

Background Information for Snapper Grouper AP Meeting

The document contains the following material:

- (1) Acronyms
- (2) Definitions
- (3) SAFMC Regulations
- (4) Stock Assessment Determinations
- (5) Recent Amendments
- (6) Southeast, Data, Assessment, and Review (SEDAR) Schedule

1.0 Acronyms

ABC	Acceptable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limits
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B	A measure of stock biomass in either weight or other appropriate unit
B_{MSY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	The current stock biomass
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CPUE	Catch per unit effort
CRP	Cooperative Research Program
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFH-HAPC	Essential Fish Habitat - Habitat Area of Particular Concern
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
F	A measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	Fishing mortality that will produce a static SPR = 30%.
$F_{45\%SPR}$	Fishing mortality that will produce a static SPR = 45%.
F_{CURR}	The current instantaneous rate of fishing mortality
F_{MSY}	The rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	The rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FMU	Fishery management unit

FONSI	Finding of No Significant Impact
GFMC	Gulf of Mexico Fishery Management Council
IFQ	Individual fishing quota
M	Natural mortality rate
MARFIN	Marine Fisheries Initiative
MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MBTA	Migratory Bird Treaty Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act of 1972
MRFSS	Marine Recreational Fisheries Statistics Survey
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuary Act
NOAA	National Oceanic and Atmospheric Administration
OY	Optimum Yield
PQBM	Post Quota Bycatch Mortality
R	Recruitment
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE Report	Stock Assessment and Fishery Evaluation Report
SAMFC	South Atlantic Fishery Management Council
SDDP	Supplementary Discard Data Program
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
TL	Total length
T _{MIN}	The length of time in which a stock could rebuild to B _{MSY} in the absence of fishing mortality
USCG	U.S. Coast Guard

2.0 Definitions

Allowable Biological Catch (ABC) – a level of a stock or stock complex’s annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty.

Annual Catch Limit (ACL) – the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures. ACL cannot exceed the ABC, but may be divided into sector-ACLs.

Annual Catch Target (ACT) – an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL.

Accountability Measure (AM) – management controls to prevent ACLs from being exceeded.

Catch – the total quantity of fish, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.

Magnuson Stevens Act – Magnuson-Steven Fishery Conservation and Management Act (Public Law 94-265) is an Act of Congress to conserve and manage the fishery resources found off the coasts of the United States. Established in 1976, it has been reauthorized/modified several time, most recently as of 1/12/07. Governed by 7 National Standards.

Maximum Fishing Mortality Threshold (MFMT) – the level of fishing mortality (F), on an annual basis, above which overfishing is occurring. SAFMC uses F_{msy} or the fishing mortality rate that will, over the long term, produce the MSY.

Maximum Sustainable Yield (MSY) – the largest long-term average catch or yield that can be taken from a stock or stock complex.

Minimum Stock Size Threshold (MSST) – means the level of biomass below which the stock or stock complex is considered to be overfished. Generally = $(1-M)B_{msy}$ where M=natural mortality.

MSY stock size (B_{msy})– the long-term average size of the stock or stock complex (pounds or numbers) that would be achieved by fishing at F_{msy}

MSY fishing mortality rate (F_{msy}) – the fishing mortality rate that, if applied over the long term, would result in MSY.

Optimum Yield (OY) – the amount of fish 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; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and, in the case of an overfished fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery.

Overfished – a stock or stock complex is considered overfished when its biomass has declined below a level that jeopardizes the capacity of the stock or stock complex to produce MSY on a continuing basis.

Overfishing – occurs whenever a stock or stock complex is subjected to a level of fishing mortality or annual total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis.

Overfishing Limit – means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish. The OFL is an estimate of the catch level above which overfishing is occurring. This is usually the yield resulting from fishing at F_{msy} .

Spawning Potential Ratio or Spawning Stock Ratio or Spawning Stock Biomass Per Recruit – indication of number of eggs produced by average recruit in a fished stock as compared to an unfished stock. SAFMC used 30% in the past to indicate overfishing and overfished stock status. Old measure and not used in current MSA.

Status Determination Criteria – the quantifiable factors, MFMT, OFL, and MSST, or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished.

Stock Assessment – All of the activities that fishery biologists do to describe the conditions or status of a stock. The result of a stock assessment is a report on the health of a stock and recommendations that would maintain or restore the stock.

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3.0 SAFMC Regulations for Snapper Grouper Species

3.1 Commercial Regulations

(Note: Tables do not reflect changes implemented through Amendment 16. See third table for regulations effective July 29, 2009.)

