Appendix A. Glossary

Acceptable 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.

Caribbean Fishery Management Council (CFMC): 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 CFMC develops fishery management plans for fisheries off the coast of the U.S. Virgin Islands and the Commonwealth of Puerto Rico.

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. (See 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 BMSY 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 percent 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}

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

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

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 GMFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Head Boat: 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 Fisheries Statistics Survey (MRFSS): 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: Percent 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 advise 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 (SAFMC): 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.

South Atlantic Red Snapper:

Estimated mortalities in 2010 and 2011

Prepared by
National Marine Fisheries Service
Southeast Fisheries Science Center

May 2012

Background

In a memorandum dated 7 April 2012, from Bob Mahood to Dr. Bonnie Ponwith, the South Atlantic Fishery Management Council requested updated 2010-2011 estimates of red snapper mortalities in the South Atlantic (see Appendix). Because red snapper were under a moratorium during these years, most of the mortality is of discarded fish, however some fish were observed in landings and are included here for completeness.

Methods

Mortality estimates were derived from three different sources: commercial logbooks, MRFSS, and the Southeast Region Headboat Survey (SHRS). Any analytical methods used for data preparation were the same as those used in SEDAR-24. Commercial logbook and MRFSS data were queried and analyzed by personnel in the Sustainable Fisheries Division of NMFS-Miami. SHRS data were queried and analyzed by personnel in the Sustainable Fisheries Branch of NMFS-Beaufort.

In those data queries, some landings were observed, despite the moratorium. Thus, landings were separated from released fish for computing total mortalities. All landings were considered killed, and the appropriate fleet-specific discard mortality was applied to the releases only. The release mortality estimates (i.e., proportion of released fish expected to die) were those of SEDAR-24: 0.48 for commercial lines, 0.41 for recreational for-hire, and 0.39 for recreational private. The recreational for-hire fleet consisted of headboats and charterboats.

The numbers of fish killed by each fleet (commercial handlines, for-hire, or private recreational) were summed to compute the total number of red snapper mortalities. These estimates were converted to units of thousand pounds using the average weight of mortalities (landings + dead discards) implied by the projection with $F=0.98\times F30$ and headboat weight $\omega=0.30$. This projection scenario was identified in Table 9C in the April 7 memorandum (see Appendix). The projected average weights were 5.3 lb in 2010, and 6.6 lb in 2011.

Results

Table 1 shows red snapper mortalities by fleet. Table 2 shows total red snapper mortalities estimated in units of number and in weight.

Discussion

The estimates of 2010-2011 red snapper mortalities (Table 2) are similar to those considered in Amendment 17A, as described in Table 1 of the memorandum (See Appendix. Note an apparent error in

the legend of memorandum Table 1, namely that values in the table are in pounds, rather than thousands of pounds). Differences between actual mortalities and projected mortalities could occur for many reasons. For example, recruitment in recent years may have been higher than expected, such that discards would exceed expectation even under stable or decreased levels of fishing effort. Conversely, recruitment may have been lower than expected, resulting in fewer discards regardless of effort.

The estimates of landings and discards tabulated here derive from self-reported data, and come with an unknown degree of uncertainty and possible bias. In most cases, we do not have the necessary data to address reporting bias, however we were able to examine the level of agreement, at the trip level, between presence of red snapper in the MRFSS headboat at-sea observer program and in the SRHS. In 2010, 56.4% of the at-sea observed red snapper trips were matched to SRHS-reported trips, and in 2011, 70.0% were matched. These matched trips showed 100% agreement with the presence of red snapper reported as discards. Unfortunately, this analysis could only be done on the basis of presence/absence, as total discard estimates are not available from at-sea observed trips. This analysis is somewhat reassuring, but it does not guarantee that estimates are unbiased. In other words, the strong agreement is a necessary, but not sufficient, condition for accurate estimates.

Table 1. Total mortalities by fleet (units=number of fish). A and B1 refers to MRFSS notation for fish known to be killed. Discard mortalities are equal to total estimated releases multiplied by the fleet-specific release mortality rate.

	For-hire (charter+headboats)		Private recreational		Commercial handlines	
YEAR	Landed (A+B1)	Discard mortalities	Landed (A+B1)	Discard mortalities	Landed	Discard mortalities
2010	971	20569	0	31561	0	18293
2011	1950	22131	0	16156	0	21169

Table 2. Estimates of total red snapper mortalities (landings and discards) summed across fleets, in units of numbers (fish) and in weight (1000 lb).

YEAR	Total mortalities (fish)	Total mortalities (1000 lb)
2010	71394	378.387
2011	61405	405.276

Appendix

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
TEL 843/571-4366 FAX 843/769-4520
Toll Free: 1-866-SAFMC-10
Email: safmc@safmc.net Web site: www.safmc.net

David Cupka, Chairman
Ben Hartig, Vice Chairman
Robert K. Mahood, Executive Director
Gregg Waugh, Deputy Executive Director

April 7, 2012

MEMORANDUM

TO: Bonnie Ponwith
FROM: Bob Mahood RKM
SUBJECT: Data Request

At our June 2012 meeting the Council may address the possibility of allowing some level of harvest of red snapper in the near future. To aid in that decision we are requesting that the SEFSC provide bycatch mortality estimates (all sectors) to evaluate the actual and estimated level of mortality relative to the previously projected mortality levels. Would you please provide the estimates of bycatch mortality as highlighted in yellow in the Table 1. (below) for the years 2010 through 2011. The information should be provided on or before noon on May 21, 2012 to be included in the June 2012 briefing book.

Table 1. Projection levels (thousand pounds whole weight) for red snapper and actual/estimated discard levels taken from Table 9c. (memo-page 2).

Projections				**Actual & Estimated**	**Amount**
	Discards	**Landings**	**Total**	**Discards**	**Available**
2010	346,000		346,000		
2011	56,000	365,000	421,000		

2012	77,000	464,000	541,000		

In Amendment 17A, the Council used the projections in Table 9c. (below) in determining that the appropriate management approach for red snapper was to continue the total prohibition on harvest and possession. Table 9c was part of SEDAR-24 (South Atlantic Red Snapper) and contains the management quantities and projections that had been requested by the SSC and SERO. The table was prepared in November 2010 by the Sustainable Fisheries Branch, Southeast Fisheries Science Center, Beaufort, NC.

Table 9c. Projection results (expected values) with F=0.98×F30, extended from assessment model configuration with component weights as in the AW report, but headboat index weight increased to $\omega = 0.30$. F is fishing mortality rate (per yr), SSB is mid-year spawning stock (mt), R is recruits (1000 age-1 fish), D is discard mortalities (1000 fish or 1000 lb whole weight), L is landings (1000 fish or 1000 lb whole weight), and sum L is cumulative landings.

Year	F	SSB(mt)	R(1000)	D(1000)	D(klb)	L(1000)	L(klb)	Sum L(klb)
2010	0.32	22.67	325	65	346	0	0	0
2011	0.199	27.74	338	33	56	31	365	365
2012	0.199	31.29	373	41	77	45	464	829
2013	0.199	35.14	394	44	86	52	525	1354
2014	0.199	39.3	414	47	92	59	589	1942
2015	0.199	43.79	432	50	96	64	649	2592
2016	0.199	48.58	449	52	101	69	710	3302
2017	0.199	53.72	466	54	105	74	772	4074
2018	0.199	59.15	481	56	109	79	835	4909
2019	0.199	64.76	495	58	112	84	898	5807

Thank you for your consideration of this request. If you have any questions, please contact John Carmichael or me.

cc: Roy Crabtree

David Cupka

Gregg Waugh

John Carmichael

Myra Brouwer

South Atlantic Red Snapper Reopening
Southeast Regional Office
SERO-LAPP-2012-04
July 6, 2012; addendum added July 30, 2012

Abstract

South Atlantic red snapper has been closed to harvest since January 2010. At the June 2012 South Atlantic Fishery Management Council meeting, the Council reviewed red snapper mortality estimates for 2010 and 2011 and projected mortality estimates for 2012. Estimated mortalities for 2012 were less than projected mortalities and the Council recommended reopening red snapper to harvest in 2012. This report evaluates the amount of fish that could be landed during the reopening and estimates the length of the recreational and commercial fishing seasons. Recreational catch rates for 2012 were predicted using a Seasonal Autoregressive Integrated Moving Average Model, which uses historical monthly landings and projected changes in exploitable abundance to predict future monthly landings. Commercial season lengths were estimated by imposing trip limits of 25 to 100 pounds gutted weight on 2009 logbook data. Both methods do not account for potential increases in fishing effort that may occur due to a short reopening and therefore likely overestimate the length of the season. Allowable landings for 2012 ranged from 2,121 to 19,600 fish. Season lengths were contingent on the amount of fish allowed for harvest. Based on the Council's recommended ACL of 13,067 fish (9,399 recreational/3,668 commercial), recreational fishing season lengths ranged from 11-25 days depending on the month reopened and monthly catch. For the commercial sector, season lengths ranged from 16-175 days depending on the trip limit chosen and start date of the reopening. Given the uncertainties in estimating season length, as well as discard mortalities, and the Council's recommendation to reopen weekends only, it is recommended that the recreational season be reopened no more than 2-3 consecutive three day weekends. For the commercial sector, landings will be monitored in season through the SEFSC's quota monitoring program. Lower trip limits will provide longer seasons and deter targeting of red snapper, while higher trip limits may result in more trips targeting red snapper compared to historic and current effort levels.

Background

The South Atlantic Fishery Management Council (Council) manages red snapper (*Lutjanus campechanus*) in U.S. Atlantic Ocean waters from the Virginia/North Carolina border through the Florida Keys. The SEDAR-24 (2010) benchmark stock assessment of U.S. South Atlantic red snapper determined the stock was undergoing overfishing and was severely overfished (SEDAR-24 2010). On January 4, 2010, NOAA Fisheries Service implemented interim regulations at the request of the Council to close the red snapper segment of the Snapper-Grouper fishery. Interim regulations were implemented to address overfishing until the Council could establish more permanent regulations through Amendment 17A and Regulatory Amendment 10 to the Snapper-Grouper Fishery Management Plan. A complete prohibition of red snapper harvest was necessary to end overfishing and rebuild the stock.

Red snapper has been closed for two and a half years. In April 2012, the Council requested NOAA Fisheries Service's Southeast Fisheries Science Center (SEFSC) provide estimates of mortalities during 2010 and 2011 to determine if red snapper could be reopened. Results were compared to projected mortalities from the SEDAR-24 (2010) stock assessment. At the June 2012 Council meeting, the Council reviewed the mortality data and requested NOAA Fisheries Service implement an emergency rule to

reopen red snapper during 2012. This report evaluates the amount of fish that could be landed during the reopening and provides estimates of how long the recreational and commercial fishing seasons may be open to harvest. Commercial trip limits for reducing the rate of harvest are also evaluated.

Methods

2012 Mortality Estimates

Red snapper discard mortality estimates for 2010 and 2011 were obtained from SEFSC (2012). Results were compared to projected mortalities summarized in Table 9c of SEFSC (2010). Projections summarized in Table 9c were used as the basis for management decisions in Regulatory Amendment 10. Under current data collection protocols, discard mortalities cannot be calculated in-season; thus, discard mortality estimates for 2012 were predicted using four methods:

1. The average of 2010 and 2011 estimated mortalities;
2. The average of 2010 and 2011 estimated mortalities and 2012 projected mortalities;
3. Estimated mortalities for 2011 increased by the change in exploitable abundance projected for 2011 to 2012 and decreased by the change in fishing effort from 2010 to 2011; and,
4. Estimated mortalities for 2011 increased by the change in exploitable abundance projected for 2011 to 2012.

The change in exploitable abundance was obtained from SEDAR-24 (2010) projections (K. Shertzer, SEFSC, personal communication; Figure 1). Projections described in Table 9c of SEFSC (2010) indicate exploitable abundance will increase by 36.6% from 2011 to 2012. Changes in fishing effort were obtained from the Marine Recreational Information Program (MRIP) and from commercial coastal logbook records (Figures 2 and 3). MRIP summarizes effort as angler trips, while commercial logbooks provide days away from port and number of trips. Only recreational fishing effort occurring in the federal economic exclusive zone was used to determine the reduction in fishing effort from 2010 to 2011. Commercial effort was based on trips harvesting any stocks in the Snapper-Grouper Fishery Management Unit. From 2010 to 2011, there was a 7.7% reduction in recreational fishing effort and a 9.1% reduction in the number of days fished by commercial vessels. Reductions in fishing effort (see method 3 above) were applied to sector specific mortality estimates summarized in SEFSC (2012) then increased by the change in exploitable abundance from 2011 to 2012.

The mortality estimates generated from each of the four methods described above were subtracted from the projected mortalities in Table 9c of SEFSC (2010) to determine the number of fish that could be allowed for harvest in 2012. Projected mortalities in 2012 are estimated to equal 86,000 fish (SEFSC 2010). The difference in projected versus estimated mortalities is equivalent to an annual catch limit (ACL) specified in numbers of fish landed. Calculated ACLs in numbers of fish were further allocated 71.93% to the recreational sector and 28.07% to the commercial sector based on the allocation specified in the Council's Comprehensive ACL Amendment (2011). To calculate the commercial ACL in pounds gutted weight, the commercial ACL in numbers of fish was multiplied by the projected average weight of mortalities (in gutted pounds) from Table 9c in SEFSC (2010).

