when fishing effort typically increases, the discards could remain similar or increase. If the prohibition length is extended to five or six months, then regulatory discarding could increase if fishermen are fishing for other species during the closed months and need to release incidentally caught red grouper. However, since the estimated release mortality for red grouper is 20% (SEDAR 53, 2017), the majority of discarded red grouper would be expected to survive.

Action 3 would modify the seasonal prohibition on commercial harvest, possession, sale, and purchase of red grouper in the EEZ off South Carolina and North Carolina. On average, 677 red grouper were discarded annually according to the SEFSC discard logbook from 2015 through 2017, with 'out of season' selected as the reason for discarding in 23% of the reports. Depending on fishing effort, bycatch and discards could remain the same or increase if the seasonal prohibition on commercial harvest and possession of red grouper is modified. If the prohibition length is extended to five or six months, then regulatory discarding could increase if fishermen are fishing for other species during the closed months and need to release incidentally caught red grouper. However, currently very few discards relative to the

landings are being reported (**Chapter 3, Table 3.2.3**), and the majority of reports select 'not legal size' as the reason for discarding. Therefore, any changes would likely have minimal population effects.

Action 4 would establish a commercial trip limit for red grouper harvested in the South Atlantic EEZ. Establishing a trip limit could extend the fishing season longer. However, the commercial trip limit could also increase discards if fishers catch more red grouper than the trip limit. Red grouper have low estimated release mortality rates, so increases in discards may have minimal population effects.

Past, Current, and Future Actions to Prevent Bycatch and Improve Monitoring of Harvest, Discards, and Discard Mortality

The Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; SAFMC 2011a) included actions that removed harvest of octocorals off Florida from the Coral, Coral Reefs, and Live/Hard Bottom Habitat Fishery Management Plan (Coral FMP); set the octocoral ACL for Georgia, South Carolina, and North Carolina equal to 0; modified management of special management zones (SMZs) off South Carolina; revised sea turtle release gear requirements for the snapper grouper fishery that were established in Amendment 15B to the Snapper Grouper FMP (SAFMC 2008); and designated new essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern in the South Atlantic. There is no bycatch associated with octocoral harvest within the management area of the Coral FMP since harvest is prohibited. CE-BA 2 also included an action that limited harvest and possession of snapper grouper and coastal migratory pelagics (CMP) species to the bag limit in SMZs off South Carolina. This action likely reduced bycatch around SMZs by restricting commercial harvest in the area, but has probably had limited effect on the magnitude of overall bycatch of snapper grouper species in the South Atlantic.

Other actions have been taken in recently implemented amendments that have reduced bycatch of and bycatch mortality of federally managed species in the South Atlantic. Amendment 13C to Snapper Grouper FMP (SAFMC 2006) required the use of 2-inch mesh in the back panel of black sea bass pots, which has likely reduced the magnitude of regulatory discards. Amendment 16 to the Snapper Grouper FMP (SAFMC 2009) required the use of dehooking devices, which could help reduce bycatch mortality of vermilion snapper, black sea bass, gag, red grouper, black grouper, and red snapper. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. If a fish does need to be removed from the water, dehookers reduce handling time thus increasing survival (Cooke et al. 2001). Furthermore, Amendment 17A to the Snapper Grouper FMP (SAFMC 2010a) required circle hooks for snapper grouper species north of 28 degrees latitude, which has likely reduced bycatch mortality of some snapper grouper species. Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) established ACLs and AMs and address overfishing for eight species in the snapper grouper management complex: golden tilefish, snowy grouper, speckled hind, Warsaw grouper, black sea bass, gag, red grouper, black grouper, and vermilion snapper. Overfishing is no longer occurring for black sea bass, snowy grouper, red grouper, black grouper, and vermilion snapper.

The Comprehensive ACL Amendment (SAFMC 2011b) implemented ACLs and AMs for species not undergoing overfishing in the Fishery Management Plans for snapper grouper, dolphin and wahoo, golden crab and *Sargassum*, in addition to other actions such as allocations and establishing annual catch targets for the recreational sector. The Comprehensive ACL Amendment (SAFMC 2011a) also established additional measures to reduce bycatch in the snapper grouper fishery with the establishment of species complexes based on biological, geographic, economic, taxonomic, technical, social, and ecological

factors. ACLs were assigned to these species complexes, and when the ACL for the complex is met or projected to be met, fishing for species included in the entire species complex is prohibited for the fishing year. ACLs and AMs will likely reduce bycatch of target species and species complexes as well as incidentally caught species.

Amendment 18A to the Snapper Grouper FMP (SAFMC 2011c), included actions that could reduce bycatch of black sea bass and the potential for interactions with protected species. Actions in Amendment 18A limited the number of participants in the black sea bass pot sector, required fishermen bring pots back to port at the completion of a trip, and limited the number of pots a fisherman can deploy. Amendment 24 to the Snapper Grouper FMP (SAFMC 2011d) established a rebuilding plan for red grouper, which was overfished and undergoing overfishing. Amendment 24 (SAFMC 2011d) also established ACLs and AMs for red grouper, to help to reduce bycatch of red grouper and co-occurring species.

Amendment 18B to the Snapper Grouper FMP (SAFMC 2012), established an endorsement program for the commercial golden tilefish longline sector, which could have positive effects for habitat and protected species. Regulatory Amendment 14 to the Snapper Grouper FMP (SAFMC, 2014) adjusted management measures for a number of snapper grouper species, some of which likely reduced the magnitude of discards. Regulatory Amendment 15 to the Snapper Grouper FMP included actions for yellowtail snapper and gag that are expected to reduce bycatch of snapper grouper species (SAFMC, 2013a). Amendment 36 to the Snapper Grouper FMP established SMZs and is expected to reduce bycatch of many snapper grouper species, especially speckled hind and warsaw grouper.