Common Name	Size Limit	Trip Limits	Other Regulations
Black Grouper	24" TL	In March & April possession limited to no more than 2 Black Grouper and/or Gag individually or in combination with no sale.	
Black Seabass	10" TL	Fishing year is June 1 - May 31. Annual Quota = 423,000 lbs. from 6/1/07 through 5/31/08; and 309,000 lbs. from 6/1/08 until modified.	
Blackfin Snapper	12" TL	None	See "Allowable Gear"
Cubera Snapper	12" TL	2 per person (not to exceed 2 per boat) for fish 30" TL or larger off Florida.	
Dog Snapper	12" TL	None	See "Allowable Gear"
Gag	24" TL	In March & April possession limited to no more than 2 Black Grouper and/or Gag individually or in combination with no sale.	
Gray Snapper	12" TL	None	See "Allowable Gear"
Gray Triggerfish	12" TL (E.FL)	None	See "Allowable Gear"
Greater Amberjack	36" FL; no coring	Commercial fishery closed April 1 - 30; 1,169,931 lb. quota. No sale after quota is reached. No sale in April. Possession limited to 1/person/day or 1/person/trip, whichever is more restrictive. 1,000 lb trip limit until quota is reached.*	
Hogfish	12" FL	1 per person in April; None	See "Allowable Gear"
Goliath Grouper	Closed to possession or harvest since 1990		
Lane Snapper	8" TL	None	See "Allowable Gear"
Mahogany Snapper	12" TL	None	See "Allowable Gear"
Mutton Snapper	16" TL	During May and June, possession limited to 10 per person per day or per trip, whichever is more restrictive.	
Nassau Grouper	Closed to possession or harvest since 1992		
Queen Snapper	12" TL	None	See "Allowable Gear"
Red Grouper	20" TL	None	See "Allowable Gear"
Red Porgy	14" TL	Annual Quota = 127,000 lbs. January through April sale or purchase prohibited and possession is limited to 3 per person/day or 3 per person/trip, whichever is more restrictive. Commercial trip limit of 120 fish per trip May through December.	
Red Snapper	20" TL	None	See "Allowable Gear"
Scamp	20" TL	None	See "Allowable Gear"
Schoolmaster	12" TL	None	See "Allowable Gear"
Silk Snapper	12" TL	None	See "Allowable Gear"
Snowy Grouper	None	Annual quota = 118,000 lb. with 175 lb. trip limit through 12/31/07. Annual quota after 12/31/07 = 84,000 lb. with 100 lb. trip limit until modified.*	
Speckled Hind	None	1 per vessel per trip	May not be sold or traded; no transfer at sea.
Blueline, Sand Tilefish	None	None	None

Golden Tilefish	None	Annual Quota = 295,000 lbs. with 4,000 lb. trip limit until 75% of quota is taken, then trip limit reduces to 300 lbs. (If 75% of quota has not been taken on or before Sept. 1, the trip limit will not be reduced).*	
Vermilion Snapper	12" TL	None	See "Allowable Gear". Annual quota = 1.1 million lbs.*
Warsaw Grouper	None	1 per vessel per trip	May not be sold or traded; no transfer at sea.
Wreckfish	Individual Transferable Quota Program in place. No one other than shareholders or their designees may possess wreckfish. Spawning season closure: January 15-April 15.		
Yellowfin Grouper	20" TL	None	See "Allowable Gear"
Yellowtail Snapper	12" TL	None	See "Allowable Gear"
Yellowmouth Grouper	20" TL	None	See "Allowable Gear"

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3.2 Recreational Regulations

Common Name	Size Limit	Daily Bag Limits	Other Regulations
Black Grouper	24" TL	No more than 2 Black Grouper and/or Gag individually or in combination (included in 5 grouper per person)	
Black Seabass	12" TL	Daily bag limit = 15. Allocation = 560,000 lbs. 6/1/07 thru 5/31/08, and allocation = 409,000 lbs. beginning 6/1/08 until modified.	
Blackfin Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Cubera Snapper	12" TL	No more than 2 Black Grouper and/or Gag individually or in combination (included in 5 grouper per person)	
Dog Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Gag	24" TL	No more than 2 Black and/or Gag Grouper individually or in combination (included in 5 grouper per person)	
Gray Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Gray Triggerfish	12" TL off E. FL only	Included in 20 fish snapper grouper aggregate	See "Allowable Gear"
Greater Amberjack	28" FL; no coring	1 per person/day. In April, limit to 1 per person/day or 1/person/trip, whichever is more restrictive	See "Allowable Gear"
Hogfish	12" FL	5 off east Florida only	See "Allowable Gear"
Goliath Grouper	Closed to possession or harvest since 1990		
Lane Snapper	8" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Mahogany Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Mutton Snapper	16" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Nassau Grouper	Closed to possession or harvest since 1992		
Queen Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Red Grouper	20" TL	Included in 5 grouper per person limit	See "Allowable Gear"
Red Porgy	14" TL	3 per person/day or 3/person/trip, whichever is more restrictive	See "Allowable Gear"
Red Snapper	20" TL	2 red snapper (included in 10 snapper per person limit)	
Scamp	20" TL	Included in 5 grouper per person limit	See "Allowable Gear"
Schoolmaster	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Silk Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Snowy Grouper	None	1 snowy grouper allowed in 5 grouper per person limit	See "Allowable Gear"
Speckled Hind	None	1 speckled hind per vessel per trip (included in 5 grouper per person). May not be sold or traded; no transfer at sea.	
Blueline, Sand Tilefish	None	Included in 5 grouper per person limit	See "Allowable Gear"
Golden Tilefish	None	1 golden tilefish allowed in 5 grouper per person limit	See "Allowable Gear"
Vermilion Snapper	12" TL	10 (in addition to the snapper bag limit)	See "Allowable Gear"
Warsaw Grouper	None	1 warsaw per vessel per trip (included in 5 grouper per person). May not be sold or traded; no transfer at sea.	
Wreckfish	No recreational harvest allowed. Individual Transfer Quota (ITQ) Program in place. No one other than shareholders or their designees may possess wreckfish.		
Yellowfin Grouper	20" TL	Included in 5 grouper per person limit	See "Allowable Gear"

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Yellowtail Snapper	12" TL	Included in 10 snapper per person limit	See "Allowable Gear"
Yellowmouth Grouper	20" TL	Included in 5 grouper per person limit	See "Allowable Gear"