Estimation of Recreational Fishing Season Length

Red snapper landings (in numbers) for 2012 were forecast using a SARIMA model (Box and Jenkins 1976). A SARIMA model analyzes and forecasts equally-spaced univariate time series data, predicting values in a response time series as a linear combination of its own past values, past errors, and past, current, and projected future values of other time series. Because the time series of red snapper recreational catch per month shows strong seasonality, a SARIMA (p,d,q)*(P,D,Q) model was used. The auto-regressive component, designated as p, represents the lingering effects of previous observations. The integrated component, designated as d, represents trends, including seasonality. The moving average component, designated as q, represents lingering effects of previous random shocks (or error). In the SARIMA model, monthly catch (in numbers) of recreational red snapper was projected as a linear combination of past values. The SARIMA model used 2001-2010 red snapper landings. Landings were obtained from the SEFSC's ACL database and aggregated across all modes. Headboat landings are reported on a monthly basis, but Marine Recreational Fisheries Statistical Survey landings are reported by two-month wave. Landings for MRFSS were converted from wave to monthly landings by multiplying wave landings by the ratio of days in a month to total days in the wave.

Exploitable abundance at age was used as a predictive co-variate to account for increasing fish abundance as the stock rebuilds. Abundance at age data were obtained from the most recent red snapper stock assessment and projections (K. Shertzer, SEFSC, pers. comm.) and converted to exploitable abundance using selectivity at age (Figure 1). Projected values of exploitable abundance from projections summarized in Table 9c of SEFSC 2010 ($F=F_{rebuild}$) were used to seed the forecast of the final SARIMA model (K. Shertzer, SEFSC, pers. comm.). It should be noted that the assessment model estimated large increases in exploitable abundance in 2007-2008 due high recruitment progressing through the fishery. Exploitable abundance was estimated to decline from 2008 through 2010 before increasing at a rapid rate beginning in 2011.

The SARIMA model was implemented using Proc ARIMA in SAS v9.2 for Windows (SAS Institute, Inc., Cary, NC). SARIMA model selection was guided by examination of autocorrelations, inverse autocorrelations, partial autocorrelations, and cross-correlations. Stationarity tests were used to guide differencing selection. Residual diagnostics and Akaike Information Criterion (AIC) values were used to select the final model, which was specified as a SARIMA(0,0,1)X(0,1,1)s model where s=12 months, with model fit using conditional least squares. The final model incorporated exploitable abundance as a predictor and explained 66% of the variability in non-seasonal and seasonal trends in monthly catch using an MA(1,1) model (Moving Average Operator: 1 + 0.93028 B**(1)), an SMA(2,1) model at a 12 month lag (Moving Average Operator: 1 - 0.75416 B**(12)), and a predictor term for exploitable abundance (Regression Factor: 0.012651).

Monthly catches predicted by the SARIMA model were then converted to daily catches by dividing the monthly catches by the number of days in the month. Because predictions of catch are highly uncertain and effort may be substantially higher than historic levels if the season is opened for only a short period of time, monthly catches using the upper 95% confidence limit were also generated. A cumulative sum of consecutive daily catch rates was then used to predict how many days it would take to catch the 2012 annual catch limit (ACL). Estimates were generated based on starting the season at the beginning of each month to take into account seasonal changes in landings and fishing effort.

Season lengths were estimated for each of the 2012 ACLs estimated above.

Commercial Trip Limits and Season Length

SEFSC commercial logbook records were used to evaluate how long the commercial fishing season would remain open if various trip limits were imposed. Trip limits were imposed on logbook landings data from 2009, the last year the red snapper commercial sector was open. Trip limits considered ranged from 25 to 100 pounds gutted weight. If a trip reported landing red snapper above a specified trip limit, then landings were reduced to the trip limit. All trips landing quantities of red snapper below the trip limit were increased to the trip limit. Not adjusting landings below a trip limit was considered, but because the Council recommended during their June 2012 meeting to eliminate the minimum size limit, it was presumed that trips previously not catching the trip limit would have a much higher probability of catching the trip limit if the size limit is eliminated. The size limit and geographic availability of red snapper are limiting factors in catching red snapper. By eliminating the size limit, the likelihood of catching the trip limit will increase, especially in the areas of highest abundance, as fish will no longer be discarded due to regulations. Although this might overestimate the amount of fish landed on trips previously occurring, effort may also be underestimated if additional trips occur due to red snapper being reopened.

Results

2012 Mortality Estimates

Red snapper mortality estimates for 2010 and 2011 were comparable to projected mortalities (Figure 4). In 2010, 71,394 red snapper were estimated to be killed (SEFSC 2012). In 2011, 61,405 red snapper were estimated to be killed (SEFSC 2012). Projected mortalities for 2010 and 2011 were 65,000 and 64,000 red snapper, respectively. In 2012, mortalities are projected to increase to 86,000 fish. Estimated mortalities for 2012 ranged from 66,400 to 83,879 fish (Table 1) and varied based on assumed changes in fishing effort, exploitable abundance, and years used to approximate mortalities. Based on the range of projected mortalities, possible ACLs ranged from 2,121 to 19,600 fish (Table 1). The lowest estimate of allowable landings for 2012 assumed mortalities from 2011 to 2012 would increase at the same rate as projected exploitable abundance. The highest estimate of allowable landings assumed mortalities would be on average similar to 2010 and 2011 mortalities.

Estimation of Recreational Fishing Season Length

The SARIMA model explained 66% of the variability in seasonal and non-seasonal monthly catch trends. Model fit was generally very good with the exception of the last four months of 2009, which were overestimated by the model (Figure 5). Estimated mean monthly landings ranged from 11,666-17,591 fish. The upper 95% confidence limit projection estimated monthly landings ranging from 20,177-26,102 fish. Monthly landings were highest during late spring and early summer and lowest during fall and winter.

Projected recreational season lengths for each of the recreational ACLs are summarized in Tables 2 and 3. Based on the mean projected landings from the SARIMA model, the season length ranged from 3-4 days for an ACL = 1,526 fish, 11-17 days for an ACL = 6,462 fish, 16-25 days for an ACL = 9,399 fish, and 24-36 days for an ACL = 14,098 fish. Based on the 95% upper confidence limit projected landings from the SARIMA model, the season length was 2 days for an ACL = 1,526 fish, 7-10 days for an ACL = 6,462

fish, 11-14 days for an ACL = 9,399 fish, and 16-21 days for an ACL = 14,098 fish. Season lengths were longer during fall and winter than spring and summer.

Commercial Trip Limits and Season Length

Tables 4-8 summarize projected commercial red snapper season lengths for various trip limits. As expected, season lengths were longest for lower trip limits and shortest if no trip limit was imposed. Season lengths ranged from as few as 3 days up to 244 days depending on the trip limit and ACL chosen

Discussion

During the June 2012 South Atlantic Council meeting, the Council recommended NOAA Fisheries Service implement emergency regulations to reopen the red snapper segment of the snapper-grouper fishery. Given harvest has been prohibited since January 2010, predicting recreational and commercial fishing season lengths for a limited opening in 2012 is difficult. The Council recommended the following management actions for reopening red snapper:

- Set the 2012 Annual Catch Limit (ACL) for red snapper = 13,067 fish;
- Set the 2012 recreational allocation at 71.93% of the ACL = 9,399 fish;
- Set the 2012 commercial allocation at 28.07% of the ACL = 3,668 fish or 20,818 pounds gutted weight;
- Establish Recreational Accountability Measures (AMs) = track recreational landings and close the recreational sector when the recreational ACL is met or projected to be met;
- Establish Commercial Accountability Measures (AMs) = track commercial landings and close the commercial sector when the commercial ACL is met or projected to be met;
- Allow for the recreational ACL to be landed during 3-day weekends (Fri-Sun) the number of which would be determined by the agency and the opening dates would be subject to modification based on weather conditions;
- Open the season as soon as possible;
- Set the recreational bag limit at 1 fish per person per day with no size limit;
- Open the commercial season in 7-day mini-season increments subject to the remaining quota; and,
- Allow for the commercial ACL to be landed under a 50-pound trip limit with no size limit.

Predicting changes in angler behavior in response to a reopening is difficult. Many factors can influence fishing activity including: fuel costs and trip expenses, weather (Figure 6, SERO 2012a), changes in regulations, changes in fishing behavior, and conflicting activities (e.g., family activities, sporting events on weekends). It is difficult to predict how South Atlantic fishermen will respond to a 'derby-style' opening of red snapper. Although the recreational red snapper sector in the Gulf of Mexico has never been completely closed, the fishing season has been shortened in each of the last five fishing years. Despite reductions in the fishing season length, the average catch-per-day has increased at a linear rate (Figure 7), due in large part to increases in stock abundance, increases in the average size of fish caught, and effort compensation (SERO 2012b). During 2011, recreational anglers landed approximately the same amount of red snapper in 48 days (in pounds) as they did during 2006 and prior when the season was 194 days.

In this analysis, historical South Atlantic red snapper landings data were forward-projected based on increases in exploitable abundance and used to estimate future monthly recreational catch rates. Although this approach accounts for changes in underlying stock size and seasonal dynamics in fishing pressure, it does not factor in changes in fishing pressure likely from a shortened season. However, even this approach may underestimate fishing effort and landings resulting from a short 'derby-style' reopening of red snapper. If effort is underestimated, then season lengths predicted in this report would be too long and would result in an overage of the ACL.

Maximum recreational season lengths ranged from 11-25 consecutive days based on the Council's recommended ACL of 13,067 fish. As the majority of private recreational fishing pressure occurs on weekends, the number of weekend days available would be much less than the 11-25 consecutive days projected. For example, 11-25 consecutive days is the equivalent of 1.6-3.6 weeks. Assuming 75% of a week's recreational landings are landed over the three-day weekend, 2.1-4.8 three-day weekends would be the equivalent of 11-25 consecutive days. Given uncertainties in estimated discard mortalities for 2012, and the potential for large shifts in fishing effort, it is recommended that the recreational fishing season be no longer than 2-3 consecutive three-day weekends.

For the commercial sector, fishing season lengths were highly variable and contingent on the trip limits chosen and the amount of trips made during a week/month. Lower trip limits would result in the longest fishing season and would limit direct targeting of red snapper while reducing wasteful dead discards. Higher trip limits would result in more trips directly targeting red snapper. Based on the Council's preferred commercial ACL (3,668 fish or 20,818 gutted pounds) and trip limit (50 pounds gutted weight), it is estimated the season length could be 2-3 months. This assumes effort is comparable to 2009 levels. In 2009, 1,997 logbook trips reported landing red snapper. Trips per month ranged from 113-235, or approximately 30-60 per week. During 2009, the maximum amount of pounds landed during a week was 21,423 pounds gutted weight between October 3-9, 2009. This amount was landed by 44 vessels taking 60 trips. Logbook records indicate there were 107 vessels fishing in statistical zones from Central-east Florida (Fort Pierce/Cape Canaveral) through Georgia in 2011 that landed species commonly associated with red snapper (i.e., vermilion snapper, scamp, red porgy, black grouper, gag, red grouper, gray triggerfish, and greater amberjack). Most trips occurred off Florida and averaged 2-3 days (Figure 8). If each of these vessels made two trips per week and caught a 50 pound trip limit, then the season would be open 14 days. If these vessels each made three trips per week and caught a 50 pound trip limit, then the season would be open 9 days. Given that vessels off South Carolina and North Carolina will also be catching some red snapper, it is likely the season could be even shorter than 9-14 days.

Quota monitoring by the SEFSC will allow commercial landings to be monitored during and after the 7-day opening(s). Once landings have been reported for the first seven-day commercial opening, the SEFSC will evaluate if the ACL has been met. If the ACL is not met, the season will be reopened for an additional 7 days or less if the quota is met sooner. Given the potential for large shifts in fishing effort, lower trip limits will reduce the risk of exceeding the ACL during these 7-day mini-season openings.

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SERO. 2012b. 2012 Recreational red snapper quota closure analysis. NOAA Fisheries Service, Southeast Regional Office, St. Petersburg, FL. 17 pp.

Table 1. Estimated discard mortalities for 2012 and potential allowable landings allocated to each sector.

Method for Estimating 2012 Discard Mortalities	2012 Discard Mortalities (n)		Potential Allowable Landings (n) / ACL
	Projected	Estimated	
2010-11 average mortalities	86,000	66,400	19,600 rec = 14,098 comm = 5,502 or 31,226 lbs gw
Average of 2010-11 estimated mortalities and 2012 projected mortalities	86,000	72,933	13,067 rec = 9,399 comm = 3,668 or 20,818 lbs gw
2011 mortalities increased by Δ in 2011-2012 exploitable abundance and decreased by Δ in 2010-2011 fishing effort	86,000	77,016	8,984 rec = 6,462 comm = 2,522 or 14,313 lbs gw
2011 increased by Δ in 2011-2012 exploitable abundance (36.6%)	86,000	83,879	2,121 rec = 1,526 comm = 595 or 3,379 lbs gw

Table 2. Estimated recreational red snapper fishing season length based on mean monthly 2012 landings projected by the SARIMA model. 'Month' refers to when the season would be reopened.

Month	Estimated Recreational Season Length (SARIMA mean)			
	ACL = 1,526	ACL = 6,462	ACL = 9,399	ACL = 14,098
Jan	3	14	20	31
Feb	3	11	16	24
Mar	3	12	17	26
Apr	3	12	17	25
May	3	11	17	25
Jun	3	11	16	24
Jul	3	14	20	30
Aug	3	14	21	31
Sep	4	17	24	36
Oct	4	17	25	36
Nov	4	16	23	34
Dec	4	16	23	34

Table 3. Estimated recreational red snapper fishing season lengths based on 95 percent upper confidence limit of monthly 2012 landings projected by the SARIMA model. ACLs are in numbers of fish and are based on results summarized in Table 1. 'Month' refers to when the season would be reopened.