The Joint Generic Headboat Reporting Amendment (SAFMC 2013b), including Amendment 31 to the Snapper Grouper FMP, which went into effect on January 27, 2014 (78 FR 78779), has changed the reporting frequency for landings by headboats from monthly to weekly, and requires that reports be submitted electronically. The action is expected to provide more timely information on landings and discards. Improved information on landings would help ensure ACLs are not exceeded. Furthermore, more timely and accurate information would be expected to provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, and lead to better decisions regarding additional measures to reduce bycatch. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Therefore, enhanced catch and bycatch monitoring would provide better data that could be used in multi-species assessments.

The South Atlantic Council developed Amendment 39 to the Snapper Grouper FMP, Amendment 9 to the Dolphin Wahoo FMP and Amendment 27 to the CMP FMP of the Gulf of Mexico and Atlantic Regions that proposes mandatory weekly electronic reporting for charter vessel operators with a federal for-hire permit in the snapper grouper, dolphin wahoo, or coastal migratory pelagic fisheries; reduces the time allowed for headboat operators to complete their electronic reports; and proposes requiring location reporting by charter vessels with the same detail now required for headboat vessels. The notice of availability published on March 14, 2018 (83 FR 11164), and the comment period ended on May 13, 2018. The proposed rule published on April 4, 2018 (83 FR 14400), and the comment period ended on May 4, 2018.

Other amendments under development to the Snapper Grouper FMP include Amendment 42, which will include actions to include sea turtle release gear in the regulations for the commercial snapper

grouper fishery and consider modifications to the snapper grouper framework so the South Atlantic Council may more quickly modify sea turtle and other protected resources release gear and handling requirements in the future. The South Atlantic Council approved the amendment for Secretarial review at their March 2018 meeting.

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit and reporting (e.g., MyFishCount App). Word on this amendment is currently on hold.

Vison Blueprint Recreational Regulatory Amendment 26 to the Snapper Grouper FMP proposes to modify recreational regulations for species in the snapper grouper complex, including aggregate bag limits, seasonal closures, minimum size limits, and gear requirements for certain species. The purpose of this amendment is to address recreational stakeholder input to increase access and predictability for the recreational component of the snapper grouper fishery, minimize regulatory discards, and improve regulatory compliance and consistency. Final approval for Secretarial review took place at the December 2018 South Atlantic Council meeting.

The South Atlantic Council reviewed options at their June 2018 meeting Regulatory Amendment 29 to the Snapper Grouper FMP, which contains actions pertaining to best fishing practices (e.g., descending devices) and powerhead regulations in a framework amendment to expedite development (these actions were previously included in Amendment 46 to the Snapper Grouper FMP). The amendment was approved for scoping at the June 2018 meeting and is scheduled to be approved for Secretarial review at the September 2019 South Atlantic Council meeting.

Regulatory Amendment 31 to the Snapper Grouper FMP (included in the Comprehensive Recreational AMs Amendment) could include actions to revise recreational AMs to allow more flexibility in managing recreational fisheries.

These future actions will help to improve estimates on the composition and magnitude of catch and bycatch of snapper grouper species, as well as all other federally managed species in the southeast region. Additional information on fishery related actions from the past, present, and future considerations can be found in **Chapter 6** (Cumulative effects) of the environmental assessment.

1.2 Ecological Effects Due to Changes in Bycatch of that Species (effects on other species in the ecosystem)

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Relationships among species in marine ecosystems are complex and poorly understood, making the nature and magnitude of ecological effects difficult to predict. As mentioned in the above section, actions have been taken, and are underway to reduce bycatch and enhance data reporting for snapper grouper species. Better bycatch and discard data would provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, and lead to better decisions regarding additional measures to reduce bycatch.

As summarized in **Section 1.1** of this Bycatch Practicability Analysis (BPA), most actions in Regulatory Amendment 30 are not expected to result in significant changes in bycatch for most of the

actions. Additionally, as stated in **Chapter 3,** and analyzed in detail in **Chapter 4**, the biological (and consequently ecological) effects due to changes in the bycatch would likely be negligible.

1.3 Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Regulatory Amendment 30 is not expected to affect major changes in bycatch of other fish species, since bycatch of other species is incidental in the hook-and-line fishery for most of the species. Furthermore, improved data monitoring and reporting measures have been implemented, and will continue to improve in the near future if management measures are put into place utilizing the improved data, which could be expected to reduce bycatch and discards. If an observer program in the South Atlantic snapper grouper fishery was developed, the program would be expected to improve estimates of discards and provide insight to management on measures for reducing bycatch. Additionally, data collection improvements using electronic reporting and monitoring should allow more accurate and timely tracking of catch as well as other capture information. Improved information should benefit stocks by improving accuracy and reducing uncertainty in catch estimates leading to better decisions.

1.4 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the 2016, 2017, and 2018, and proposed 2019 LOF classifies as a Category II (81 FR 20550, April 8, 2016, 81 FR 54019, August 15, 2016; February 7, 2018, 83 FR 5349; October 23, 2018, 83 FR 53422, respectively). Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 2000. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented; each was taken by handline gear and each released alive (McCarthy SEFSC database). The longline and hook-and-line gear components of the snapper grouper in the South Atlantic are classified in the 2016, 2017, 2018, and proposed 2019 LOF as Category III fisheries.

Commercial and recreational fishers in the South Atlantic snapper grouper fishery use hook-and-line gear, spear/powerheads, and pot/traps to target black sea bass, but only pots may adversely affect North Atlantic Right whales (NARWs) (NMFS 2016). Although the black sea bass pot sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot sector operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3- 36.6 meters). NMFS estimated that the number of annual lethal takes for NARWs from black sea bass trap/pot gear ranged from an estimated minimum of 0.005 to a maximum of 0.08. This equates to 1 estimated lethal entanglement approximately every 25 to 42 years.

On December 1, 2016, NMFS completed its most recent biological opinion (2016 Opinion) on the snapper grouper FMP (NMFS 2016). In the 2016 Opinion, NMFS concluded that the snapper grouper fishery's continued authorization is likely to adversely affect but is not likely to jeopardize the continued existence of the NARW, loggerhead sea turtle Northwest Atlantic distinct population segments (DPS), leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper. Summary information on the species that may be adversely affected by the snapper grouper fishery and how they are affected is presented **Section 3.2.5**.