Regulations effective July 29, 2009

Measures	New Regulations
Recreational	
Grouper aggregate* bag limit	3 fish
Gag/black grouper bag limit within aggregate	1 gag or black grouper (combined)
Vermilion snapper bag limit	5 fish
Shallow water grouper** closed season	January-April
Vermilion snapper closed season	November-March
Commercial	
Shallow water grouper** closed season	January-April (all shallow-water groupers*)
Gag quota	352,940 lbs gutted weight
Vermilion snapper quota	315,523 lbs gutted weight (January-June); 302,523 lbs gutted weight (July-December)
<p>* Grouper aggregate includes: Misty grouper, red grouper, scamp, tiger grouper, yellowedge grouper, yellowfin grouper, blueline tilefish, sand tilefish, coney, graysby, red hind, and rock hind. Snowy grouper and golden tilefish are also in the grouper aggregate with a maximum of 1 fish per person, for each species.</p>	
<p>** Shallow water grouper include: Gag, black grouper, red grouper, scamp, red hind, rock hind, coney, graysby, yellowfin grouper, yellowmouth grouper, and tiger grouper.</p>	

4.0 Stock Assessment Determinations

The status of gag, vermilion snapper, black sea bass, golden tilefish, snowy grouper has been recently assessed through the Southeast Data, Assessment, and Review (SEDAR) process. Black grouper, red grouper, speckled hind, and warsaw grouper have not been recently assessed.

The SEDAR process consists of a series of workshops aimed at ensuring that each assessment is based on the best available scientific information. First, representatives from NOAA Fisheries Service, state agencies, and the South Atlantic Council, as well as experts from non-governmental organizations and academia, participate in a data workshop. The purpose of a data workshop is to assemble and review available fishery-dependent and fishery-independent data and information on a stock, and to develop consensus about what constitutes the best available scientific information on the stock, how that information should be used in an assessment, and what type of stock assessment model should be employed.

Second, assessment biologists from these agencies and organizations participate in a stock assessment workshop, where data from the data workshop are input into one or more stock assessment models (e.g., production, age-structured, length structured, etc.) to generate estimates of stock status and fishery status. Generally, multiple runs of each model are conducted: base runs and a number of additional runs to examine sensitivity of results to various assumptions (e.g., different natural mortality rates, different data sets/catch periods, etc.).

Finally, a stock assessment review workshop is convened to provide representatives from the Center for Independent Experts the opportunity to peer review the results of the stock assessment workshop. Representatives from NOAA Fisheries Service, the South Atlantic Council, and constituent groups may attend and observe the review but the actual review is conducted by the Center for Independent Experts. The Council's Scientific and Statistical Committee (SSC) then reviews the report of the stock assessment review workshop.

The review portion of the SEDAR process has helped improve the acceptance of stock assessments. However, continued lack of basic fishery data has resulted in uncertainty in the assessment results. Each SEDAR Review Panel has identified significant shortcomings in data and research. In addition, not all of the reviews have been completed with 100% consensus.

4.1 Gag assessment and stock status

SEDAR assessment

The stock of gag off the United States South Atlantic was assessed during a SEDAR assessment workshop, held at the Wyndham Grand Bay Hotel, Miami, Florida, on May 1–5, 2006. The workshop’s objectives were to complete the SEDAR 10 benchmark assessment of gag and to conduct stock projections. Participants in the benchmark assessment included state, federal, and university scientists, as well as Council members and staff, and various observers. All decisions regarding stock assessment methods and acceptable data were made by consensus (SEDAR 10 2007).

Available data on the stock included abundance indices, recorded landings, and samples of annual size compositions and age compositions from fishery-dependent sources. Three fishery–dependent abundance indices were developed by the data workshop: one from the NOAA Fisheries Service headboat survey, one from the commercial logbook program, and one from the MRFSS survey. There were no usable fishery–independent abundance data for this stock of gag. Landings data were available from all recreational and commercial fisheries. The assessment included data through 2004.

A forward projecting statistical model of catch at age was used as the primary assessment model. In addition, an age-aggregated production model was used to investigate results under a different set of model assumptions. The assessment workshop developed two base runs: one assuming a time-varying catchability and one assuming constant catchability for the fishery dependent indices. Each base run of the catch-at-age model was used for estimation of benchmarks and stock status.

Stock projections were evaluated under five scenarios starting in 2008. Each scenario applied the current fishing mortality rate (F) in years 2005–2007. Starting in 2008, the five projection scenarios included: (1) current F , (2) F_{MSY} , (3) 85% of F_{MSY} , (4) 75% of F_{MSY} , and (5) 65% of F_{MSY} .

Status

The gag stock in the Atlantic is undergoing **overfishing** as of 2004 (last year of data in the stock assessment). This means fish are being removed more quickly than the stock can replace them such that the maximum sustainable yield (MSY) cannot be achieved. The Council compares the current fishing mortality rate (F) to the level of fishing mortality that would result in overfishing (maximum fishing mortality threshold or MFMT) and if the current F is greater than the MFMT,

overfishing is occurring. For gag the most recent estimate of the fishing mortality rate (F) is from 2004 and is = 0.310. The Council is using the fishing mortality rate that would produce the maximum sustainable yield ($F_{MSY} = 0.237$) as the maximum fishing mortality threshold. Comparing these two numbers:

- $F_{2004}/MFMT = 0.310/0.237 = 1.309$

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

The gag stock in the Atlantic was not **overfished** as of the start of 2005. This means that the spawning stock biomass (pounds of spawning fish in the water) has not been reduced below the level that could produce the maximum sustainable yield. The Council compares the current spawning stock biomass (SSB) to the level of spawning stock biomass that could be rebuilt to the level to produce the MSY in 10 years. This is referred to as the minimum spawning stock biomass or MSST. For gag, the estimated level of spawning stock biomass in 2005 was 7,470,000 pounds gutted weight (gw). The Minimum stock size threshold (MSST) = 6,816,000 pounds gw. Comparing these two numbers:

- $SSB_{2005}/MSST = 7,470,000/6,816,000 = 1.096$

This comparison is referred to as the **overfished ratio**. If the ratio is less than 1, then the stock is overfished.