	Estimated Recreational Season Length (SARIMA 95% CL)			
Month	**ACL = 1,526**	**ACL = 6,462**	**ACL = 9,399**	**ACL = 14,098**
Jan	2	9	13	19
Feb	2	7	11	16
Mar	2	8	11	17
Apr	2	8	11	17
May	2	8	11	17
Jun	2	7	11	16
Jul	2	9	13	19
Aug	2	9	13	19
Sep	2	10	14	21
Oct	2	10	14	22
Nov	2	9	13	20
Dec	2	10	14	21

Table 4. Estimated commercial red snapper fishing season lengths based on 2009 logbook landings data and a 25-pound gutted weight trip limit. ACLs are in gutted pounds and are based on results summarized in Table 1. 'Month' refers to when the season would be reopened.

	Estimated Season Length (25 lb gw trip limit)			
Month	**ACL = 3,379**	**ACL = 14,313**	**ACL = 20,818**	**ACL = 31,226**
Jan	26	122	162	229
Feb	25	118	152	227
Mar	36	105	150	223
Apr	30	94	141	210
May	22	86	135	198
Jun	17	92	135	214
Jul	23	100	143	229
Aug	27	99	152	240
Sep	22	96	152	244
Oct	22	107	156	244
Nov	23	112	175	237
Dec	33	126	175	236

Table 5. Estimated commercial red snapper fishing season lengths based on 2009 logbook landings data and a 50-pound gutted weight trip limit. ACLs are in gutted pounds and are based on results summarized in Table 1. 'Month' refers to when the season would be reopened.

	Estimated Season Length (50 lb gw trip limit)			
Month	**ACL = 3,379**	**ACL = 14,313**	**ACL = 20,818**	**ACL = 31,226**
Jan	13	54	88	131
Feb	13	64	92	125
Mar	19	67	89	116
Apr	15	55	73	102
May	11	43	60	96
Jun	9	39	61	101
Jul	12	52	75	109
Aug	13	52	73	108
Sep	11	47	68	109
Oct	11	47	73	117
Nov	11	57	83	123
Dec	17	62	86	138

Table 6. Estimated commercial red snapper fishing season lengths based on 2009 logbook landings data and a 75-pound gutted weight trip limit. ACLs are in gutted pounds and are based on results summarized in Table 1. 'Month' refers to when the season would be reopened.

	Estimated Season Length (75 lb gw trip limit)			
Month	**ACL = 3,379**	**ACL = 14,313**	**ACL = 20,818**	**ACL = 31,226**
Jan	9	37	53	88
Feb	8	39	62	92
Mar	12	48	66	89
Apr	10	39	54	73
May	7	31	42	60
Jun	6	22	37	61
Jul	8	33	50	75
Aug	9	37	51	73
Sep	7	31	45	68
Oct	7	31	46	73
Nov	8	33	55	83
Dec	11	44	60	86

Table 7. Estimated commercial red snapper fishing season lengths based on 2009 logbook landings data and a 100-pound gutted weight trip limit. ACLs are in gutted pounds and are based on results summarized in Table 1. 'Month' refers to when the season would be reopened.

	Estimated Season Length (100 lb gw trip limit)			
Month	**ACL = 3,379**	**ACL = 14,313**	**ACL = 20,818**	**ACL = 31,226**
Jan	7	28	40	59
Feb	6	26	44	70
Mar	9	38	52	72
Apr	8	31	42	59
May	6	25	33	47
Jun	4	14	27	43
Jul	6	24	37	57
Aug	7	29	40	56
Sep	6	23	34	51
Oct	5	23	34	51
Nov	6	22	38	63
Dec	8	34	47	67

Table 8. Estimated commercial red snapper fishing season lengths based on 2009 logbook landings data and no trip limit. ACLs are in gutted pounds and are based on results summarized in Table 1. 'Month' refers to when the season would be reopened.

	Estimated Season Length (no trip limit)			
Month	**ACL = 3,379**	**ACL = 14,313**	**ACL = 20,818**	**ACL = 31,226**
Jan	4	16	24	36
Feb	4	17	25	40
Mar	5	22	32	45
Apr	4	18	26	39
May	4	19	27	39
Jun	4	15	22	33
Jul	3	13	20	29
Aug	6	24	35	46
Sep	4	18	26	35
Oct	3	11	16	25
Nov	4	16	24	36
Dec	4	18	26	39

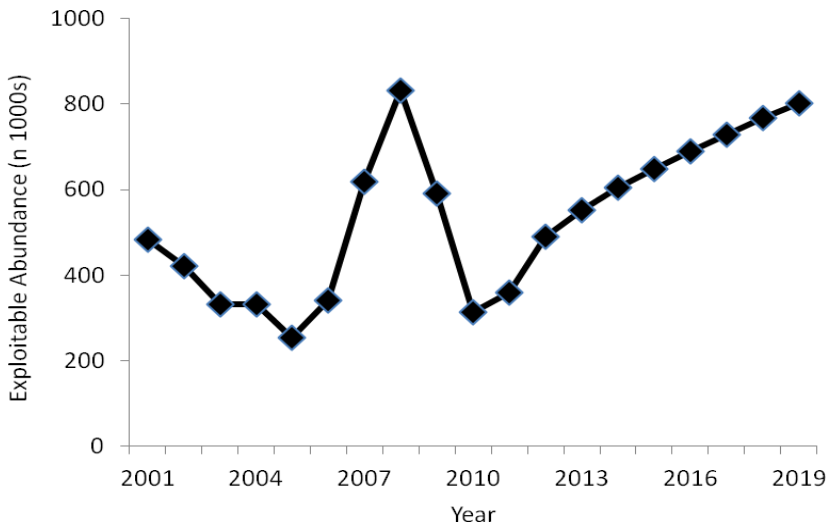

Figure 1. Red snapper exploitable abundance (thousands o f fish), 2001-2019.

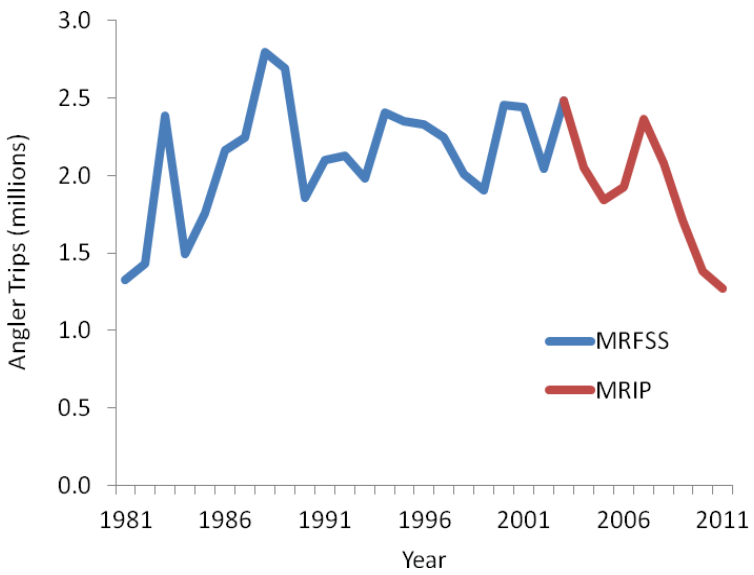

Figure 2. Recreational angler trips in federal waters of the South Atlantic, 1981-2011. Angler trips were estimated using the Marine Recreational Fisheries Statistics Survey from 1981-2003. From 2004-2011, angler trips are estimated based on Marine Recreational Information Program methods.

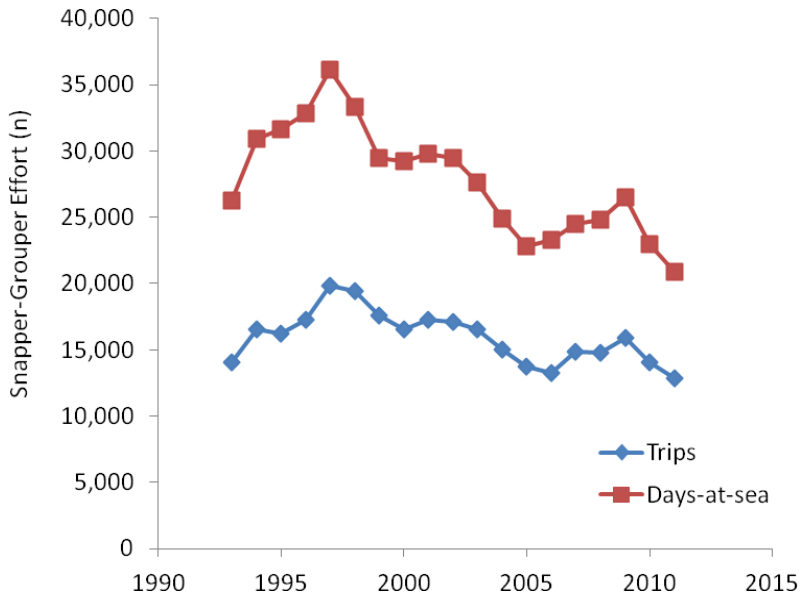

Figure 3. Snapper-grouper commercial fishing trips and days-at-sea, 1993-2011. Source: Coastal logbook records.

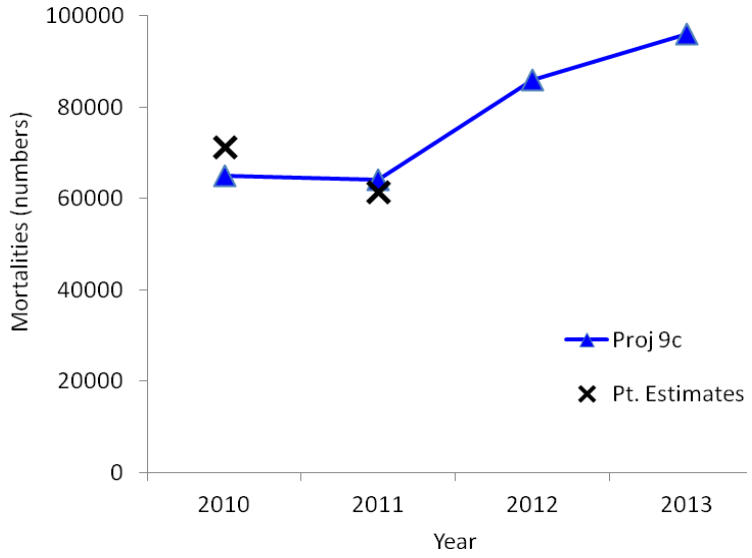

Figure 4. Projected (blue triangles) and estimated (black x) red snapper mortalities, 2010-2013. Projected mortalities are from Table 9c in SEFSC (2010). Estimated mortalities are from SEFSC (2012).

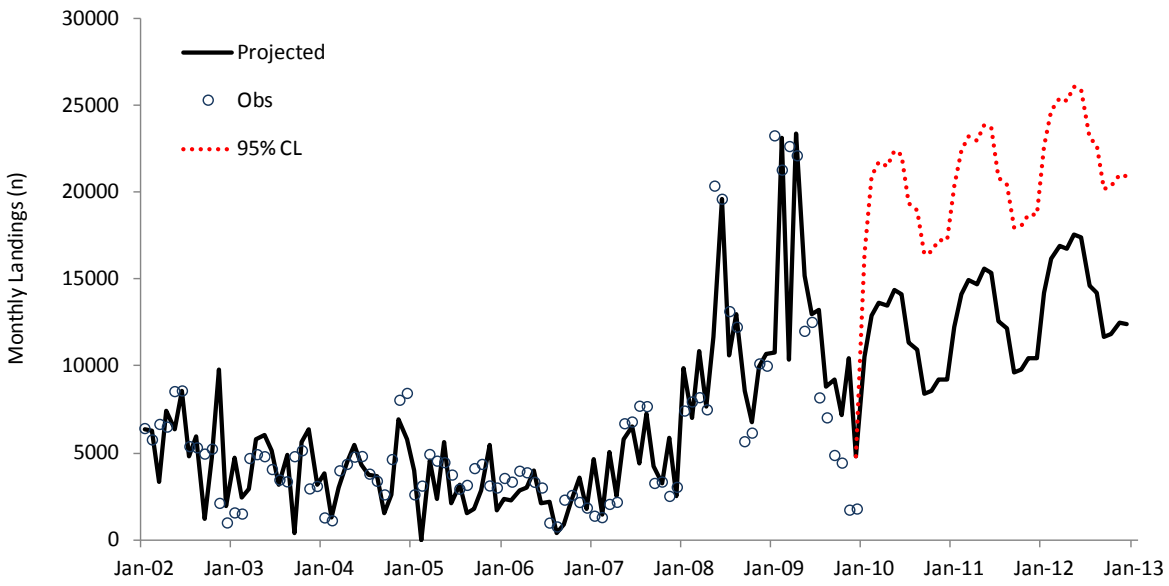

Figure 5. SARIMA model fit to recreational landings-per-month (in numbers). Red dashed line represents 95% upper confidence limit. Monthly landings are projected for 2010 through 2012.