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished US Fish and Wildlife Service data). Interaction with fisheries has not been reported as a concern for either of these species. Fishing effort reductions have the potential to reduce the amount of interactions between the fishery and marine mammals and birds. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the snapper grouper fishery. Thus, it is believed that the snapper grouper fishery is not likely to negatively affect the Bermuda petrel and the roseate tern.

1.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

Research and monitoring is ongoing to understand the effectiveness of proposed management measures and their effect on bycatch. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. The SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Further, the Joint Commercial Logbook Reporting Amendment is being developed by the South Atlantic Council and the Gulf of Mexico Council, which would require electronic reporting of landings information by federally permitted commercial vessels to increase the timeliness and accuracy of landings and discard data.

Recreational discards are obtained from MRIP and logbooks from the NMFS headboat program. Additional data collection activities for the recreational sector are being considered by the South Atlantic Council that could allow for a better monitoring of snapper grouper bycatch in the future. Some observer information has been provided by Marine Fisheries Initiative and Cooperative Research Programs (CRP), but more is desired for the snapper grouper fishery. In December 2012, the Southeast Region Headboat Survey underwent a transition from paper logbooks to electronic logbooks, which is expected to improve the quality of data in that sector. As of January 1, 2013, a new electronic logbook replaced the paper logbook form. The form is available through a password protected Web site on the Internet, which can be accessed by personal computer, computer tablet, or "smart phone". The South Atlantic Council approved the For-Hire Amendment at their March 2013 meeting, which was approved and implemented in January 2014. This amendment requires weekly electronic reporting by the headboat sector.

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information on the snapper grouper fishery in the South Atlantic. For example, Harris and Stephen (2005) characterized the entire (retained and discarded) catch of reef fishes from a selected commercial fisherman in the South Atlantic including total catch composition and disposition of fishes that were released. The Gulf and South Atlantic Fisheries Foundation, Inc. conducted a fishery observer program within the snapper grouper vertical hook-and-line (bandit rig) fishery of the South Atlantic United States. Through contractors they randomly placed observers on cooperating vessels to collect a variety of data quantifying the participation, gear, effort, catch, and discards within the fishery.

In the spring 2010, Archipelago Marine Research Ltd. worked with North Carolina Sea Grant and several South Atlantic Unlimited Snapper Grouper Permit holders to test the effectiveness of electronic video monitoring to measure catch and bycatch. A total of 93 trips were monitored with video monitoring, 34 by self-reported fishing logbooks, and 5 by observers. Comparisons between electronic video monitoring data and observer data showed that video monitoring was a reliable source of catch and bycatch data.

Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Marine Fisheries Initiative, Saltonstall-Kennedy program, and the CRP. Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the South Atlantic Councils and NMFS upon completion of a study.

NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

1.6 Changes in Fishing Practices and Behavior of Fishermen

Changes in seasonal closures and trip limits through Regulatory Amendment 30 could result in a modification of fishing practices by commercial and recreational fishers, thereby affecting the magnitude of discards during the designated timeframe. Whereas it is possible that bycatch of species in the red grouper fishery will be reduced with the actions proposed, there is a potential for the discards to increase if the fishing season or trip limits are overly restrictive. However, as discussed in **Section 1.1** of this BPA, the magnitude of discards is not expected to be significantly affected for most of the proposed actions. It is difficult to quantify any of the measures in terms of reducing discards until bycatch has been monitored over several years. Commercial and recreational bycatch information is collected by NMFS, and that information will continue to be analyzed to determine what changes, if any, have taken place in terms of fishing practices and fishing behavior as a result of the actions implemented through Regulatory Amendment 30.

Social effects of actions proposed in Regulatory Amendment 30 are addressed in **Chapter 4** of this document. **Section 3.4** includes information on environmental justice.

Fishermen can be educated about methods to reduce bycatch and enhance survival of regulatory discards. Whereas improving survival may be advantageous for mid-shelf species, it is more of a

challenge for deep-water species that can experience nearly 100% mortality from depth related trauma. Furthermore, it is not clear that changes in behavior could substantially affect the amount of bycatch incurred. Gear changes such as hook type or hook size could have some effect on reducing bycatch mortality. Furthermore, spawning seasons with stricter regulations, new or reduced quotas and reduced trip limits could cause some commercial fishers to reduce or shift effort.

1.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

The proposed actions are not expected to significantly impact administrative costs. Trip limits, and catch monitoring are currently used to regulate the commercial fishery. All these measures will require additional research to determine the magnitude and extent of changes in bycatch and bycatch mortality. Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

1.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Any changes in economic, social, or cultural values from the proposed actions are discussed in **Chapter 4** of the environmental assessment.

1.9 Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from proposed actions in the environmental assessment are discussed in **Chapter 3**. Economic and social effects of the proposed actions are addressed in **Chapter 4** of this document.

1.10 Social Effects

The social effects of all the measures are described in **Chapter 4** of the environmental assessment.

Conclusion

The bycatch practicability analysis evaluates taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR section 600.350(d)(3)(i). In summary, measures proposed in Regulatory Amendment 30 are intended to revise the rebuilding schedule, recreational and commercial fishing seasons, and commercial trip limits for red grouper. These actions are necessary to rebuild the red grouper stock and achieve optimum yield while minimizing, to the extent practicable, adverse social and economic effects. As summarized in **Section 1.1** of this BPA, the actions in Regulatory Amendment 30 are not expected to result in significant changes in bycatch for most of the actions. In addition, the South Atlantic Council, NMFS, and the SEFSC have implemented and plan to implement numerous management measures and reporting requirements that have improved, or are likely

to improve monitoring efforts of discards and discard mortality. Therefore, no additional action is needed to minimize bycatch or bycatch mortality within the snapper grouper fishery.

References

Alsop III, F.J. 2001. Smithsonian Handbooks: Birds of North America eastern region. DK Publishing, Inc. New York, NY.

Cooke, S.J., D.P. Philipp, K.M. Dunmall, and J.F. Schreer. 2001. The influence of terminal tackle on injury, handling time, and cardiac disturbance of rock bass. North American Journal of Fishery Management 21:333-342.