4.2 Vermilion Snapper assessment and stock status

SEDAR assessment

A SEDAR stock assessment workshop was convened at the NOAA Center for Coastal Fisheries and Habitat Research Beaufort, North Carolina, on Monday, April 4, 2007. The workshop's objectives were to conduct an update assessment of the vermilion snapper off the southeastern U.S. and to conduct stock projections based on possible management scenarios. Participants in the update assessment included state and federal scientists, Council AP and SSC members, and various observers. All decisions regarding stock assessment methods and acceptable data were made by consensus (SEDAR Assessment Update #3 2007).

Available data on the species included all those utilized for the benchmark assessment conducted in 2002; no additional data sources were identified during the scoping workshop. These data were abundance indices, recorded landings, and samples of annual size compositions from indices and landings. Four abundance indices were used in the benchmark assessment: one from the NMFS headboat survey and three from the SC MARMAP fishery-

independent monitoring program. Landings data were available from all recreational and commercial fisheries. While the MARMAP chevron trap index decreased in recent years, the remaining abundance indices showed neither marked increase nor decline during the assessment period (1976–2006).

The statistical model of catch at length as developed for the benchmark assessment was used as the only assessment model. The assessment workshop provided the base run of the model, identical to that used in the benchmark assessment. This base run was used for the estimation of benchmarks and stock status. The benchmark assessment concluded that the high degree of uncertainty in recruitment and spawning stock biomass estimates meant that reliable biomass based benchmarks could not be developed from the assessment, and this was found to be the case for the update assessment as well.

The ratio of fishing mortality in 2006 to FMAX was 2.05, compared to 1.71 in the benchmark assessment, suggesting that overfishing continues. Projections were used to evaluate the potential of the stock to be rebuilt, but could only be conducted for constant F scenarios. Four projections were considered: F=FMAX; F=85%FMAX; F=75%FMAX; and F=65%FMAX. The results of each were very similar.

Stock Status

The vermilion snapper stock in the Atlantic is undergoing **overfishing** as of 2006 (last year of data in the stock assessment update). This means fish are being removed more quickly than the stock can replace them such that the maximum sustainable yield (MSY) cannot be achieved. The Council compares the current fishing mortality rate (F) to the level of fishing mortality that would result in overfishing (maximum fishing mortality threshold or MFMT) and if the current F is greater than the MFMT, overfishing is occurring. For vermilion snapper the most recent estimate of the fishing mortality rate is from 2006 and was = 0.729. The Council is using the fishing mortality rate that produces the greatest yield per fish ($F_{MAX} = 0.355$) as the maximum fishing mortality threshold. F_{MAX} is being used as a proxy for F_{MSY} (F_{MSY} = Fishing mortality rate that would produce maximum sustainable yield) because the SSC did not have confidence in the calculated biomass reference points. The SSC does have confidence in the fishing mortality rate estimates from the SEDAR assessment. Comparing these two numbers:

- $F_{2006}/MFMT = 0.729/0.355 = 2.05$

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

Whether the vermilion snapper stock in the Atlantic is currently **overfished** is unknown because the SSC does not have confidence in the biomass reference points from the SEDAR assessment. Recognizing the need for a new benchmark assessment, NMFS and the state of South Carolina began sampling available vermilion snapper otoliths to enable an age-based assessment. Further, the SEDAR steering committee replaced white grunt in the SEDAR schedule with vermilion snapper. Results from an age-based assessment for vermilion snapper were reviewed by the Council's Scientific and Statistical Committee (SSC) during their November 30 – December 2, 2008 meeting.

4.3 Black sea bass assessment and stock status

SEDAR assessment

Black sea bass was assessed at the second SEDAR (SEDAR 2 2003b). Data for the SEDAR assessment were assembled and reviewed at a data workshop held during the week of October 7, 2002 in Charleston, South Carolina. The assessment utilized commercial and recreational landings, as well as abundance indices and life history information from fishery-independent and fishery-dependent sources. Six abundance indices were developed by the data workshop. Two CPUE indices were used from the NMFS headboat survey (1978-2001) and the MRFSS recreational survey (1992-1998). Four indices were derived from CPUE observed by the South Carolina MARMAP fishery-independent monitoring program ("Florida" trap index, 1981-1987; blackfish trap index, 1981-1987; hook and line index, 1981-1987; and chevron trap index, 1990-2001) (SEDAR 2 2003b).

Age-structured and age-aggregated production models were applied to available data at the assessment workshop. The age-structured model was considered the primary model, as recommended by participants in the data workshop. The stock assessment indicated black sea bass was overfished and overfishing was occurring.

At the request of the South Atlantic Council, the SEDAR panel convened to update the 2003 black sea bass stock assessment, using data through 2003, and to conduct stock projections based on possible management scenarios (SEDAR Update #1 2005). The update indicated the stock was still overfished and overfishing was still occurring but results showed the stock was much more productive than previously indicated. The stock could be rebuilt to the biomass level capable of producing the maximum sustainable yield in 5 years if all fishing mortality were eliminated; previously this was estimated to take 11 years (SEDAR 2 2003b).