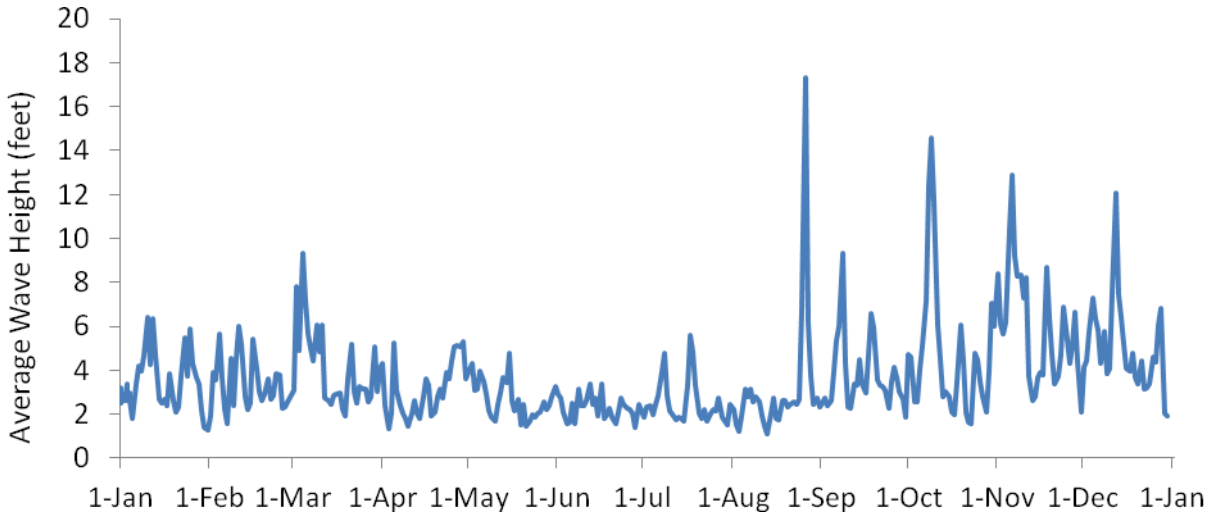

Figure 6. Average daily wave heights (feet) during 2011 at buoy 41012, east of St. Augustine, Florida. Source: www.ndbc.noaa.gov

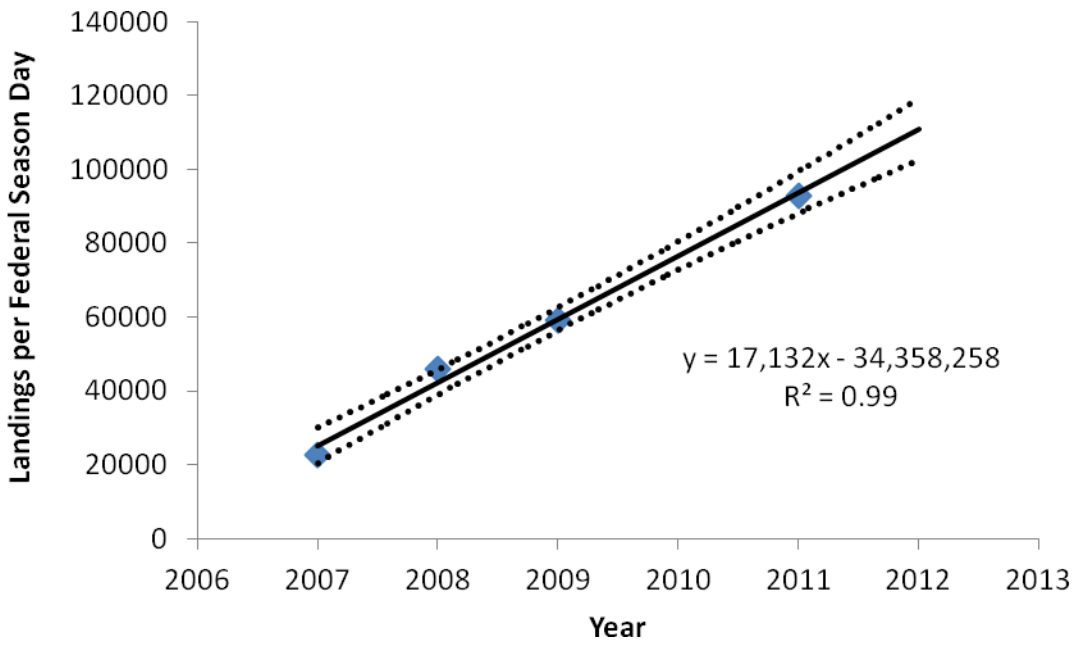

Figure 7. Linear regression (± 80% confidence limits) of Gulf of Mexico red snapper landings per federal season day versus year, 2007-2011 (excluding 2010 due to Deepwater Horizon oil spill).

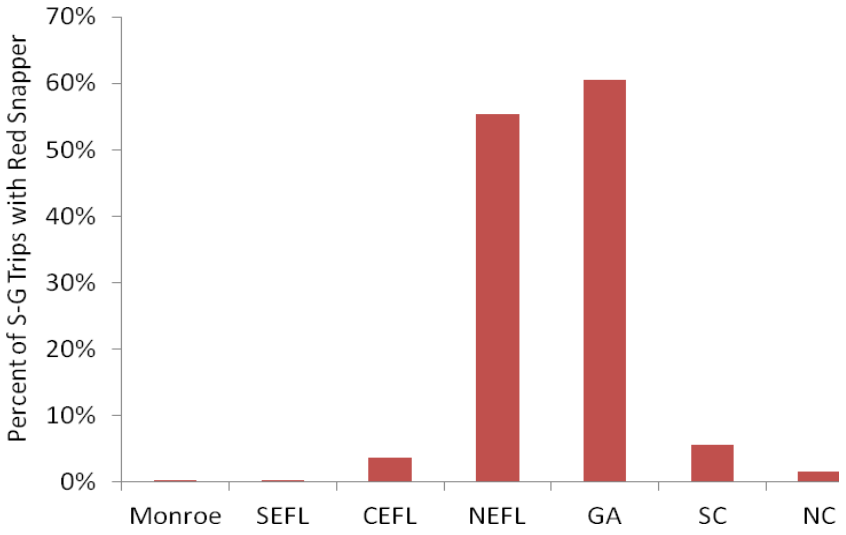

Figure 8. Percentage of snapper-grouper fishing trips in 2009 landing red snapper by state/region. Monroe = Florida Keys, SEFL = West Palm Beach-Miami, CEFL = Cape Canaveral – Fort Pierce, NEFL = Jacksonville – St. Augustine)

ADDENDUM

At the June 2012 South Atlantic Fishery Management Council (Council) meeting, the Council reviewed estimated 2012 red snapper mortalities summarized in Table 1 of this report. The Council selected an annual catch limit (ACL) for red snapper of 13,067 fish. This ACL was based on the difference in projected 2012 mortalities from Table 9c of SEFSC (2010) relative to the average of 2010-11 estimated mortalities and 2012 projected mortalities. Since the June Council meeting, the Southeast Regional Office and Southeast Fisheries Science Center have reviewed additional discard and effort data for 2012 to further evaluate whether or not discard mortalities in 2012 will be less than projected mortalities to determine if reopening the red snapper segment of the snapper-grouper fishery is justified.

Red snapper discard estimates from the Marine Recreational Information Program (MRIP) and Marine Recreational Fisheries Statistics Survey (MRFSS) were obtained for waves 1-2 (January-April) in 2010-2012 (Table A1). Discards estimated through the shore mode were excluded consistent with SEDAR-24 (2010). Dead discards were calculated by multiplying discards by mode-specific mortality rates from SEDAR-24 (i.e., 0.39 for private/rental and 0.41 for charter). No data were available to evaluate commercial or headboat red snapper mortalities for 2012.

Table A1. Discard and dead discard estimates from MRIP and MRFSS waves 1-2, 2010-2012.

	MRFSS (waves 1-2)		**MRIP (waves 1-2)**	
Year	**Discards (n)**	**Dead Discards (n)**	**Discards (n)**	**Dead Discards (n)**
2010	21,312	8,315	24,536	9,577
2011	3,186	1,259	5,842	2,294
2012	6,154	2,407	5,707	2,270

MRFSS discard estimates were higher than 2011 estimates but well below discard estimates for 2010. MRIP discard and dead discard estimates were comparable to 2011 estimates and much lower than 2010 estimates. There does not appear to be a significant change in discards for the first four months of 2012. Given that discard estimates are low and in-line with last year using MRIP and slightly higher, but still low under MRFSS, there is no evidence at this time to indicate mortalities will be higher than the amount assumed by the Council when setting the ACL. Even though MRFSS discard estimates are up for 2012 relative to 2011, they are still much lower than 2010. Total mortalities in 2010 and 2011 (see SEFSC 2012; 71,394 fish in 2010 and 61,405 fish in 2011) were both below the assumed level of total mortalities for 2012 (i.e., 72,933) selected by the Council for setting the ACL.

NOAA Fisheries Service also reviewed MRIP effort data to evaluate effort relative to prior years. MRIP estimates angler trips by state, area, wave, and mode. Angler trips for the South Atlantic Exclusive Economic Zone (EEZ) were extracted for waves 1-2, 1983-2012, and for waves 1-6, 1983-2011 (Figure A1). Effort in the South Atlantic EEZ generally declined from 2003-2011. Total and wave 1-2 EEZ angler trips in 2011 were the lowest on record. In 2012, wave 1-2 EEZ angler trips were the third lowest since 1983. Angler trips in waves 1-2 increased in 2012 relative to both 2010 and 2011 angler trips. Angler trips during the first two waves in 2012 were 47.7% higher than 2011 and 18.9% higher than 2010. Charter angler trips for waves 1-2 in 2012 were lower than 2010 and 2011 levels (23,255 trips vs. 30,060

in 2010 and 17,498 in 2011), while private angler trips were higher than 2010 and 2011 levels (316,384 trips vs. 257,387 in 2010 and 195,961 in 2011).

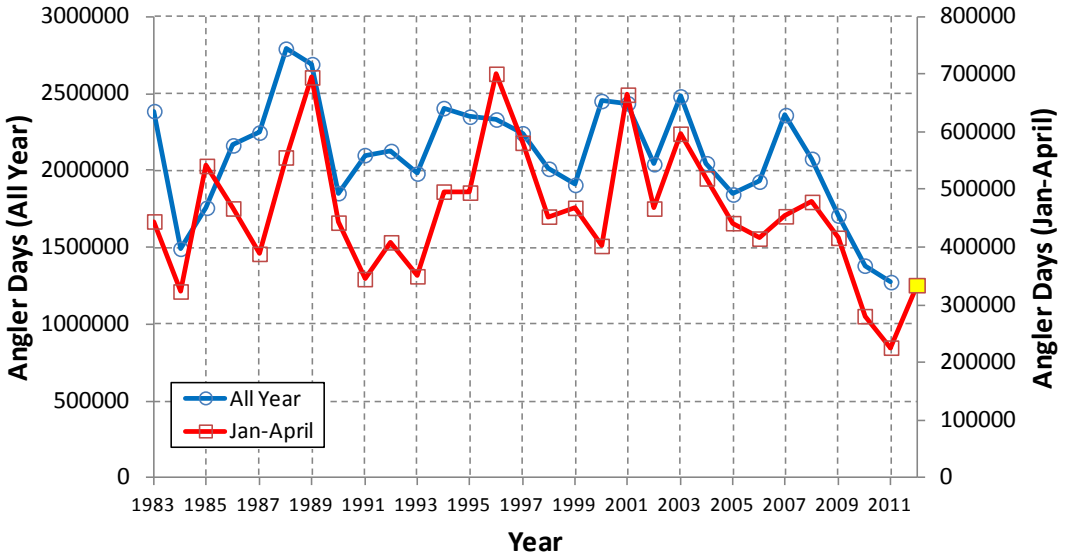

Figure A1. MRIP angler trips in South Atlantic federal waters.

In conclusion, discard estimates for waves 1-2, 2012, are comparable to previous estimates in 2010 and 2011. There appears to be no evidence based on data through April that discards are increasing in 2012. Despite increases in private fishing effort during waves 1-2, 2012, discards have remained low and comparable to previous years. Several reasons may explain the low number of discards including, but not limited to: 1) fishermen avoiding red snapper and other snapper-grouper due to regulatory restrictions, 2) discards being underreported or underestimated by MRFSS and MRIP, 3) effort being overestimated by MRIP, or 4) increases in exploitable abundance being lower than previously projected.

Appendix D.

1 Bycatch Practicability Analysis (BPA)

1.1 Population Effects for the Bycatch Species

Background

In 2008, a stock assessment for red snapper indicated the red snapper stock was overfished and undergoing overfishing (Southeast Data, Assessment, and Review (SEDAR) 15; 2008a). Consequently, an interim rule was published on December 4, 2009 (NOAA's National Marine Fisheries Service (NMFS) 2010), which prohibited harvest and possession of red snapper beginning on January 4, 2010. That rule was extended for 186 days. Amendment 17A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) (Amendment 17A; SAFMC 2010a), effective December 3, 2010, continued the harvest and possession prohibition of red snapper to end overfishing and also implemented a rebuilding plan. **Appendix R** of Amendment 17A contains the BPA conducted for that amendment, and is incorporated herein by reference. At their June 2012 meeting, the South Atlantic Fishery Management Council (South Atlantic Council) reviewed red snapper discard mortality estimates and compared them to the 2012 acceptable biological catch (ABC) from the rebuilding projection. The estimated mortalities for 2012 are less than the ABC for 2012 suggesting some minimal level of harvest of red snapper can occur without negatively affecting the stock (**Appendix B**). As a result, the South Atlantic Council recommended reopening red snapper to a small amount of harvest in 2012.

Harvest of red snapper in federal waters has been prohibited since January 4, 2010. There has been some very small harvest of red snapper in Florida state waters since they did not adopt compatible regulations. However, most of the mortality, in the form of dead discards, has occurred as incidental catch of red snapper from fishermen targeting co-occurring species. Amendment 17A indicates the top co-occurring species with red snapper are vermilion snapper, gag, scamp, greater amberjack, gray triggerfish, black sea bass, and red grouper. The Southeast Fisheries Science Center (SEFSC) has provided a report on the level of harvest and dead discards of red snapper in 2010 and 2011, which is contained in **Appendix B**.

The directed commercial fishery top co-occurring species with red snapper (vermilion snapper, gag, scamp, greater amberjack, gray triggerfish, black sea bass, and red grouper) is executed primarily with hook and line gear (Table 1). Table 1 from **Appendix R** of the Amendment 17A BPA indicates red snapper were also taken primarily with hook and line gear (93%) during 2005-2008 before the harvest prohibition. Black sea bass are predominantly taken with pots.