Campbell, M. D., W. B. Driggers, B. Sauls, and J. F. Walter. 2014. Release mortality in the red snapper fishery (Lutjanus campechanus) fishery: a meta-analysis of 3 decades of research. Fishery Bulletin 112:283-296.

Farmer, N. A., R. P. Malinowski, M. F. McGovern, and P. J. Rubec. 2016. Stock complexes for fisheries management in the Gulf of Mexico. Marine and Coastal Fisheries 8(1):177-201.

Harris, P.J. and J. Stephen. 2005. Final Report Characterization of commercial reef fish catch and bycatch off the southeast coast of the United States. CRP Grant No. NA03NMF4540416.

NMFS (National Marine Fisheries Service). 2016. Endangered Species Act Section 7 consultation on the continued authorization of snapper grouper fishing in the U.S. South Atlantic EEZ as Managed under the Snapper Grouper Fishery Management Plan (SGFMP) of the South Atlantic Region, including Proposed Regulatory Amendment 16 to the SGFMP. Biological Opinion. December 1.

Pulver, J. R., H. Liu, and E. Scott-Denton. 2016. Modelling community structure and species co-occurrence using fishery observer data. ICES Journal of Marine Science 73(7):1750-1763.

Pulver, J. R. 2017. Sink or Swim? Factors affecting immediate discard mortality for the Gulf of Mexico commercial reef fish fishery. Fisheries Research 188:166-172.

Rudershausen, P. J., J. A. Buckel, and J. E. Hightower. 2014. Estimating reef fish discard mortality using surface and bottom tagging: effects of hook injury and barotrauma. Canadian Journal of Fisheries and Aquatic Sciences 71:514-520.

SAFMC (South Atlantic Fishery Management Council). 2006. Amendment 13C, Final Environmental Assessment, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 631 pp.

SAFMC (South Atlantic Fishery Management Council). 2008. Amendment 15B to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Biological Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. 324 pp. plus appendices.

SAFMC (South Atlantic Fishery Management Council). 2009. Amendment 16 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final

Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. 608 pp. plus appendices.

SAFMC (South Atlantic Fishery Management Council). 2010a. Amendment 17A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2010b. Amendment 17B, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011a. Comprehensive Ecosystem Based Amendment 2, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. (Amendment 23 to the Snapper Grouper FMP). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011b. Comprehensive Annual Catch Limit Amendment for the South Atlantic Region with Final Environmental Impact Statement, Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. 755 pp. plus appendices.

SAFMC (South Atlantic Fishery Management Council). 2011c. Amendment 18A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement with Regulatory Flexibility Act Analysis, Regulatory Impact Review, and Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011d. Amendment 24 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2012. Amendment 18B to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Assessment, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013a. Regulatory Amendment 15 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region . South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2013b. Amendment 31 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Assessment, Regulatory Flexibility Analysis, Regulatory Impact Review, and Social

Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014. Regulatory Amendment 14 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Assessment, Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SEDAR 42. 2015. Stock assessment report Gulf of Mexico red grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina.

SEDAR 53. 2017. Stock assessment report South Atlantic red grouper. Southeast Data, Assessment, and Review. North Charleston, South Carolina.

Stephen, J. A., and P. J. Harris. 2010. Commercial catch composition with discard and immediate release mortality proportions off the southeastern coast of the United States. Fisheries Research 103:18-24.

Wilson Jr., R. R., and K. M. Burns. 1996. Potential survival of released groupers caught deeper than 40 m based on shipboard and in-situ observations, and tag-recapture data. Bulletin of Marine Science 58(1):234-247.

Appendix J. Essential Fish Habitat and Ecosystem Based Fishery Management

EFH and EFH-HAPC Designations and Cooperative Habitat Policy Development and Protection

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal fishery management Councils and the National Marine Fisheries Service (NMFS) to designate Essential Fish Habitat (EFH) for species managed under federal fishery management plans (FMP). Federal regulations that implement the EFH program encourage fishery management Councils and NMFS also to designate subsets of EFH as a way to highlight priority areas within EFH for conservation and management. These subsets of EFH are called EFH-Habitat Areas of Particular Concern (EFH-HAPCs or HAPCs) and are designated based on ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of the habitat type. Information supporting EFH and EFH-HAPC designations was updated (pursuant to the EFH Final Rule) in FEP II.

South Atlantic Fishery Management Council (South Atlantic Council) EFH User Guide
(http://safmc.net/download/SAFMCEFHUsersGuideFinalRevAug17_2.pdf)

The EFH Users Guide developed during the FEP II development process is available through the FEP II Dashboard (refer to following sections) and provides a comprehensive list of the designations of EFH and EFH-HAPCs for all species managed by the South Atlantic Council and the clarifications identified during FEP II development. As noted above, additional detailed information supporting the EFH designations appears in FEP, FEP II and in individual FMPs, and general information on the EFH provisions of the Magnuson-Stevens Act and its implementing regulations (50 CFR 900 Subparts J and K) https://www.fisheries.noaa.gov/topic/habitat-conservation. These sources should be reviewed for information on the components of EFH assessments, steps to EFH consultations, and other aspects of EFH program operation.

South Atlantic Council EFH Policy and EFH Policy Statements
Policy for Protection and Restoration of Essential Fish Habitat
South Atlantic Council Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the South Atlantic Council to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, "habitat" is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the South Atlantic Council policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The South Atlantic Council will pursue these goals at state, Federal, and local levels. The South Atlantic Council shall assume an aggressive role in the protection and enhancement of habitats important to fishery species, and

shall actively enter Federal, decision making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the South Atlantic Council.