Stock Status

The black sea bass stock in the Atlantic is undergoing **overfishing** and is **overfished** as of 2004 (last year of data in the stock assessment update). For black sea bass the most recent estimate of the fishing mortality rate is from 2003 and was = 2.64 and $F_{MSY} = 0.429$ as the maximum fishing mortality threshold. Comparing these two numbers:

- $F_{2003}/MFMT = 0.729/0.355 = 6.15$

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

The black sea bass stock in the Atlantic is **overfished**. For black sea bass, the estimated level of spawning stock biomass in 2005 was 4,099,884 pounds whole weight. The Minimum stock size threshold (MSST) = 10,511,633 pounds whole weight. Comparing these two numbers:

- $SSB_{2005}/MSST = 4,099,884/10,511,633 = 0.39$

If the ratio is less than 1, then the stock is overfished.

4.4 Snowy grouper assessment and stock status

SEDAR assessment

The data workshop convened in Charleston, SC during the week of November 3, 2003 to examine data from eight deep-water species for assessment purposes (SEDAR 4 2004). The group determined that data were adequate to conduct assessments on snowy grouper and tilefish. Four indices were available for snowy grouper including a logbook index, headboat index, MARMAP trap index, and MARMAP short longline index. The assessment workshop chose not to use the logbook index for snowy grouper since this species forms aggregations and has been known to be taken in large numbers over wrecks. Commercial and recreational landings as well as life history information from fishery-independent and fishery-dependent sources were used in the assessment.

Estimates were made of several time series of management interest. These include annual exploitation rate, fishing mortality rate, total landings, number of recruits, mature biomass, and total biomass. Results show a population beginning a decline as early as 1966, reaching its lowest levels in the most recent years. Increasing exploitation of snowy grouper begins at about the same time as the population decline, which coincides with an increase in the reported landings of snowy grouper.

Stock Status

The snowy grouper stock in the Atlantic is undergoing **overfishing** and is **overfished** as of 2004 (last year of data in the stock assessment). For snowy grouper the most recent estimate of the fishing mortality rate is from 2002 and was $F_{2002} = 0.154$ and $F_{MSY} = 0.05$ as the maximum fishing mortality threshold. Comparing these two numbers:

- $F_{2002}/F_{MSY} = 0.154/0.05 = 3.08$

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

The snowy grouper stock in the Atlantic is **overfished**. For snowy grouper, the estimated level of spawning stock biomass in 2003 was 869,503 pounds whole weight. The Minimum stock size threshold (MSST) = 3,498,735 pounds whole weight. Comparing these two numbers:

- $SSB_{2003}/MSST = 869,503/3,498,735 = 0.25$

If the ratio is less than 1, then the stock is overfished. In the absence of fishing it was determined that it would take 13 years to rebuild the stock to B_{MSY} . The maximum recommended rebuilding time is 34 years based on the formula: T_{MIN} (13 years) + one generation time (21 years).

The estimated stock status for snowy grouper in 2002 is quite low, median of 18% for $SSB_{(2002)}/SSB_{MSY}$. This corresponds to a stock status in 2002 relative to the virgin stock size [$SSB_{(2002)}/SSB_{virgin}$] of about 5%. The input data for the assessment model do not include a consistent abundance index that covers the whole time period of the model. The headboat CPUE and length composition data extends back to 1972, but changes in the fishery make interpretation of the observed trends in this index difficult. The headboat fishery moved inshore during the data period and consequently selectivity in the fishery changed. In the age-structured modeling, this was accommodated by dividing the headboat index into three time periods: with constant selectivity in 1972–1976, a possibly different constant selectivity in 1992–2002, and selectivity varying between them in 1977–1991. The other abundance indices do not start until 1990 or later. Therefore, the model must rely on data sources other than abundance indices for determining stock status.

Other data that provide information on stock status are the average weight and length from the fisheries landings as well as the observed age and length composition data. The 2002 average weights and lengths from the commercial fisheries suggest the population is at very low levels. The average weight and length in 2002 from the handline fishery suggests the population is near 11% and 3% of SSB_{MSY} , respectively. The average weight and length in 2002 from the

longline fishery suggests the population is near 44% and 28% of SSB_{MSY} , respectively. The length composition data from the most recent years (2000-2002) also suggests a depleted population of snowy grouper. The observed length distributions are skewed toward smaller fish compared to an equilibrium, virgin state length composition.

4.5 Golden tilefish assessment and stock status

There two indices of abundance available for the golden tilefish stock assessment. A fishery-independent index was developed from MARMAP horizontal longlines (SEDAR 4 2004). A fishery-dependent index was developed from commercial logbook data during the data workshop. Commercial and recreational landings as well as life history information from fishery-independent and fishery-dependent sources were used in the assessment. A statistical catch-at-age model and a production model were used to assess the golden tilefish population.

Exploitation status in 2002 was analyzed relative to the maximum fishing mortality threshold (MFMT; limit reference point in F). The MFMT was assumed equal to EMS_Y or F_{MSY} , depending on the measure of exploitation. Stock status in 2002 was estimated relative to SSB_{MSY} and to maximum spawning size threshold (MSST). The MSST was computed as a fraction c of SSB_{MSY} . Restrepo *et al.* (1998) recommend a default definition for that fraction: $c = \max(1 - M, 1/2)$, where M is the natural mortality rate. However, this definition does not account for age-dependent M , as was used in this assessment. Hence to accommodate the default definition, a constant M was computed that would correspond to an age-dependent M , by providing the same proportion of survivors at the maximum observed age [$M = -\log(P)/A$, where P is the proportion survivors at maximum observed age A]. This value of constant M was computed uniquely for each of the MCB runs.