Table 1. Mean percentage of commercial landings by gear (2010-2011).

Species	Diving	Hook&Line	Longline	Pot	Other
Gag	25.49%	74.47%	0.02%	0.04%	0.00%
Black sea bass	0.08%	12.58%	0.03%	87.21%	0.11%
Vermilion snapper	0.00%	99.97%	0.00%	0.04%	0.00%
Red grouper	2.86%	97.08%	0.01%	0.07%	0.00%
Scamp	11.97%	88.03%	0.01%	0.00%	0.00%
Greater amberjack	6.44%	93.34%	0.21%	0.00%	0.02%
Gray triggerfish	1.70%	93.79%	2.52%	1.56%	0.44%

Source: NOAA's National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) commercial logbook (April 2012).

During 2010 and 2011, black sea bass were most abundantly captured by the recreational sector, and gray triggerfish landings were evenly divided between the commercial and recreational sectors (Table 2). The commercial sector dominated landings of other species, which commonly occur with red snapper. **Appendix R** from Amendment 17A indicates the recreational sector took approximately 83% of the red snapper landings during 2005-2008.

Table 2. Mean commercial and recreational landings (pounds whole weight) during 2010-2011. Commercial landings include all of Monroe County, Florida; MRFSS landings do not include Monroe County, Florida; Headboat landings include Monroe County, Florida for Atlantic-based vessels.

Species	Headboat	MRFSS	Recreational	Commercial	Percent Recreational	Percent Commercial
Gag	31,241	168,256	199,497	425,328	32%	68%
Black sea bass	260,900	503,973	764,873	400,080	66%	34%
Vermilion snapper	160,467	92,584	253,050	929,001	21%	79%
Red grouper	9,836	97,420	107,256	254,231	30%	70%
Scamp	21,300	34,960	56,261	183,007	24%	76%
Greater amberjack	55,429	609,787	665,216	947,443	41%	59%
Gray triggerfish	139,080	336,044	475,124	423,208	53%	47%

Source: SEFSC commercial annual catch limit (ACL) data (July 2012);
Recreational ACL data (July 2012).

Commercial Sector

During 2010 and 2011, approximately 20% of snapper grouper permitted vessels from the Gulf of Mexico and South Atlantic were randomly selected to fill out supplementary logbooks. The

average number of trips per year during 2010 and 2011 was 21,318; and fishermen spent an average of 1.66 days at sea per trip (Table 3).

Table 3. Snapper grouper fishery effort for South Atlantic.

Year	Trips	Days	Days per Trip
2010	13,387	22,347	1.67
2011	12,253	20,289	1.66
Mean	12,820	21,318	1.66

Source: NMFS SEFSC logbook program.

Among red snapper and co-occurring species during 2010-2011, the average percentage of trips that reported discards was greatest for vermilion snapper and red snapper (25% and 24%,respectively), followed by black sea bass (20%), scamp (13%), and gag (12%) (Table 4). Species with the greatest number of individuals discarded during 2010-2011 were vermilion snapper (44,155), red snapper (41,106), and black sea bass (32,548) (Table 4).

Since the discard logbook database represents a sample, data were expanded to estimate the number of discarded fish (Table 4). The formula used for expansion was: "discard per unit effort from discard logbook database * total effort from commercial logbook." Release mortality estimates for the commercial sector compiled from the most recent stock assessments (as available) using SEFSC's SEDAR process are: 48% red snapper (SEDAR 24; 2010b); 40% gag (SEDAR 10; 2006b); 1% black sea bass (SEDAR 25; 2011); 38% vermilion snapper (SEDAR 17; 2008b); 20% red grouper and 20% black grouper (SEDAR 19; 2010a); 20% greater amberjack (SEDAR 15; 2008a); and 0% gray triggerfish (Gulf of Mexico SEDAR 9; 2006a) (Table 4). Dead discards were estimated by applying the release mortality rates to the total discards. Discard mortality was highest for red snapper (19,731), followed by vermilion snapper (16,779) (Table 4). See the "Finfish Bycatch Mortality" and "Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality" sections of this BPA for more details.

Table 4. Percentage of trips that discarded species; and expanded commercial discards of red snapper and co-occurring species from 2010-2011.

Species	Percentage of trips that discarded species	Total discards	Release Mortality	Dead discards
Red snapper	24.17%	41,106	48%	19,731*
Gag	12.35%	7,913	40%	3,165
Black sea bass	20.43%	32,548	1%	325
Vermilion snapper	24.99%	44,155	38%	16,779
Red grouper	7.47%	2,447	20%	489
Scamp	13.10%	1,416	Unknown	Unknown
Greater Amberjack	6.11%	3,164	20%	633
Gray triggerfish	7.66%	1,845	0%	0

Note: Computed using mean discard rates (2010-2011) from commercial discard logbook applied to overall commercial effort reported to commercial logbook. ***Appendix B** (SEFSC Report, May 2012).

Recreational Sector

For the recreational fishery, estimates of the number of recreational discards are available from Marine Recreational Fisheries Statistical Survey (MRFSS) and the NMFS headboat survey. The MRFSS 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.

Recreational harvest for red snapper co-occurring species, was greatest for black sea bass, followed by vermilion snapper, gray triggerfish, and gag (Table 5). There were differences in the amount and variety of species harvested by the private recreational sector and the “for-hire” sectors (charterboats/headboats). During 2010 and 2011, 90% black sea bass, 89% black grouper, and 84% gag were discarded by the private recreational sector (Table 5). During the same period, 87% red grouper and 67% black sea bass were released by fishermen on charterboats, versus 88% red grouper, 83% black grouper, and 68% black sea bass by fishermen on headboats (Table 5).

Release mortality estimates for the recreational sector compiled from the most recent stock assessments using data from SEDAR stock assessments (as available) are: 25% gag (SEDAR 10; 2006b); 7% black sea bass (SEDAR 25; 2011); 38% vermilion snapper (SEDAR 17; 2008b); 20% red grouper and 20% black grouper (SEDAR 19; 2010a); 20% greater amberjack (SEDAR 15; 2008a); and 0% gray triggerfish (Gulf of Mexico SEDAR 9; 2006a) (Table 5). Dead discards were estimated by applying the release mortality rates to the total discards. In 2010 and 2011, discard mortality was highest for black sea bass (207,156), vermilion snapper (19,425), and gag (19,136) for the private recreational sector (Table 5). For the "for-hire" sector (charterboats/headboats), discard mortality was highest for black sea bass (13,051/35,426), followed by vermilion snapper (6,464/35,228), and red grouper (1,381/2,099) (Table 5). Discard mortality was zero for gray triggerfish in 2010 and 2011, for both the private recreational, and "for-hire" sectors (Table 5).

The SEFSC's May 2012 report (**Appendix B**) shows red snapper discard mortalities in the private recreational sector decreasing from 31,561 fish in 2010, to 16,156 fish in 2011. Conversely, the same report reveals red snapper discard mortalities in the "for-hire" sector (charterboats/headboats) increasing from 20,569 fish in 2010, to 22,131 fish in 2011. Release mortality rates for these two sectors are similar, 41% for the "for-hire" sector, and 39% for the private recreational sector (SEDAR 24; 2010b).

Table 5. Mean number (expanded) of MRFSS private, and charterboat and headboat recreational harvests (A+B1) and discards (B2) for the South Atlantic from 2010-2011.

	Private						Charterboat						Headboat					
Species	Total	A+B1	B2	Percent B2	Release Mortality	Dead Discards	Total	A+B1	B2	Percent B2	Release Mortality	Dead Discards	Total	A+B1	B2	% B2	Release Mortality	Dead Discards
Gag	90,715	14,170	76,545	84%	25%	19,136	3,064	1,795	1,269	41%	25%	317	7,295	2,957	4,339	59%	25%	1,085
Black sea bass	3,292,457	333,083	2,959,374	90%	7%	207,156	279,515	93,069	186,446	67%	7%	13,051	744,708	238,625	506,084	68%	7%	35,426
Vermilion snapper	98,756	47,637	51,119	52%	38%	19,425	45,621	28,610	17,012	37%	38%	6,464	228,610	135,904	92,707	41%	38%	35,228
Red grouper	62,765	6,963	55,802	89%	20%	11,160	7,900	996	6,904	87%	20%	1,381	11,914	1,421	10,493	88%	20%	2,099
Black grouper	5,765	2,209	3,556	62%	20%	711	451	253	198	44%	20%	40	1,841	315	1,527	83%	20%	305
Scamp	5,912	2,533	3,379	57%	25%	845	2,774	1,922	852	31%	25%	213	4,963	2,642	2,321	47%	25%	580
Greater amberjack	38,215	18,152	20,063	53%	20%	4,013	14,100	11,366	2,734	19%	20%	547	4,403	2,821	1,582	36%	20%	316
Gray triggerfish	180,375	99,995	80,380	45%	0%	0	44,982	39,513	5,469	12%	0%	0	76,475	61,082	15,393	20%	0%	0

Source: SEFSC Recreational ACL Dataset (July2012), Headboat CRNF files (expanded; July 2012).
Note: The use of MRFSS data has been recommended until ACLs are recomputed using recalibrated MRFSS>MRIP data.

Finfish Bycatch Mortality

SEDAR 24 (2010b) estimated acute release mortality rates of red snapper to be 48% for the commercial sector, 41% for recreational for-hire sector (charterboats and headboats), and 39% for the private recreational sector, in the South Atlantic. This new stock assessment revised the release mortality estimate of 90% for the commercial sector as reported in SEDAR 15 (2008a). There was no significant difference between the two stock assessments regarding the release mortality of red snapper in the recreational sector, which was 40%, as per the findings in SEDAR 15 (2008a). Diamond and Campbell (2009) reported a delayed mortality rate of 64% off Texas. A study by Burns *et al.* (2004) conducted on headboats off Florida in the Atlantic and Gulf of Mexico found a release mortality of 64% for red snapper. The majority of acute mortalities in this study (capture depth of 9–42 m) were attributed to hooking (49%), whereas barotrauma accounted for 13.5%. An earlier study by Burns *et al.* (2002), also conducted in the Atlantic and Gulf of Mexico, had similar results, as J-hook mortality accounted for 56% of the acute mortalities of red snapper on headboats. Using tagging data and cage studies, Burns *et al.* (2002) determined the depth at which 50% of the released red snapper would die is 43.7 m (143 feet). SEDAR 15 (2008a) indicated red snapper were most often caught at depths of 141 to 190 feet by the recreational sector and 141 to 234 feet by the commercial sector. Rummer and Bennett (2005) reported over 70 different overexpansion injuries related to barotrauma in red snapper, and Wilde (2009) observed reduced survival of this species when vented.

SEDAR 17 (2008b) recommended a release mortality rate for vermilion snapper of 38% for both the commercial and recreational sectors. This was based on a mortality study conducted by Ruderhshausen *et al*. (2007) who estimated release mortality rates of 15% for undersized vermilion snapper. Immediate mortality of vermilion snapper was estimated to be 10% at depths of 25-50 m and delayed mortality was estimated to be 45% at the same depths. Rudershausen *et al.* (2007) indicated minimum size limits are moderately effective in shallower water for vermilion snapper. Previously, SEDAR 2 (2003) estimated a release mortality rate of 40% and 25% for vermilion snapper taken by commercial and recreational fishermen, respectively. Release mortality rates from SEDAR 2 (2003) were based on cage studies conducted by Collins (1996) and Collins *et al*. (1999). Burns *et al*. (2002) suggested that release mortality rates of vermilion snapper could be higher than those estimated from cage studies because cages protect the fish from predators. A higher release mortality rate is supported by low recapture rates of vermilion snapper in tagging studies. Burns *et al*. (2002) estimated a 0.7% recapture rate for 825 tagged vermilion snapper; whereas, recapture rates for red grouper, gag, and red snapper ranged from 3.8% to 6.0% (Burns *et al*. 2002). McGovern and Meister (1999) estimated a 1.6% recapture rate for 3,827 tagged vermilion snapper. Alternatively, recapture rates could be low if population size was very high or tagged fish were unavailable to fishing gear. Harris and Stephen (2005) indicated approximately 50% of released vermilion snapper caught by one commercial fisherman were unable to return to the bottom. Higher recapture rates were estimated for black sea bass (10.2%), gray triggerfish (4.9%), gag (11%), and greater amberjack (15.1%) (McGovern and Meister 1999; McGovern *et al*. 2005). Burns *et al*. (2002) suggested released vermilion snapper did not survive as well as other species due to predation. Vermilion snapper, which do not have air removed from swim bladders, are subjected to predation at the surface of the water. Individuals with a ruptured swim bladder or those that have air removed from the swim bladder are subject to bottom predators, since fish would not be able to join

schools of other vermilion snapper hovering above the bottom (Burns *et al*. 2002). However, Wilde (2009) reports that venting appears to be increasingly harmful for fish captured from deepwater.

SEDAR 10 (2006b) estimated release mortality rates of 40% and 25% for gag taken by commercial and recreational fishermen, respectively. A tagging study conducted by McGovern *et al.* (2005) indicated recapture rates of gag decreased with increasing depth. The decline in recapture rate was attributed to depth related mortality. Assuming there was no depth related mortality at 0 m, McGovern *et al.* (2005) estimated depth related mortality ranged from 14% at 11 – 20 m (36 – 65 feet) to 85% at 71 – 80 m (233 – 262 feet). Similar trends in depth related mortality were provided by a gag tagging study conducted by Burns *et al.* (2002). Overton *et al.* (2008) reported a post-release mortality for gag as 13.3%. Release mortality rates are not known for other shallow water grouper species, but could be similar to gag since they have a similar depth distribution. Rudershausen *et al.* (2007) estimated release mortality rates of 33% for undersized gag taken with J- hooks in depths of 25-50 m off North Carolina. For other gag caught at depths of 25-50 m, no immediate mortality was observed but delayed mortality was estimated to be 49%. McGovern *et al.* (2005) estimated a release mortality rate of 50% at 50 m, which is similar to the findings of Rudershausen *et al.* (2007). Rudershausen *et al.* (2007) concluded minimum size limits are effective for gag in the shallower portions of their depth range.