South Atlantic Council Essential Fish Habitat Policy Statements
Considerations to Reduce or Eliminate the Impacts of Non-Fishing Activities on EFH

In addition to implementing regulations to protect habitat from degradation due to fishing activities, the South Atlantic Council in cooperation with NOAA Fisheries, actively comments on non-fishing projects or policies that may impact fish habitat. The South Atlantic Council established a Habitat Protection and Ecosystem Based Management AP and adopted a comment and policy development process. Members of the AP serve as the South Atlantic Council's habitat contacts and professionals in the field and have guided the South Atlantic Council 's development of the following Policy Statements:

- EFH Policy Statement on South Atlantic Climate Variability and Fisheries (December 2016)
- EFH Policy Statement on South Atlantic Food Webs and Connectivity (December 2016)
- Protection and Restoration of EFH from Marine Aquaculture (June 2014)
- Protection and Enhancement of Marine Submerged Aquatic Vegetation (June 2014)
- Protection and Restoration of EFH from Beach Dredging and Filling, Beach Re-nourishment and Large Scale Coastal Engineering (March 2015)
- Protection and Restoration of EFH from Energy Exploration, Development, Transportation and Hydropower Re-Licensing (December 2015)
- Protection and Restoration of EFH from Alterations to Riverine, Estuarine and Nearshore Flows (June 2014)
- Policies for the Protection of South Atlantic Marine & Estuarine Ecosystems from Non-Native and Invasive Species (June 2014)
- Policy Considerations for Development of Artificial Reefs in the South Atlantic Region and Protection of Essential Fish Habitat (September 2017)

Habitat Conservation and Fishery Ecosystem Plans

The South Atlantic Council, views habitat conservation as the foundation in the move to Ecosystem Based Fishery Management (EBFM) in the region. The South Atlantic Council has been proactive in advancing habitat conservation through extensive gear restrictions in all South Atlantic Council FMPs and by directly managing habitat and fisheries affecting those habitats through two FMPs, the Fishery Management Plan for Coral, Coral Reefs and Live/Hard Bottom Habitat of the South Atlantic Region (Coral FMP) and the Pelagic Sargassum Habitat FMP. In addition, the Dolphin Wahoo FMP represents a proactive FMP which established fishery measures and identified EFH in advance of overfishing or habitat impacts from the fisheries.

Building on the long-term conservation approach, the South Atlantic Council facilitated the evolution of the Habitat Plan into the first FEP to provide a clear description and understanding of the fundamental physical, biological, and human/institutional context of ecosystems within which fisheries are managed and identify information needed and how that information should be used in the context of FMPs. Developing a South Atlantic FEP required a greater understanding of the South Atlantic ecosystem, including both the complex relationships among humans, marine life, the environment and essential fish habitat and a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from single species management to EBFM in the region. To support the move towards EBFM, the South Atlantic Council adopted broad goals: (1) maintaining or improving ecosystem structure and function; (2) maintaining or improving economic, (3) social, and

cultural benefits from resources; and (4) maintaining or improving biological, economic, and cultural diversity.

Ecosystem Approach to Conservation and Management of Deep-water Ecosystems

The South Atlantic Council 's Habitat and Environmental Protection Advisory Panel (AP) and Coral AP supported an ecosystem approach and proactive efforts to identify and protect deep-water coral ecosystems in the South Atlantic region. Through Comprehensive Ecosystem-Based Amendment 1, Comprehensive Ecosystem-Based Amendment 2, and Coral Amendment 8, the South Atlantic Council established and expanded deep-water coral HAPCs (CHAPCs) and co-designated them as EFH-HAPCs to protect the largest continuous distribution (>23,000 square miles) of pristine deep-water coral ecosystems in the world from fishing and non-fishing activities.

Fishery Ecosystem Plan II Development

The South Atlantic Council developed FEP II, in cooperation with NOAA Fisheries, as a mechanism to incorporate ecosystem principles, goals, and policies into the fishery management process, including consideration of potential indirect effects of fisheries on food web linkages when developing harvest strategies and management plans. The South Atlantic Council policies developed through the process support data collection, model and supporting tool development, and implementation of FEP II. FEP II and the FEP II Implementation Plan provide a system to incorporate of ecosystem considerations into the management process.

FEP II was developed employing writing and review teams established from the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP, and experts from state, federal, NGOs, academia and other regional organizations and associations. Unlike the original Plan, FEP II is a living continually developing online information system presenting core sections and sections with links to documents or other online systems with detailed updated information on species, habitat, fisheries and research. For example, FEP II provides both concise summaries of South Atlantic Council managed species with links to detailed information served through the South Atlantic Ecospecies online species information system cooperatively developed with Florida Fish and Wildlife Research Institute (FWRI). The system provides online access to detailed information on habitat, life history, the fishery and management. A core part of the FEP II development process involved engaging the South Atlantic Council's Habitat Protection and Ecosystem Based Management Advisory Panel and regional experts in developing new sections and ecosystem- specific policy statements to address South Atlantic food webs and connectivity and South Atlantic climate variability and fisheries. In addition, standing essential fish habitat policy statements were updated and a new artificial reef habitat policy statement was approved. In combination, these statements advance habitat conservation and the move to EBFM in the region. They also serve as the basis for further policy development, consideration in habitat and fish stock assessments and future management of fisheries and habitat. They also support a more comprehensive view of conservation and management in the South Atlantic and identify long-term information needs, available models, tools, and capabilities that will advance EBFM in the region.

Fishery Ecosystem Plan II Dashboard

The FEP II Dashboard and associated online tools provide a clear description of the fundamental physical, biological, human, and institutional context of South Atlantic ecosystems within which fisheries are managed. The FEP II Digital Dashboard layout and online links follow are below:

- Introduction
- South Atlantic Ecosystem
- South Atlantic Habitats
- Managed Species
- Social and Economic
- Essential Fish Habitat
- SAFMC Managed Areas
- Research & Monitoring
- SAFMC Tools

NOAA Ecosystem Based Fishery Management Activities Supporting FEP II

NOAA EBFM Policy and Road Map

To support the move to EBFM, NOAA Fisheries developed an agency-wide EBFM Policy and Road Map (available through Ecosystem page of the FEP II Dashboard http://safmc.net/fishery-ecosystem-plan-ii-south-atlantic-ecosystem/) that outlines a set of principles to guide actions and decisions over the long-term to: implement ecosystem-level planning; advance our understanding of ecosystem processes; prioritize vulnerabilities and risks of ecosystems and their components; explore and address trade-offs within an ecosystem; incorporate ecosystem considerations into management advice; and maintain resilient ecosystems.