Overfishing of golden tilefish ($F > MFMT$) began in the early 1980's and has continued in most years since then. The population responded to the fishing with a steady population decline to levels near SSB_{MSY} starting in the mid-1980's. The median value of $E_{(2002)}/EMS_Y$ is 1.55, with a 10th to 90th percentile range of [0.77,3.25]. The median value of $F_{(2002)}/F_{MSY}$ is 1.53, with a range of [0.72,3.31]. The median value of $SSB_{(2002)}/SSB_{MSY}$ is 0.95, with a range of [0.61,1.53]. The median value of $SSB_{(2002)}/MSST$ is 1.02, with a range of [0.65,1.67].

It appears likely that overfishing was occurring in 2002; however it is less clear whether the stock was overfished in 2002. The data do not include an abundance index that covers the entire assessment period. To determine stock status, therefore, the assessment must rely in

part on other data sources, such as average weight and length from landings as well as the observed age and length composition data. This was explored in the following way: Assuming an equilibrium age-structure, the predicted average weight of landed fish from commercial fisheries is portrayed as a function of stock status. The average weight in 2002 from the handline fishery suggests that the population is near 52% of SSBMSY; the average weight in 2002 from the longline fishery suggests that the population is near 100.1% of SSBMSY. Taken together, these results are consistent with those from the assessment model that the stock is on the border between overfished and not overfished, and that the variability around the point estimate of stock status includes both possibilities. The length composition data from the most recent years (2000 to 2002) also suggests that golden tilefish SSB is near SSBMSY. Observed length distributions are skewed toward smaller fish as compared to an equilibrium virgin length composition, but correspond to the predicted length composition at SSBMSY. Under $F=0$, the median projection depicts a tilefish stock that recovers to SSBMSY within one year.

4.6 Red snapper assessment and stock status

Assessments conducted in 1988 and 1990, indicated red snapper was experiencing overfishing (NMFS 1991; Huntsman *et al.* 1992). In 1990, scientists recommended size limits for red snapper to achieve reductions necessary to end overfishing. In response, the Council developed Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. In January 1992, new regulations for red snapper established a 20" TL minimum size limit and an aggregate bag limit of 10 snapper (excluding vermilion snapper) with no more than 2 red snapper included in the aggregate bag limit. These regulations were determined to be sufficient to end overfishing based on the science available at the time.

In 1997, a new red snapper stock assessment was conducted by the NMFS using landings data from 1986 to 1996. The assessment estimated red snapper reached a maximum age of 25 and noted that few fish over the age of 12 were landed. The assessment concluded that the red snapper stock was in a "transitional" condition. "The status of the stock is less than desirable, but does appear to be responding for the better to something, possibly management, in the most recent years." The Council did not implement any changes to red snapper management at the time based on the assessment conclusions.

The 2008 SEDAR 15 stock assessment concluded red snapper is overfished and undergoing overfishing. The assessment estimated that red snapper reach a maximum age of 54 years, not

25 years as previously estimated. The Council's SSC approved the assessment and indicated it was based on the best available scientific information.

A statistical catch-at-age model (SCA) and a surplus-projection model (ASPIC) were considered in this assessment. Data used assessment consist of records of commercial catch for the handline (hook-and-line) and dive fisheries, logbook data from the recreational headboat fishery, and MRFSS survey data of the rest of the recreational sector. The bulk of landings of red snapper come from the recreational fishery, which have exceeded the landings of the commercial fishery by 2-3 fold over the assessment period. Total landings were variable, with a downward trend through the 1990s.

The Council is considering two proxies for F_{MSY} in Amendment 17B, $F_{30\%SPR}$ and $F_{40\%SPR}$. The ratio of F to the respective proxies for F_{MSY} suggests a generally increasing trend in fishing mortality from the 1950s through the mid-1980s. This indicates that overfishing has been occurring since the early 1970s, with the 2006 estimate of $F/F_{30\%SPR} = 5.39$ and $F/F_{40\%SPR}$ at 7.67 (March 19, 2009 Projection; SEDAR 15 2008).

Estimated abundance-at-age shows truncation of the oldest ages from the 1950s into the 1980s; the age structure continues to be in a truncated condition. Fish of age 10 and above are practically non-existent in the population. Estimated biomass-at-age follows a similar pattern of truncation as seen in the abundance data. Total biomass and spawning biomass show nearly identical trends with a sharp decline during the 1950s and 1960s, continued decline during the 1970s, and stable but low levels since 1980. Numbers of age-1 fish have declined during the same period, however notably strong year classes occurred in 1983 and 1984, and again in 1998 and 1999. Note: Additional detail is presented in Section 4 and is hereby incorporated by reference.

4.7 Black grouper assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates black grouper are undergoing overfishing and the overfished status is unknown. Black grouper was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). The assumption of $\frac{1}{2} L_{\infty}$ as the age of maturity was used for estimating the static SPR. SPR values were 0.37%, 0.41%, 0.18%, and 0.18% for 1988, 1990, 1996, and 1999 fishing years, respectively.