Release mortality rates were estimated as 20% for black grouper and red grouper taken by recreational fishermen in SEDAR 19 (2010a) during the data workshop. Wilson and Burns (1996) reported potential mortality rates for released red grouper to be low (0 - 14%) as long as the fish were caught from waters shallower than 44 m. SEDAR 15 (2008a) estimated a 20% release mortality rate for greater amberjack. In the Gulf of Mexico, SEDAR 9 (2006a) assume a 0% release mortality rate for gray triggerfish.

Release mortality of black sea bass is considered to be low (7% for the recreational sector and 1% for the commercial sector) (SEDAR 25; 2011) indicating minimum size limits are probably an effective management tool for black sea bass. McGovern and Meister (1999) report a recapture rate of 10.2% for 10,462 that were tagged during 1993-1998 suggesting that survival of released black sea bass is high. Rudershausen *et al.* (2007) reported a sub-legal discard rate of 12% for black sea bass. Collins *et al.* (1999) reported venting of the swim bladder yielded reductions in release mortality of black sea bass, and the benefits of venting increased with capture depth. The same study was analyzed by Wilde (2009) to suggest that venting increased the survival of black sea bass, although this was an exception to the general findings of Wilde's (2009) study.

Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Vermilion snapper, gag, black sea bass, red grouper, black grouper, and red snapper
The snapper grouper fishery represents many species occupying the same location at the same time such as vermilion snapper, scamp, and gag. Fishermen could harvest one of these species when targeting red snapper and may return them to the water as "regulatory discards" (e.g., if the fish is under the size limit) or if undesirable. A portion of the population would not survive. Species with the greatest number of individuals discarded by the commercial sector during 2010-2011 were vermilion snapper (44,155), red snapper (41,106), and black sea bass (32,548) (Table 4). During 2010-2011, 90% black sea bass, 89% black grouper, and 84% gag were discarded by the private recreational sector (Table 5). During the same period, 87% red grouper and 67% black sea bass were released by fishermen on charterboats, versus 88% red grouper, 83% black grouper, and 68% black sea bass by fishermen on headboats (Table 5).

Although fishery management actions can adversely impact non-target species, the proposed action is not anticipated to significantly increase bycatch of snapper-grouper species. As the increase in the red snapper ACL as proposed by the EA is relatively small (13,067 fish) and the seasons would be relatively short, none of the proposed actions are expected to substantially increase overall fishing effort or the spatial and/or temporal distribution of current fishing effort.

Alternative 1 (no action) would retain the red snapper 20-inch total length (TL) minimum size limit; however, the size limit is currently not in effect due to prohibition on the harvest and possession of red snapper. Under **Alternative 1 (no action),** if the season were to reopen, the minimum size limit would be effective. **Alternative 5 (preferred)** would temporarily suspend the size limit. Both alternatives could have adverse effects to the stock by promoting the discarding of fish to the water of which a portion would not survive. Release mortality rates for red snapper range from 39 to 48 percent depending on the fishing sector (SEDAR 24; 2010b). With a minimum size limit (**Alternative 1/no action)**, fishermen may produce "regulatory discards"; these are fish that are returned to the water because they are below the minimum size limit. These fish may be smaller and younger than a 20-inch TL fish and may have been caught in relatively shallow water. Often, discard mortality rates decrease along with depth that the fish was caught.

Fishery managers could produce adverse effects (additional mortality) from both **Alternative 1 (no action)** and **Alternative 5 (preferred)** through "high-grading" behavior. High-grading is a practice of selectively landing fish so that only the best quality (usually largest) fish are brought ashore. For example, recreational fishermen may discard smaller size fish in order to retain a larger, more desirable red snapper. High-grading can result in many dead discards. Fishermen would most likely high-grade less with no size limit (**Preferred Alternative 5**) as fishermen may cease targeting red snapper after harvesting the bag limit. Therefore, suspension of the 20-inch TL minimum size limit (**Alternative 5 Preferred**) could have a greater biological effect than retaining the minimum size limit (**Alternative 1/no action**) if it resulted in fewer fish being discarded.

Preferred Alternative 7 would establish a one per person per day bag limit. Currently, the harvest and possession of red snapper is prohibited and there is no recreational bag limit. There are a number of shortcomings with bag limits similar to the ones previously mentioned concerning size limits. Once the one per person per day bag limit (**Preferred Alternative 7**) is reached, fishermen may retain larger red snapper and throw smaller, dead red snapper back. In addition, the snapper grouper fishery represents many species occupying the same location at the same time such as vermilion snapper, scamp, and gag. Fishermen could continue to target these other co-occurring species and throw back fish that have bag limits such as red snapper, many of which will die. It would be expected that fishermen would still tend to target the largest, most desirable species. However, the bag limit may reduce discards of red snapper and co-occurring species by discouraging the targeting of red snapper after the bag limited is reached.

Overall, the suspension of the minimum size limit **(Preferred Alternative 5)** and establishment of a one fish bag limit **(Preferred Alternative 7**) could reduce the magnitude of dead discards even if high-grading occurs and have an overall positive biological effect on the stock despite the potential for increased discards.

Seasonal closures of both commercial and recreational fisheries implemented by Amendment 16 to the Snapper Grouper FMP (Amendment 16; SAFMC 2009) could also reduce bycatch mortality of red snapper. Expected harvest reductions for red snapper from Amendment 16 in total kill was estimated to be 16.5% (commercial sector), 1.1 to 7.7% (headboat sector), and 2.3% (private/charter sector). A longer spawning seasonal closure could enhance the reproductive potential of grouper stocks. For example Amendment 16 established a January-April spawning season closure for gag, red grouper, black grouper, and shallow water grouper species. Gag are in spawning condition from December through April each year. There is some evidence spawning aggregations may be in place before and after a spawning season (Gilmore and Jones 1992). When aggregated, gag are extremely susceptible to fishing pressure since the locations are often well known by fishermen. Gilmore and Jones (1992) showed that the largest and oldest gag in aggregations are the most aggressive and first to be removed by fishing gear. Since gag change sex, larger and older males can be selectively removed. As a result, a situation could occur where there are not enough males in an aggregation to spawn with the remaining females. Furthermore, the largest most fecund females could also be selectively removed by fishing gear. Therefore, a spawning season closure for all shallow water grouper species would be expected to protect grouper species when they are most vulnerable to capture, reduce bycatch of co-occurring grouper species, increase the percentage of males in grouper populations, enhance reproductive success, and increase the magnitude of recruitment. Other actions in Amendment 16, which could reduce bycatch of snapper grouper species, include a reduction in the recreational bag limit to 1 gag or black grouper (combined) per day within a grouper aggregate bag limit of 3 fish and the establishment of a commercial quota for gag. When the commercial quota is met, all fishing for or possession of shallow water grouper species will be prohibited.

Unobserved mortality due to predation or trauma associated with capture could be substantial (Burns *et al.* 2002; Rummer and Bennett 2005; St. John and Syers 2005; Parker *et al*. 2006; Rudershausen *et al.* 2007; Hannah *et al.* 2008; Diamond and Campbell 2009). Amendment 16 also included actions that required the use of dehooking devices, which could help reduce

bycatch 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 could still reduce handling time in removing hooks, thus increasing survival (Cooke *et al.* 2001).

In addition to prohibiting the harvest of red snapper, Amendment 17A implemented regulations requiring the use of non-stainless circle hooks north of 28 degrees N. latitude, effective March 2, 2011**.** Circle hooks are generally thought to reduce discard mortality rate for red snapper (SEDAR 7 2005b; Rummer 2007); however, Burns *et al*. (2004) did not observe decreased discard mortality rate when comparing recapture rates of red snapper caught on circle and J-hooks. Rummer (2007), and Diamond and Campbell (2009) found that a greater differential between the surface and bottom temperature caused a higher discard mortality rate for red snapper. Amendment 17B to the Snapper Grouper FMP (Amendment 17B; SAFMC 2010b) established ACLs and accountability measures (AMs) and addressed overfishing for eight species in the snapper grouper management complex currently listed as undergoing overfishing: golden tilefish, snowy grouper, speckled hind, warsaw grouper, black sea bass, gag, red grouper, and vermilion snapper, in addition to black grouper.

The Comprehensive ACL Amendment (SAFMC 2011a) implemented ACLs and AMs for species not undergoing overfishing in four fishery management plans, in addition to other actions such as allocations and establishing annual catch targets for the recreational sector. The Comprehensive ACL Amendment 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 (i.e. red snapper).

Amendment 18A to the Snapper Grouper FMP (Amendment 18A; SAFMC 2011b) contains measures to limit participation and effort for black sea bass, and does not directly affect red snapper. Amendment 18A established an endorsement program than enables snapper grouper fishermen with a certain catch history to harvest black sea bass with pots. In addition, Amendment 18A includes measures to reduce bycatch in the black sea bass pot fishery, modify the rebuilding strategy, and other necessary changes to management of black sea bass as a result of a 2011 stock assessment (SEDAR-25). Amendment 24 to the Snapper Grouper FMP (Amendment 24; SAFMC 2011c) established a rebuilding plan for red grouper, which is overfished and undergoing overfishing. Amendment 24 also established ACLs and AMs for red grouper, which could help to reduce bycatch of red grouper and co-occurring species such as red snapper.

1.2 Ecological Effects Due to Changes in the Bycatch

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.

Overall fishing effort could increase in the commercial and recreational sectors in response to the limited reopening(s) of red snapper, and therefore, increase the potential for bycatch. However, as stated in **Chapter 2** and analyzed in detail in **Chapter 4**, the reopening(s) will be of short duration (see **Chapter 6** for details), and therefore, the ecological effects due to changes in the bycatch would likely be small (see **Appendix C** (SERO 2012b)) for detailed analysis.

1.3 Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

The action in this temporary measure for red snapper through emergency action would allow a limited harvest of red snapper in 2012, after two years of harvest prohibition for the species. Thus, ecological changes could occur in the community structure of reef ecosystems through the proposed action, due to increased fishing pressure on co-occurring species that could be caught as bycatch. These ecological changes could affect the nature and magnitude of bycatch over time. However, as stated in **Chapters 2** and **4**, the allowed harvest of red snapper in 2012 is relatively limited in scope, and changes in the bycatch of other fish species and resulting population and ecosystem effects could be minimal in nature. Quota monitoring by the SEFSC would allow commercial landings to be monitored during and after the 7-day opening(s). Once landings have been reported for the first seven-day commercial opening, the SEFSC would evaluate if the ACL has been met. If the ACL is not met, the season could be reopened for an additional time period. Trip limits could reduce the risk of exceeding the ACL during the 7-day season opening (see **Chapter 4**, **Appendix C** (SERO 2012b), for more details). **Chapter 6** includes details on openings and closures, as well as data collection procedures.

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 fishery is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the 2012 LOF classifies as a Category II (76 FR 73912; November 26, 2011). 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 200. 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 2012 LOF (76 FR 73912; November 26, 2011) as Category III fisheries.

Although the black sea bass pot fishery 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 fishery 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). There are no known interactions between the black sea bass pot fishery and large whales. NOAA Fisheries Service's biological opinion on the continued operation of the South Atlantic snapper grouper fishery determined the possible adverse effects resulting from the fishery are extremely unlikely.

North Atlantic right and humpback whales may overlap both spatially and temporally with the black sea bass pot fishery. Revisions to the Atlantic Large Whale Take Reduction Plan folded the Atlantic mixed species trap/pot fisheries into the plan (72 FR 57104; October 5, 2007). The new requirements will help further reduce the likelihood of North Atlantic right and humpback whale entanglement in black sea bass pot gear.

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 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 U.S. 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

Red snapper has been closed since January 2010 for both the commercial and recreational sectors. The action in this temporary measure for red snapper through emergency action would allow a limited harvest of red snapper in 2012. Since red snapper is a desirable species, it is highly likely that all opportunities to harvest this species will be entertained. Therefore, there could be changes to costs associated with the fishing, processing, disposal, and marketing of red snapper. It is likely that all four states (North Carolina, South Carolina, Georgia, and Florida) would be affected by the regulations associated with this action, since fishermen from all the states would be interested in participating in any reopening of the harvest of red snapper.

Additionally, factors such as waterfront property values, availability of less expensive imports, etc. may affect economic decisions made by recreational and commercial fishermen.

The South Atlantic Council has discussed options to enhance current data collection programs in future amendments. This might provide more insight in calculating the changes in fishing, processing, disposal and marketing costs. The states and the SEFSC will work together to collect as much biological information as possible during the limited commercial and recreational openings for red snapper. The emergency action for gathering life history information that may help in assessing the status of the stock in 2014.

1.6 Changes in Fishing Practices and Behavior of Fishermen

Allowing harvest of red snapper could result in a modification of fishing practices by commercial and recreational fishermen, thereby affecting the magnitude of discards. However, as the increase in the red snapper ACL as proposed by the EA is relatively small (13,067 fish) and the seasons would be relatively short, none of the proposed actions are expected to substantially increase overall fishing effort or the spatial and/or temporal distribution of current fishing effort. Red snapper has been closed since January 2010 for both the commercial and recreational sectors. Since red snapper is a desirable species, it is highly likely that all opportunities to harvest this species will be entertained. Predicting changes in angler behavior in response to a reopening is difficult. Many factors can influence fishing activity (see **Chapter 3** for more details) including: fuel costs and trip expenses; weather; changes in regulations; changes in fishing behavior; and conflicting activities (e.g., family activities, sporting events on weekends).