FEP II Implementation Plan Structure and Framework

The Implementation Plan (http://safmc.net/download/SAFMC-FEP-II-Implementation-Plan-March-2018.pdf) is structured to translate approved policy statements of the South Atlantic Council into actionable items. The plan encompasses chapters beginning with an introduction to the policy statement, a link to the complete policy statement, and a table which translates policies and policy components into potential action items. The actions within the plan are recommendations for activities that could support the South Atlantic Council ‘s FEP II policies and objectives.

FEP II Two Year Roadmap

The FEP II Two Year Roadmap (http://safmc.net/download/SAFMC-FEP-II-Two-Year-Roadmap-March-2018.pdf) draws from the Implementation Plan and presents three to five priority actions for each of the nine approved policy statements of the South Atlantic Council which would be initiated or completed over the next two years. The Roadmap provides “Potential Partners” and other potential regional collaborators, a focused list of priority actions they could cooperate with the South Atlantic Council on to advance policies supporting the move to EBFM in the South Atlantic region.

Monitoring/Revisions to FEP II Implementation Plan

FEP II and this supporting Implementation Plan are considered active and living documents. The Implementation Plan will be reviewed and updated periodically. During their spring meeting in 2021 and every three years following, the Habitat Protection and Ecosystem Based Management Advisory Panel will engage regional experts as needed, to determine whether additional actions addressing South Atlantic Council policies should be added to the implementation plan. The South Atlantic Council ‘s Habitat Protection and Ecosystem Based Management Committee will review, revise and refine those

recommendations for South Atlantic Council consideration and approval for inclusion into the implementation plan.

Regional Habitat and Ecosystem Partners

The South Atlantic Council, with the Habitat Protection and Environmental Based Management Advisory Panel as the foundation, collaborates with regional partners to create a comprehensive habitat and ecosystem network in the region to enhance habitat conservation and EBFM.

Integrated Ocean Observing System (IOOS) and Southeast Coastal and Ocean Observing Regional Association (SECOORA)

The Integrated Ocean Observing System (IOOS®) is a partnership among federal, regional, academic, and private sector parties that works to provide new tools and forecasts to improve safety, enhance the economy, and protect our environment. IOOS supplies critical information about our Nation's oceans, coasts, and Great Lakes. Scientists working to understand climate change, governments adapting to changes in the Arctic, municipalities monitoring local water quality, and industries affected by coastal and marine spatial planning all have the same need: reliable, timely, and sustained access to data and information that inform decision-making. Improving access to key marine data and information supports several purposes. IOOS data sustain national defense, marine commerce, and navigation safety. Scientists use these data to issue weather, climate, and marine forecasts. IOOS data are also used to make decisions for energy siting and production, economic development, and ecosystem-based resource management. Emergency managers and health officials need IOOS information to make decisions about public safety. Teachers and government officials rely on IOOS data for public outreach, training, and education.

Southeast Coastal and Ocean Observing Regional Association (SECOORA)

The Southeast Coastal Ocean Observing Regional Association (SECOORA) is the coastal ocean observing system for the Southeast U.S. SECOORA is one of 11 regional coastal observing systems that comprise the NOAA-led United States Integrated Ocean Observing System (U.S. IOOS®). SECOORA's mission is to observe, understand, and increase awareness of our coastal ocean; promoting knowledge, economic, and environmental health through strong regional partnerships. Guided by their members, users, regional ocean experts, managers, and other stakeholders, SECOORA collects data and creates tools that support human populations, coastal economies and a healthy, sustainable environment. The SECOORA observing system is comprised of multiple data products, moored and coastal stations, high-frequency radars, and a glider observatory. The SECOORA footprint spans the eastern side of Gulf of Mexico to South Atlantic Bight and is connected by the Loop Current-Florida Current-Gulf Stream continuum. The SECOORA Strategic Plan (2016-2020) was developed by the Board in 2015 and guides tasks for the next 4 years. SECOORA supports projects that are important to stakeholders in the southeast. SECOORA talks to users and produces oceanographic observations, models, web tools, applications, and products based on their needs. Data are available on the portal http://secoora.org/data/. Each project SECOORA supports is linked to one of four focus areas: Marine Operations, Coastal Hazards, Ecosystems, and Climate Variability.

The South Atlantic Council is a voting member and South Atlantic Council staff serves on the Board of Directors to guide and direct priority needs for observation and modeling to support fisheries oceanography and integration into stock assessments through SEDAR.

Collaboration facilitates SECOORAs ability to: refine current or water column designations of EFH and EFH-HAPCs (e.g., Gulf Stream and Florida Current); provide oceanographic models linking benthic,

pelagic habitats, and food webs; provide oceanographic input parameters for ecosystem mode; integrate OOS information into SEDAR process in the South Atlantic; facilitate OOS system collection of data and other research necessary to support the South Atlantic Council 'sconservation of habitat and use of area-based management tools in the South Atlantic Region including designation of EFH and EFH-HAPC and establishment of Marine Protected Areas, Deepwater C-HAPCs, Special Management Zones, Spawning Special Management Zones and Allowable Gear Areas; characterize connectivity of habitats and managed areas; highlight the OOS program in the South Atlantic FEP II Dashboard; and provide access to OOS products to facilitate model and tool development and provide researchers access to data or products including those collected/developed by South Atlantic OOS partners. The South Atlantic Council is also collaborating with SECOORA to advance the coordination, techniques and data integration for biodiversity and environmental observations in support of region-specific decision making and implement a sustainable National Marine Biodiversity Observation Network (Marine Biodiversity Observation Network).