4.8 Red grouper assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates red grouper are undergoing overfishing and the overfished status is unknown. Red grouper was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). The assumption of $\frac{1}{2} L_{\infty}$ as the age of maturity was used for estimating the static SPR. SPR values were 0.41%, 0.61%, 0.19%, and 0.28% for 1988, 1990, 1996, and 1999 fishing years, respectively.

4.9 Warsaw grouper assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates warsaw grouper are undergoing overfishing and the overfished status is unknown. Warsaw grouper was assessed by catch curve analysis using data from 1988 and 1990 (Huntsman *et al.* 1992). Because warsaw grouper are infrequently caught, a single length frequency was constructed from several years (e.g., 1983-1988) for the assessment of the 1988 fishing year and 1989-1990 length samples were used for the 1990 fishing year. A limited age length key was applied to the length frequency to obtain catch-at-age data. No reproductive biology data were available; therefore, for SPR calculations the assumption for age-at-maturity was based on $\frac{1}{2} L_{\infty}$. Static SPR values for warsaw grouper were 0.2% and 6% for 1988 and 1990 fishing years, respectively.

4.10 Speckled hind assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates speckled hind are undergoing overfishing and the overfished status is unknown. Speckled hind was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). Length frequencies for each fishing year assessed was constructed from that year's data. Length samples came primarily from the commercial fishery. Lengths for 1996 and 1999 were limited by the management restriction of one speckled hind per trip. Age and growth data were available but there were no reproductive biology data. The assumption of $\frac{1}{2} L_{\infty}$ as the age of maturity was used for estimating the static SPR. SPR values were 25%, 12%, 8%, and 5% for 1988, 1990, 1996, and 1999 fishing years, respectively.

4.11 Other Affected Council-Managed Species

Gag and vermilion snapper are targeted by fishermen and are commonly taken on trips together. Red grouper, scamp, blueline tilefish, red snapper, gray triggerfish, greater amberjack, white grunt, and others are also targeted by commercial fishermen and are taken on trips with gag and vermilion snapper. Gag and vermilion snapper are commonly taken on trips by recreational fishermen with white grunt, black sea bass, red snapper, gray triggerfish, and red porgy. A detailed description of the life history of these species is provided in the snapper grouper SAFE report (NMFS 2005).

5.0 Recent Amendments

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed Rule and Final Rules for all actions of listed documents.
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 spp. within the <i>Oculina</i> Experimental Closed Area.
Notice of Control Date	10/14/05	70 FR 60058	-The Council is considering 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	<p>- End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006.</p> <p>1. Snowy Grouper Commercial: Quota (gutted weight) = 151,000 lbs gw in year 1, 118,000 lbs gw in year 2, and 84,000 lbs gw in year 3 onwards. Trip limit = 275 lbs gw in year 1, 175 lbs gw in year 2, and 100 lbs gw in year 3 onwards. Recreational: Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit.</p> <p>2. Golden Tilefish Commercial: Quota of 295,000 lbs gw, 4,000 lbs gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lbs gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1. Recreational: Limit possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit.</p> <p>3. Vermilion Snapper Commercial: Quota of 1,100,000 lbs gw. Recreational: 12" size limit.</p> <p>4. Black Sea Bass Commercial: Commercial quota (gutted weight) of 477,000 lbs gw in year 1, 423,000 lbs gw in year 2, and 309,000 lbs gw in year 3 onwards. Require use of at least 2" mesh for the</p>

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			<p>entire back panel of black sea bass pots effective 6 months after publication of the final rule. Require black sea bass pots be removed from the water when the quota is met. Change fishing year from calendar year to June 1 – May 31.</p> <p>Recreational: Recreational allocation of 633,000 lbs gw in year 1, 560,000 lbs gw in year 2, and 409,000 lbs gw in year 3 onwards. Increase minimum size limit from 10” to 11” in year 1 and to 12” in year 2. Reduce recreational bag limit from 20 to 15 per person per day. Change fishing year from the calendar year to June 1 through May 31.</p> <p>5. Red Porgy Commercial and recreational</p> <ol style="list-style-type: none"> 1. Retain 14” TL size limit and seasonal closure (retention limited to the bag limit); 2. Specify a commercial quota of 127,000 lbs 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; 3. Increase commercial trip limit from 50 lbs ww to 120 red porgy (210 lbs gw) during May through December; 4. Increase recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	-The Council may consider measures to limit participation in the snapper grouper for-hire fishery
Amendment #14 (2007) Sent to NMFS 7/18/07	2/12/09	PR: 73 FR 32281 FR: 74 FR 1621	-Establish 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 (2007)	3/14/08	73 FR 14942	- Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Amendment #15B (2008b)	TBD	PR: 74 FR 30569	<p>- Prohibit the sale of bag-limit caught snapper grouper species.</p> <p>-Reduce the effects of incidental hooking on sea turtles and smalltooth sawfish.</p> <p>- Adjust commercial renewal periods and transferability requirements.</p>