It is difficult to predict how South Atlantic fishermen will respond to a 'derby-style' opening of red snapper. Despite reductions in the fishing season length for Gulf of Mexico red snapper, the average catch-per-day has increased at a linear rate, due in large part to increases in stock abundance, increases in the average size of fish caught, and effort compensation (SERO 2012a). Quota monitoring by the SEFSC would allow commercial landings to be monitored during and after the 7-day opening(s). Once landings have been reported for the first seven-day commercial opening, the SEFSC would evaluate if the ACL has been met. If the ACL is not met, the season could be reopened for an additional time period. Given the potential for large shifts in fishing effort, lower trip limits could reduce the risk of exceeding the ACL during the 7-day season opening (see **Appendix C** (SERO 2012b), for more details).

1.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research and monitoring is needed to understand the effectiveness of proposed management measure and their effect on bycatch. Efforts are underway by the states and the SEFSC to enhance data collection activities during the limited opening for red snapper. In addition, 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. Recreational discards are obtained from the Marine Recreational Information Program (MRIP) and logbooks from the NMFS headboat program. Additional administrative and enforcement efforts will be needed to implement and enforce these regulations.

Additional data collection activities for the recreational sector are being considered in the Comprehensive Ecosystem-Based Amendment 3 that could allow for a better monitoring of snapper grouper bycatch in the future. The use of electronic logbooks could be enhanced to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Some observer information has been provided by Marine Fisheries Initiative and Cooperative Research Programs, but more is needed for the snapper grouper fishery.

1.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Preferred alternatives, including those that are likely to increase or decrease discards could result in social and/or economic impacts as discussed in **Chapter 4** of the EA.

1.9 Changes in the Distribution of Benefits and Costs

The ACL for the commercial and recreational sectors proposed in the temporary rule was specified based on allocations established in the Comprehensive ACL Amendment. Management measures proposed in this temporary rule such as the suspension of the minimum size limit and reduction in the bag limit have the potential to reduce bycatch of red snapper during a limited opening of the recreational and commercial sectors. See earlier section titled, "Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality", in this BPA for a list of amendments and a summary of actions within them that could help reduce bycatch and discard mortality in the snapper grouper fishery. The extent to which these management measures will increase or decrease the magnitudes of discards is unknown. However, this depends on if fishermen shift effort to other species, seasons, or fisheries and if effort decreases in response to more restrictive management measures as well as changes in community structure and age/size structures that could result from ending overfishing.

1.10 Social Effects

The social effects of all the alternatives, including those most likely to reduce bycatch, are described in **Chapter 4** of the EA.

1.11 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality in the South Atlantic snapper grouper fishery using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, management measures proposed in this temporary rule such as the suspension of the minimum size limit and reduction in the bag limit have the potential to reduce bycatch of red snapper during a limited opening of the recreational and commercial sectors. Seasonal closures for snapper grouper species in Amendment 16, as well as the total prohibition for red snapper in Amendment 17A may contribute to decreases in bycatch of red snapper and co-occurring species. The requirement of dehooking devices, a recreational/commercial seasonal closure for gag, reduction of recreational bag limits, and closing all shallow water groupers when a gag quota is met or during a gag seasonal closure specified in Amendment 16 could also help to reduce bycatch. However, this depends on if fishermen shift effort to other species, seasons, or fisheries and if effort decreases in response to more restrictive management measures as well as changes in community structure and age/size structures that could result from ending overfishing. Furthermore, overall fishing effort could decrease in the commercial and recreational sectors in response to more restrictive management measures, thereby reducing the potential for bycatch.

ACLs and AMs established by Amendment 17B and the Comprehensive ACL Amendment could help reduce bycatch by limiting the amount of harvest, and provide for accountability if the ACL is exceeded. Management measures in Amendment 17B limit harvest of co-occurring species (vermilion snapper, gag, scamp, greater amberjack, gray triggerfish, black sea bass, and red grouper), and could help reduce discard mortality of red snapper.

Amendment 18A contains measures to limit participation and effort for black sea bass, which co-occurs with red snapper. In addition, Amendment 18A includes measures to reduce bycatch in the black sea bass pot fishery, modify the rebuilding strategy, and other necessary changes to management of black sea bass as a result of a 2011 stock assessment (SEDAR 25). Amendment 24 specifies ACLs and AMs for red grouper, which could reduce bycatch of red grouper co-occurring species such as red snapper.

The South Atlantic Council is considering actions in future amendments such as a tagging program in Amendment 22 to the Snapper Grouper FMP (Amendment 22) to allow harvest of red snapper as the stock rebuilds. Scoping of Amendment 22 was conducted during January and February 2011. Additionally, a new regulatory amendment is under development to allow for adjustment of allocations and ACLs based on the new landings information from MRIP. Finally, at their June 2012 meeting the South Atlantic Council requested development of a regulatory amendment to adjust management measures for greater amberjack, vermilion snapper, black sea bass, gray triggerfish, and vermilion snapper, which co-occur with red snapper.

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Appendix E. Other Applicable Laws Including Environmental Justice

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. This temporary rule will be effective fifteen days after date of publication in the *Federal Register*. The immediate benefits of implementing a limited commercial and recreational fishing season for red snapper in 2012 outweigh the value of advance notice and public comment. A limited red snapper season must be implemented immediately so as not to open the season too late in the fishing year when poor weather can lead to unsafe fishing conditions, which violates National Standard 10 of the Magnuson-Stevens Fishery Management and Conservation Act (Magnuson-Stevens Act). Also, the public already had a chance to comment on this action at the June 2012 South Atlantic Fishery Management Council (South Atlantic Council) meeting during the Public Comment Session and they strongly favored a fall season. The U.S. Coast Guard advised that a red snapper opening in late 2012 could lead to unnecessary accidents from unsafe fishing conditions. The South Atlantic Council considered this information when they made a motion to request a temporary rule for emergency action.

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. This document has used 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. While it is the goal of the South Atlantic Council to have management measures that complement those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. The South Atlantic Council believes this document is consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North

Carolina. This determination will be submitted to the responsible state agencies under Section 307 of the CZMA administering 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 NOAA Fisheries Service 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. NOAA Fisheries Service completed a biological opinion (NMFS 2006) in 2006 evaluating the impacts of the continued authorization of the South Atlantic snapper grouper fishery under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) and Amendment 13C to the Snapper Grouper FMP on ESA-listed species (see **Section 3.0**). The opinion stated the fishery was not likely to adversely affect northern right whale critical habitat, seabirds, or marine mammals (see NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, as well as smalltooth sawfish. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. See NMFS (2006) for a full discussion of impacts to smalltooth sawfish.

Sea turtles are vulnerable to capture by bottom longline and vertical hook-and-line gear. The magnitude of the interactions between sea turtles and the South Atlantic snapper grouper fishery was evaluated in NMFS (2006) using data from the Supplementary Discard Data Program (SDDP). Three loggerheads and three unidentified sea turtles were caught on vertical lines; one leatherback and one loggerhead were caught on bottom longlines, all were released alive. The effort reported in the program represented between approximately 5% and 14% of all South Atlantic snapper-grouper fishing effort. These data were extrapolated in NMFS (2006) to better estimate the number of interactions between the entire snapper-grouper fishery and ESA-listed sea turtles. The extrapolated estimate was used to project future interactions (**Table 1-1**).

The SDDP does not provide data on recreational fishing interactions with ESA-listed sea turtle species. However, anecdotal information indicates that recreational fishermen occasionally take sea turtles with hook-and-line gear. The biological opinion also used the extrapolated data from the SDDP to estimate the magnitude of recreational fishing on sea turtles (**Table 1-1**).

Regulations implemented through snapper-grouper Amendment 15B (74 FR 31225; June 30, 2009) required all commercial or charter/headboat vessels with a South Atlantic snapper grouper permit, carrying hook-and-line gear on board, to possess required literature and release gear to aid in the safe release of incidentally caught sea turtles and smalltooth sawfish. These regulations are thought to decrease the mortality associated with accidental interactions with sea turtles and smalltooth sawfish. Subsequent to the June 7, 2006, biological opinion, elkhorn and staghorn coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened. In a consultation memorandum dated July 9, 2007, NOAA Fisheries concluded the continued authorization of the South Atlantic snapper-grouper fishery is not likely to adversely affect these *Acropora* species. On November 26, 2008, an *Acropora* critical habitat was designated. In a consultation memorandum dated December 2, 2008, NOAA Fisheries concluded the continued authorization of the snapper-grouper fishery is not likely to adversely affect *Acropora* critical habitat.

Additionally, on September 22, 2011, NOAA Fisheries and the U.S. Fish and Wildlife Service determined the loggerhead sea turtle population consists of nine DPSs (76 FR 58868). Previously, loggerhead sea turtles were listed as threatened species throughout their global range. The snapper-grouper fishery interacts with loggerhead sea turtles from what is now considered the Northwest Atlantic (NWA) DPS, which remains listed as threatened. Five distinct population segments (DPS) of Atlantic sturgeon have been listed (effective April 6, 2012). In a consultation memorandum dated February 15, 2012, NOAA Fisheries concluded the continued authorization of the South Atlantic snapper-grouper fishery is not likely to adversely affect the Atlantic sturgeon. The February 15, 2012, memorandum also stated that because the 2006 biological opinion had evaluated the impacts of the fishery on the loggerhead subpopulations now wholly contained within the NWA DPS, the opinion's conclusion that the fishery is not likely to jeopardize the continued existence of loggerhead sea turtles remains valid.

Table 1-1. Three-year South Atlantic anticipated takes sea turtles by the snapper grouper fishery. Source: NMFS 2006.

Species	**Amount of Take**	**Total**
Green	Total Take	39
	Lethal Take	14
Hawksbill	Total Take	4
	Lethal Take	3
Kemp's Ridley	Total Take	19
	Lethal Take	8
Leatherback	Total Take	25
	Lethal Take	15
Loggerhead	Total Take	202
	Lethal Take	67

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. 13132 is not necessary.

1.6 Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NOAA Fisheries Service prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new fishery management plan (FMP) or that significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or if it has other major economic effects.

In accordance with E.O. 12866, the following is set forth by the South Atlantic Council: (1) this rule is not likely to have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) this rule is not likely to create any serious inconsistencies or otherwise interfere with any action taken or planned by another agency; (3) this rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) this rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order; (5) this rule is not controversial.

1.7 Executive Order 12898: Environmental Justice

E.O. 12898 requires that "to the greatest extent practicable and permitted by law…each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, 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 and possessions…"

The alternatives being considered in this document are not expected to result in any disproportionate adverse human health or environmental effects to minority populations or low-income populations of Florida, North Carolina, South Carolina, or Georgia, rather the impacts would be spread across all participants in the red snapper portion of the snapper grouper fishery regardless of race or income. A

detailed description of the communities impacted by the actions contained in this document and potential socioeconomic impacts of those actions are contained in **Sections 3.0** and **4.0** of this document.

1.8 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 NOAA Fisheries Service 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.

1.9 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.

1.10 Executive Order 13158: Marine Protected Areas

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 (MPAs). 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.

1.11 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 NOAA Fisheries Service) 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 NOAA Fisheries Service 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; 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 red snapper are listed as part of a Category III fishery (76 FR 37716, June 28, 2011) 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 2012 proposed LOF (76 FR 37716, June 28, 2011). 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 gears 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 this EA are not expected to negatively impact the provisions of the MMPA

1.12 **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- 6, Section 6.03.a.2.

Purpose and Need for Action

The purpose and need for this action are described in **Section 1.0.**

Alternatives

The alternatives for this action are described in **Section 2.0.**

Affected Environment

The affected environment is described in **Section 3.0**.

Impacts of the Alternatives

The impacts of the alternatives on the environment are described in **Section 4.0.**

1.13 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 two main sanctuaries in the South Atlantic exclusive economic zone are 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 Gray's Reef and Florida Keys National Marine Sanctuaries.

1.14 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 NOAA Fisheries Service 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.

1.15 Regulatory Flexibility Act (RFA)

The RFA of 1980 (5 U.S.C. 601 et seq.) requires federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA, NOAA Fisheries Service must determine whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities. If not, a certification to this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the RFA requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses, affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the *Federal Register* in full or in summary for public comment and submitted to the chief counsel for advocacy of the Small Business Administration. Changes to the RFA in June 1996 enable small entities to seek court review of an agency's compliance with the RFA's provisions.

AS NOAA Fisheries Service has determined whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities, a certification to this effect will be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration.

1.16 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, NOAA Fisheries Service, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

1.17 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens 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 document.

At the June 2012 South Atlantic Council meeting, the U.S. Coast Guard advised that a red snapper opening in late 2012 could lead to unnecessary accidents from unsafe fishing conditions. Openings for red snapper would occur as early as possible in 2012 to avoid poor weather that could lead to unsafe fishing conditions, which violates National Standard 10 of the Magnuson-Stevens Act. The commercial and recreational season openings would be determined by the Southeast Regional Administrator and are contingent on weather conditions.

Appendix F. Regulatory Impact Review

Introduction

The NOAA Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, (3) it 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 the proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order (E.O.) 12866. This RIR analyzes the expected effects that this action would be expected to have on the commercial and recreational sectors of the snapper grouper fishery, with emphasis on the red snapper segment. Additional details on the expected economic effects of this action are included in **Section 4** and are incorporated herein by reference.