National Fish Habitat Plan and Southeast Aquatic Resource Partnership (SARP)

The South Atlantic Council serves on the National Habitat Board http://www.fishhabitat.org/ and, as a member of the Southeast Aquatic Resource Partnership (SARP) https://southeastaquatics.net/, has highlighted this collaboration by including the Southeast Aquatic Habitat Plan (SAHP) and associated watershed conservation restoration targets into the original FEP. Many of the habitat, water quality, and water quantity conservation needs identified in the threats and recommendations Volume of the original FEP are directly addressed by on-the-ground projects supported by SARP. This cooperation results in funding fish habitat restoration and conservation intended to increase the viability of fish populations and fishing opportunity, which also meets the needs to conserve and manage EFH for South Atlantic Council -managed species or habitat important to their prey. This work supports conservation objectives identified in the SAHP to improve, establish, or maintain riparian zones, water quality, watershed connectivity, sediment flows, bottoms and shorelines, and fish passage, and addresses other key factors associated with the loss and degradation of fish habitats. SARP also developed the Southern Instream Flow Network (SIFN) https://southeastaquatics.net/sarps-programs/sifn to address the impacts of flow alterations in the Southeastern US aquatic ecosystems which leverages policy, technical experience, and scientific resources among partners based in 15 states. Maintaining appropriate flow into South Atlantic estuarine systems to support healthy inshore habitats essential to South Atlantic Council managed species is a major regional concern and efforts of SARP through SIFN are envisioned to enhance state and local partners ability to maintain appropriate flow rates.

South Atlantic Landscape Conservation Cooperative

The South Atlantic Council participates as Steering Committee member for the South Atlantic Landscape Conservation Cooperative (SALCC), an applied conservation science partnership focused on the South Atlantic region that informs on-the-ground strategic conservation efforts at landscape scales. LCC partners included Department of Interior (DOI) agencies, other federal agencies, states, tribes, non-governmental organizations, universities, and others. The DOI Southeast Climate Services Center (CSC) had the LCCs in the region as their primary clients. One of the initial charges of the CSCs is to downscale climate models for use at finer scales.

The SALCC developed a Strategic Plan and a regional blueprint to address the rapid changes in the South Atlantic including climate change, urban growth, and increasing human demands on resources which are reshaping the landscape. Integration of connectivity, function, and threats to river, estuarine and marine systems supporting South Atlantic Council -managed species is supported by the SALCC and

enhanced by the South Atlantic Council being a voting member of its Steering Committee. In addition, the South Atlantic Council's Webservices present spatial representations of EFH, managed areas, regional fish and fish habitat distribution, and fishery operation information which was drawn on as a critical part of the collaboration with the SALCC Conservation Planning Atlas and the Regional Conservation Blueprint. While the LCCs are no longer funded, the South Atlantic Conservation Blueprint continues to be refined and serves as the technical foundation for the Southeast Conservation Adaptation Strategy (SECAS).

Southeast Conservation Adaptation Strategy: http://secassoutheast.org/

SECAS unites the conservation community around a shared, long-term vision for the future to consider dramatic changes sweeping the Southeastern United States including urbanization, competition for water resources, extreme weather events, sea-level rise, and climate change which pose unprecedented challenges for sustaining our natural and cultural resources. Through SECAS, diverse partners are working together to design and achieve a connected network of lands and waters that supports thriving fish and wildlife populations and improved quality of life for people across the Southeastern United States and the Caribbean. The primary product of SECAS is the Southeast Conservation Blueprint SECAS Blueprint. http://secassoutheast.org/blueprint.html. The Blueprint stitches together smaller sub-regional plans into one unifying map that identifies important areas for conservation and restoration.

Regional Ecosystem Modeling in the South Atlantic

South Atlantic Ecopath with Ecosim Model

The South Atlantic Council worked cooperatively with the University of British Columbia and the Sea Around Us project to develop a straw-man and preliminary food web models (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the South Atlantic Council. This effort helped the South Atlantic Council and cooperators identify available information and data gaps while providing insight into ecosystem function. More importantly, the model development process provided a vehicle to identify research necessary to better define populations, fisheries, and their interrelationships. While individual efforts were underway in the South Atlantic, only with significant investment of resources through other programs was a comprehensive regional model further developed.

A subsequent collaboration building on the previous Ecopath model developed through the Sea Around Us project for the South Atlantic Bight focused on simulating forage fish population changes that could result from environmental or oceanographic variation associated with climate change effect and how it could potentially affect managed species.

As part of the FEP II development process a new generation South Atlantic ecosystem modeling effort funded by the SALCC, was conducted to engage a broader scope of regional partners. This effort facilitated development of a new generation Ecopath with Ecosim (EwE) model which will ultimately provide evaluation tools for the SSC and South Atlantic Council and inform other regional conservation planning efforts.

The new South Atlantic EwE model provides a more complete view of the system and supports potential future evaluations that may be possible with the model. With the model complete and tuned to the available data it can be used to address broad strategic issues, and explore "what if" scenarios that could then be used to address tactical decision-making questions such as provide ecosystem context for

single species management, address species assemblage questions, and address spatial questions using Ecospace.

A modeling team comprised of FWRI staff, South Atlantic Council staff and other technical experts as needed, will coordinate with members of the original Ecosystem Modeling Workgroup to maintain and further refine the South Atlantic Model. The SAFMC Ecospecies online species information system will be the long-term repository for the processed inputs and outputs associated with the South Atlantic model. Online access to the EcoSpecies system is available through the FEP II Dashboard through individual links under Managed Species Section http://safmc.net/uncategorized/safmc-managed-species/ and through the Tools Section http://safmc.net/fishery-ecosystem-plan-ii-tools/ The direct link to the system is http://saecospecies.azurewebsites.net/.

Tools to support EBFM in the South Atlantic Region

The South Atlantic Council developed a Habitat Conservation and Ecosystem Management Section of the website http://safmc.net/fishery-ecosystem-plan-ii-introduction/which provides access to the FEP II Digital Dashboard and associated tools. Florida's FWRI maintains and distributes GIS data, imagery, and documents relevant to habitat conservation and ecosystem-based fishery management in their jurisdiction. Over the last several years, FWRI has created web services and applications using the ArcGIS for Server (AGS) software. AGS enables collaboration among various federal, state and local agencies to evaluate and analyze fisheries-related information in a new way. By transitioning to the AGS platform, the South Atlantic Council enhanced their online suite of tools to support fisheries management in their region. The South Atlantic Council has continued its collaboration with FWRI in the evolution to Web Services provided through the regional SAFMC Habitat and Ecosystem Atlas (http://ocean.floridamarine.org/safmc_atlas/) and the SAFMC Digital Dashboard (http://ocean.floridamarine.org/safmc_dashboard/). The online systems provide access to the following Services:

South Atlantic Council Fisheries Webservice: (http://ocean.floridamarine.org/SA_Fisheries/)

The service provides access to species distribution and spatial presentation of regional fishery independent data from the Southeast Area Monitoring and Assessment Program (South Atlantic) SEAMAP-SA, the Marine Resources Monitoring, Assessment, and Prediction program (MARMAP), and NOAA Southeast Fishery-Independent Survey (SEFIS).