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			<ul style="list-style-type: none"> - Implement plan to monitor and assess bycatch, - Establish reference points for golden tilefish. - Establish allocations for snowy grouper (95% com & 5% rec) and red porgy (50% com & 50% rec).
Amendment #16 (SAFMC 2008c)	07/29/09	PR: 74 FR 6257 FR: 74 FR 30964	<ul style="list-style-type: none"> -Specify SFA parameters for gag and vermilion snapper -For gag grouper: Specify interim allocations 51%com & 49%rec; rec & com spawning closure January through April; directed com quota=348,440 pounds gutted weight; reduce 5-grouper aggregate to 3-grouper and 2 gag/black to 1 gag/black and exclude captain & crew from possessing bag limit. -For vermilion snapper: Specify interim allocations 68%com & 32%rec; directed com quota split Jan-June=168,501 pounds gutted weight and 155,501 pounds July-Dec; reduce bag limit from 10 to 4 and a rec closed season October through May 15. In addition, the NMFS RA will set new regulations based on new stock assessment. -Require dehooking tools.
Amendment 17A	TBD	TBD	<ul style="list-style-type: none"> -Specify an ACL and an AM for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL -Specify a rebuilding plan for red snapper -Specify status determination criteria for red snapper -Specify a monitoring program for red snapper
Amendment 17B	TBD	TBD	<ul style="list-style-type: none"> -Specify ACLs, ACTs, and AMs, where necessary, for 9 species undergoing overfishing. -Modify management measures as needed to limit harvest to the ACL or ACT. -Update the framework procedure for specification of total allowable catch.
Notice of Control Date	December 4, 2008	TBD	Establishes a control date for the golden tilefish fishery of the South Atlantic
Notice of Control Date	December 4, 2008	TBD	Establishes control date for black sea bass pot fishery of the South Atlantic

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Amendment 18	TBD	TBD	<ul style="list-style-type: none"> -Extend the range of the snapper-grouper FMP north -Limit participation and effort in the golden tilefish fishery -Modifications to management of the black sea bass pot fishery -Separate snowy grouper quota into regions/states -Separate the gag recreational allocation into regions/states -Change the golden tilefish fishing year -Improve the accuracy, timing, and quantity of fisheries statistics -Designate EFH in new northern areas
Amendment 19	TBD	TBD	<ul style="list-style-type: none"> -Establish deepwater coral HAPCs
Amendment 20	TBD	TBD	<ul style="list-style-type: none"> -Update wreckfish ITQ according to reauthorized MSFCMA -Establish ACLs, AMs, and management reference points for wreckfish fishery
Comprehensive ACL Amendment	TBD	TBD	<ul style="list-style-type: none"> -Establish ABC control rules, establish ABCs, ACTs, and AMs for species not undergoing overfishing -Remove some species from South Atlantic FMUs -Specify allocations among the commercial, recreational, and for-hire sectors for species not undergoing overfishing -Limit the total mortality for federally managed species in the South Atlantic to the ACTs -Address spiny lobster issues.

6.0 SEDAR Schedule (last updated 02/17/2009)

6.1 SEDAR Benchmark Assessment List

SEDAR	SPECIES	Year	Status
1	SAFMC red porgy	2002	FINAL
2	SAFMC vermilion snapper & black sea bass	2003	FINAL
3	SAFMC & GMFMC yellowtail snapper Review ASMFC Atlantic menhaden & croaker	2003	FINAL
4	SAFMC tilefish & snowy grouper	2004	FINAL
5	SAFMC & GMFMC king mackerel	2004	FINAL
6	SAFMC & GMFMC goliath grouper & hogfish	2004	FINAL
7	GMFMC red snapper	2004	FINAL
8	CFMC yellowtail snapper & spiny lobster Review FL spiny lobster	2005	FINAL
9	GMFMC vermilion snapper, greater amberjack, & gray triggerfish	2005	FINAL
10	SAFMC & GMFMC gag grouper	2006	FINAL
11	HMS large coastal sharks	2006	FINAL
12	GMFMC red grouper	2006	FINAL
13	HMS small coastal sharks	2007	FINAL
14	CFMC yellowfin grouper, mutton snapper & queen conch	2007	FINAL
15	SAFMC greater amberjack & red snapper Review SAFMC & GMFMC mutton snapper	2007	FINAL
16	SAFMC & GMFMC king mackerel	2008	FINAL
17	SAFMC Spanish mackerel & vermilion snapper	2008	FINAL
18	Atlantic red drum	2009	ONGOING
19	SAFMC & GMFMC black grouper, SA red grouper	2009	ONGOING
20	ASMFC Menhaden & Croaker Review	2010	SCHEDULED
21	Shark TBD	2010	SCHEDULED
22	GMFMC yellowedge grouper & tilefish	2010	SCHEDULED
23	CFMC TBD through data evaluation workshops 2008	2010	TENTATIVE
24	SAFMC black sea bass & TBD	2011	SCHEDULED
25	CFMC TBD	2011	TENTATIVE
26	GMFMC red snapper	2012	SCHEDULED
27	SAFMC speckled hind, Warsaw grouper	2012	TENTATIVE
28	Shark TBD	2012	TENTATIVE
29	SAFMC & GMFMC Goliath grouper	2013	TENTATIVE
30	CFMC TBD	2013	TENTATIVE

6.2 SEDAR Assessment Update Schedule

Note: Updates in 2010 have been requested for black sea bass, snowy grouper, red snapper, and golden tilefish.

Benchmark #	Species	Scheduled Completion	Status
2	SA black sea bass	April 2005	FINAL
1	SA red porgy	May 2006	FINAL
2	SA vermilion snapper	2007	FINAL
10/12	Gulf gag & red grouper	early 2009	Scheduled
7	Gulf red snapper	Late 2009	Scheduled
8	FL spiny lobster	Mid 2010	Scheduled
9	Gulf greater amberjack	Late 2010	Scheduled
4	SA golden tilefish & snowy grouper	Mid 2010	Scheduled
10	Atlantic gag	late 2011	Scheduled
1	Atlantic red porgy	mid 2012	Scheduled
9	Gulf vermilion, gray triggerfish	late 2012	Scheduled