Problems and Objectives

The purpose, need, issues, problems, and objectives of the proposed rule are presented in **Section 1.4**. The purpose of this proposed action is to establish regulations to allow harvest of red snapper in the South Atlantic in 2012. The need for the proposed action is to reduce existing socio-economic adverse impacts to fishermen and fishing communities that utilize the red snapper portion of the snapper grouper fishery. Regulations should minimize (1) safety at sea concerns, (2) probability of overages of the annual catch limit, and (3) discard mortality of red snapper, while maximizing data collection efforts.

Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. Ideally, the net effects of the proposed measures should be expressed in terms of producer and consumer surplus. Absent the necessary information, the analysis considers mainly the revenue effects on the commercial sector and consumer surplus on the recreational sector of the various measures. It is worth noting, though, that for commercial vessels that would not take additional trips but still catch red snapper in their usual trips, sales from otherwise discarded red snapper would directly add to their net operating revenue. In addition, the public and private costs associated with the process of developing and enforcing regulations on fishing for red snapper in waters of the U.S. South Atlantic are provided.

Description of the Fishery

A description of the South Atlantic snapper grouper fishery, with particular reference to red snapper, is contained in **Chapter 3**.

Effects of Management Measures

Details on the economic effects of all alternatives are found in **Chapter 4**. The following discussion focuses mainly on the expected effects of the preferred alternatives.

The preferred alternative (**Sub-alternative 2c**) for a red snapper allowable catch limit (ACL) may be expected to result in approximately $86,000 (2011 dollars) revenue increase for the commercial sector and CS increases to the recreational sector of approximately $232,000 (2011 dollars) to $724,000 (2011 dollars). In the absence of overages in both sectors, these would be the maximum economic benefits that the two sectors would derive from the re-opening of the red snapper fishing season in 2012. Among the sub-alternatives, this would provide the biggest revenue increase to the commercial sector and CS increase to the recreational sector.

Alternative 3 (Preferred) would establish a 7-day open season for the commercial sector in 2012, with NMFS evaluating the data if any additional days can be open in 2012. While this would increase the likelihood of a derby occurring in the fishery and dampen ex-vessel price and revenues, it would assist in ensuring the commercial ACL is not exceeded. ACL overages would have long-term negative effects on commercial revenues as they would prompt more stringent measures affecting red snapper and other snapper grouper fishermen.

Alternative 4 (Preferred) would establish a two weekend-only (Friday, Saturday, Sunday) opening for the recreational sector, with NMFS evaluating the data to determine if additional days may be open in 2012. To the extent that the recreational ACL would still be fully taken, this measure would mainly affect the distribution of economic benefits among anglers. Anglers and for-hire vessels normally taking trips on weekends would be favored, although some redirection of effort to the weekend could also be done by other anglers and for-hire vessels. This measure could assist in ensuring the recreational ACL is not exceeded. In this sense, the long-term economic implications of this measure would be positive.

Alternative 5 (Preferred) would suspend the commercial and recreational size limit for red snapper during the temporary open season. This measure could lead to the commercial ACL being landed in a short period, resulting in depressed ex-vessel price and revenue. On the other hand, it could also reduce fishing cost if vessels do not have to spend more time to catch legal-sized fish or cull the catch to retain legal-sized fish. Since recreational anglers would be allowed to keep whatever size fish they catch, they would receive higher consumer surplus per trip because consumer surplus is higher for kept fish than for discarded fish. Similar to the commercial sector, the recreational sector may reach its ACL early, resulting in the early end of

the recreational fishing season. However, this would not necessarily result in lower recreational benefits anglers can derive from the recreational ACL.

Alternative 6 (Preferred) would establish a commercial trip limit of 50 pounds gutted weight. This measure would limit a commercial vessel's revenue from red snapper to $218 per trip. At this level, most commercial vessels would unlikely increase their effort to target red snapper. Some vessels, however, could specifically target red snapper but would have to take many trips or redirect their effort to the open season. This alternative would assist in ensuring the commercial sector does not exceed its ACL, thus its long-term economic effects may be considered positive.

Alternative 7 (Preferred) would establish a recreational bag limit of 1 fish per person per day for 2012. While this measure would limit the benefits an angler receives from keeping red snapper to $76.98 per day, it may not be too constraining as to decrease the overall benefits that can be derived from the recreational ACL. This measure would assist in keeping the recreational sector from exceeding its ACL, and this is important because of the difficulty of monitoring recreational harvest on a real time basis. Thus, the long-term economic implications of this alternative would be positive.

Public and Private 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 associated with this amendment include:

Council costs of document preparation, meetings, public hearings, and information dissemination……...…….. $10,000

NOAA Fisheries administrative costs of document preparation, meetings and review $35,000

Annual law enforcement costs .....unknown

TOTAL $45,000

Law enforcement currently monitors regulatory compliance in these fisheries under routine operations and does not allocate specific budgetary outlays to these fisheries, nor are increased enforcement budgets expected to be requested to address components of this action. In practice, some enhanced enforcement activity might initially occur while the fishery becomes familiar with the new regulations. However, the costs of such enhancements cannot be forecast. Thus, no specific law enforcement costs can be identified.

Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is expected 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, this regulatory action would not meet the first criterion. Therefore, this regulatory action is determined to not be economically significant for the purposes of E.O. 12866.

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

4055 FABER PLACE DRIVE, SUITE 201
NORTH CHARLESTON, SOUTH CAROLINA 29405
TEL 843/571-4366 FAX 843/769-4520
Toll Free: 1-866-safmc-10
Email: safmc@safmc.net Web site: www.safmc.net

David Cupka, Chairman
Ben Hartig, Vice-Chairman

Robert K. Mahood, Executive Director
Gregg Waugh, Deputy Executive Director

June 19, 2012

Dr. Roy E. Crabtree
Regional Administrator
NOAA/NMFS Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Dr. Crabtree:

Pursuant to Section 305(c)(2)(B) of the Magnuson-Stevens Act as reauthorized, the Council requests measures addressing the red snapper fishery be implemented through emergency regulations. The Council, by a 12 to 1 vote, approved motions at their June 2012 meeting in Orlando, Florida to request that the National Marine Fisheries Service initiate emergency action to:

- Set the 2012 Annual Catch Limit (ACL) for red snapper = 13,067 fish;
- Set the 2012 recreational allocation at 71.93% of the ACL = 9,399 fish;
- Set the 2012 commercial allocation at 28.07% of the ACL = 3,668 fish or 20,818 pounds gutted weight;
- Established Recreational Accountability Measures (AMs) = track recreational landings and close the recreational sector when the recreational ACL is met or projected to be met;
- Established Commercial Accountability Measures (AMs) = track commercial landings and close the commercial sector when the commercial ACL is met or projected to be met;
- Allow for the recreational ACL to be landed during 3-day weekends (Fri-Sun) the number of which would be determined by the agency and the opening dates would be subject to modification based on weather conditions;
- Open the season as soon as possible;
- Set the recreational bag limit at 1 fish per person per day with no size limit;
- Open the commercial season in 7-day mini-season increments subject to the remaining quota; and
- Allow for the commercial ACL to be landed under a 50-pound trip limit and without a size limit.

New information was provided to the Council shortly before the June Council meeting in the form of projections and the value for ABC in 2012. Subsequently, discussions were held between the NMFS SERO/SEFSC staff and Council staff pertaining to this issue. It was determined the ABC for 2012 could allow some directed harvest after accounting for 2012 discard mortalities. NMFS offered to prepare some options for the Council's consideration.

The Council reviewed the "Options for Possible Reopening of South Atlantic Red Snapper" prepared by NOAA Fisheries Service (**attached**) and chose to calculate the number of red snapper available for harvest using the average of 2010-11 estimated mortalities plus 2012 projected mortalities and comparing that number to the projected amount of discard mortalities in 2012. The resulting potential allowable landings were 13,067 fish (86,000 projected 2012 discard mortality – 72,933 estimated 2012 discard mortality). This was acceptable to the Southeast Fisheries Science Center based on their review of the materials and participation during the Council's deliberations.

The Council is requesting this emergency action to address this new information and to provide some regulatory relief and positive social/economic benefits to fishermen in the form of a limited opening in 2012. The Council is also preparing a plan amendment to address long-term management of red snapper in 2013 and future years.

We appreciate your assistance in expediting implementation of this request. If you require any additional information, please do not hesitate to contact Bob Mahood.

Sincerely,

David Cupka

David Cupka
Chairman

cc: Council Members & Staff
Scientific & Statistical Committee
Snapper Grouper Advisory Panel
Bonnie Ponwith, Theo Brainerd & Tom Jamir, SEFSC
Monica Smit-Brunello, NOAA GC
Phil Steele & Jack McGovern, NMFS SERO

APPENDIX H. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Eliminated Sub-Alternative 1

Establish a temporary red snapper annual catch limit (ACL) ACL of 19,600 fish for 2012. Establish a temporary red snapper commercial ACL of 5,502 fish or 31,226 lbs gutted weight for 2012. Establish a temporary red snapper recreational ACL of 14,098 fish for 2012. The sector ACLs were calculated through use of the established allocations for red snapper (28.07% commercial; 71.93% recreational).

Reason for elimination: The method for estimating the ACL of 19,600 fish uses the average mortalities from 2010 and 2011 to calculate the 2012 discard mortalities. This method and resulting ACLs were presented to the South Atlantic Fishery Management Council (South Atlantic Council) at their June 2012 meeting. The analysis is included in **Appendix C** to this environmental assessment. The South Atlantic Council discussed establishing the ACL based on this method, but did not forward this ACL in their request for emergency regulations (**Appendix G**) as the Director of the Southeast Fishery Science Center expressed concerns with the assumptions used in the methodology to determine the ACL of 19,600 fish for 2012.

NOAA Fisheries Service did not evaluate this alternative in detail in this EA due to the unreasonable assumptions discussed at the South Atlantic Council meeting. Setting the ACL equal to 19,600 fish is contingent on fishing effort continuing to decrease as stock abundance increases. Review of preliminary recreational fishing effort data from the Marine Recreational Information Program indicates effort during waves 1-2, 2012, was higher than 2010 and 2011, but lower than effort observed in the previous 20 years. Given that preliminary data indicates effort did not further decrease, it is unreasonable to assume dead discards will remain similar to 2010-2011 average levels (**Appendix C**). Dead discard estimates for waves 1-2, 2012, are comparable or slightly higher than dead discards observed in 2011. The South Atlantic Council's preferred ACL accounts for increases in stock abundance, which is expected to increase encounter rates, resulting in higher dead discards and a lower ACL for landed red snapper.

An excerpt of the minutes of the June 2012 Snapper-Grouper Committee Meeting are included below:

MR. HAYMANS: Well, I was going to ask it of Bonnie because Roy indicated when I brought up a similar question up earlier that the center didn't necessarily care for the average mortalities from 2010 and 2011, and I was going to ask Bonnie to elaborate on that and why we didn't choose the 19.

DR. PONWITH: Again, as our chairman mentioned, this is relevant if and only if the council comes up with a way – makes a determination that they want a reopening in 2012 and comes up with a way to actually be able to accomplish it, then this conversation is

highly relevant. If you take a look at this slide and then you also take a look – just to refresh our memories, let's go back to Slide Number 4. What you see on that slide, on the right-hand side are the projections for red snapper discard mortality. Those projections were based on the SEDAR 24 stock assessment, and you see that it starts to increase and that increase again is a function of the fact that there are more red snapper out there because that is the intent of the management measure, to make more red snapper out there. That means that your encounter rates would be expected to go up as well. On the left-hand what we have is the number in that projection compared to the actual estimate of discards that were done when we looked at the commercial logbook, the MRFSS and the headboat survey. What you see in 2010 is a projected estimate of 65,000 and an estimated bycatch of 71,000, so we actually caught more fish than we projected we were going to catch so we have an overrun. In 2011 we projected that we would encounter 64,000 dead discards, and the mortalities that were actually estimated based on the data that we had were 61, which was below, so we have one year we were above and one year we were below. In 2012 what is going to happen; we don't really know because we're in the middle of the year and there is no way to actually do an estimate in the middle of the year as Andy's presentation gave. Now let's go back to that other table that we had up, which is Slide Number 6. If you take a look at this, in 2011 and 2010 one proposal was just average those and say that might be what we're going to catch. That mathematically is a way to do it, but logically it doesn't make much sense, and the reason is we expect red snapper to be increasing; it's not logical to think that the population would be increasing in the ocean and we would have static encounter rates. I'm troubled by that one because it is just not logical. The next one is that you average 2010 and 2011 as sort of what happened in those two years, those differences, and then average in on top of that what the projection is for 2012. What that does is it decreases 2012 by some amount that would be logical from the standpoint of we're seeing some trends in effort and those trends appear to be declining. If effort is declining, it could counterbalance some of the increases that we're seeing in the abundance. The third example here, it increases by the change in the exploitable abundance but it also makes a correction for the decrease in fishing effort in the patterns that we're seeing in those two years, 2010 and 2011. Then the last one, the smallest one, it just makes the change – help me out with that one, Andy.

MR. STRELCHECK: The last one is similar to the one above it except it is not altering the estimates based on the decrease in effort, so it is essentially presuming effort will remain constant, but the exploitable abundance will increase.

DR. PONWITH: So those are sort of a range of scenarios and there is no concrete way to say that this one is the truth, it is the one that is going to happen. There is an explanation for each of them and some of those explanations are more plausible or more reasonable than others. It is a matter of looking at that range and deciding what your goals are in terms of managing for risk of disrupting your rebuilding plan weighed with your risk of foregoing a potential fishing opportunity, so those are the two risks you're weighing. You need to make a determination based on that information of which of these scenarios you would select. From the science center's perspective, for me that top one with averaging just 2010 to 2011 is not a viable option. It would be hard for me to justify that one scientifically.