South Atlantic Council EFH Webservice: (http://ocean.floridamarine.org/sa_efh/)

The EFH service provides access to spatial representation of EFH and EFH-HAPCs for South Atlantic Council managed species and Highly Migratory Species.

South Atlantic Council Managed Areas Service:
(http://ocean.floridamarine.org/safmc_managedareas/).

The Managed Area service provides access to spatial presentations of South Atlantic Council and other managed areas in the region. A new data layer of gear restrictions to include in the Managed Areas map service. Restrictions for black sea bass pots, fish traps, roller rigs, octocoral harvest, spiny lobster closed areas, golden crab closed areas, pelagic sargassum harvest, and longline prohibited areas are provided.

South Atlantic Council EcoSpecies Online Species Information System:
(http://saecospecies.azurewebsites.net/)

FWRI works with the South Atlantic Council to provide support relevant to habitat conservation and ecosystem-based fishery management in the South Atlantic Council 's jurisdiction. The system provides species life history and habitat information to flexibly fill the needs of the South Atlantic Council and other regional users. The updated and refined system provides the South Atlantic Council with the foundation from which to attain a more comprehensive understanding of habitat and biology of species, fisheries information, social and economic impacts of management, and ecological consequences of conservation and management. The system was further refined with information supporting EFH designations, Annual Catch Limits (ACLs), and Accountability Measures (AMs) associated with all South Atlantic Council-managed species, added and additional refinement of structure and function further enhancing the systems capabilities and utility. In addition, new habitat information based on life history stage was imported into the database and a link to a User's Guide (http://safmc.net/download/EcoSpecies-WebUser-Manual-3-17.pdf) was added. The project in 2019 will continue to update and refine the online data system. Updates included in this phase of the project address the need by the South Atlantic Council to refine and update species information for future 5-year EFH reviews and to highlight and expand accessibility and availability of detailed species, habitat, and fishery information for FEP II to further support the move to Ecosystem-Based Fishery Management.

South Atlantic Artificial Reefs Web Application:

(http://myfwc.maps.arcgis.com/apps/webappviewer/index.html?id=f3c6ac59ee5f49e59f1ae5c96c5bc76b). This application provides a regional view of artificial reefs locations, contents and eventually imagery associated with programs in the southeastern U.S. overseen by individual states (Florida, Georgia, South Carolina, North Carolina).

South Atlantic ACCSP Web Map and Application:

A new ArcGIS Online web map displays Atlantic Coastal Cooperative Statistics Program (ACCSP) Statistical Areas with related ACCSP non-spatial tables of non-confidential data binned into 5-year time steps to better represent catch and values of South Atlantic Council -managed species across time. The web map provides an easy interface to view landings of a statistical area over time. FWRI also created an ACCSP web application for users to query by species for each time step or query by ACCSP Statistical Areas. The ACCSP web application is powered by the web map to display charts of landings and values for ACCSP Statistical Areas. The related table widgets summarize the fields for "live_pounds" and "dollar_values" by species and time step.

South Atlantic Council Habitat and Ecosystem Digital Dashboard Enhancements:

To further enhance the South Atlantic Council's Digital Dashboard and enhance linkages with regional partners mapping and characterizing habitats and documenting species use of habitats in the South Atlantic Region, a live link to the *Okeanos Explorer* while on cruise was added to the Projects page and a link to the Atlantic Coastal Fish Habitat Partnership (ACFHP) was added to the Partners page.

Ecosystem-Based Action, Future Challenges and Needs

The South Atlantic Council has implemented ecosystem-based principles through several existing fishery management actions including establishment of deep-water Marine Protected Areas for the Snapper Grouper fishery, proactive harvest control rules on species (e.g., dolphin and wahoo) which are not overfished, implementing extensive gear area closures which in most cases eliminate the impact of fishing gear on EFH, and use of other spatial management tools including Special Management Zones and Spawning Special Management Zones. Through development of the Comprehensive Ecosystem-Based Amendments, the South Atlantic Council has taken an ecosystem approach to protecting deep-water

ecosystems while providing for traditional fisheries for the Golden Crab and Royal Red shrimp in areas where they do not impact deep-water coral habitat. The stakeholder-based process tapped into an extensive regional Habitat and Ecosystem network. Support tools facilitate South Atlantic Council deliberations and with the help of regional partners, are being refined to address long-term habitat conservation and EBFM needs.

One of the greatest challenges to enhance habitat conservation and EBFM in the region is funding high priority research, including comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex, and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for South Atlantic Council use in place-based management measures. Additional resources need to be dedicated to expanding regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP, and SEFIS) which are linking directly to addressing high priority management needs. The FEP II Implementation Plan includes Appendix A to highlight research and data needs excerpted from the SEAMAP 5 Year Plan because they represent short and long-term research and data needs that support EBFM and habitat conservation in the South Atlantic Region.

Development of ecosystem information systems to support South Atlantic Council management should build on existing tools (e.g., Regional Habitat and Ecosystem GIS and Arc Services) and provide resources to regional cooperating partners for expansion to address long-term South Atlantic Council needs. NOAA should support and build on the regional coordination efforts of the South Atlantic Council as it transitions to a broader management approach. Resources need to be provided to collect information necessary to update information supporting FEP II, which support refinement of EFH designations and spatial representations and future EBFM actions. These are the highest priority needs to support habitat conservation and EBFM, the completion of mapping of near-shore, mid-shelf, shelf edge, and deep-water habitats in the South Atlantic region and refinement in the characterization of species use of habitats.