Preliminary Analyses for Amendment 17A Alternatives Brought Forward By Public/AP Since the June 2009 Council Meeting

September 8, 2009

Snapper Grouper Amendment 17A contains alternatives to immediately end overfishing of the red snapper stock in the South Atlantic once the regulations are implemented. The amendment evaluates a range of alternatives. Various alternatives have been forwarded to Council Members, Council Staff, and NMFS Staff since the June 2009 Council meeting (Table 1). In addition, the Snapper Grouper Advisory Panel provided alternatives at their August 2009 meeting. Council and NMFS staffs, in this document, are providing preliminary analyses of ten alternatives for the Council's evaluation at their September 2009 meeting.

Table 1. Ten Alternatives Proposed for Addition to Amendment 17A by the public and Snapper Grouper Advisory Panel.

Proposed Alternatives	Developer
Proposed Alternative 1. *GA Recreational and Commercial.* In Georgia, allow red snapper harvest with a red snapper quota (commercial), tag system (private recreational), and electronic logbooks (for-hire).Allow red snapper harvest, based on a quota for the commercial fishery, a quota for the for-hire fishery (utilizing electronic logbooks), and a quota for the private recreational fishery (based on a quota tag system administered by the states). Once the catch limits are reached in Georgia, South Carolina, and Florida, bottom fishing is prohibited beyond 98 feet. Dead discards inshore of 98 feet must be taken off the top before quotas are established. Possibly eliminate the 20-inch size limit.	Not known. Sent from the public to a Council member
Proposed Alternative 2. *Modify current alternatives to allow alleys.* Allow openings in the closure alternatives currently in the amendment (alleys). These would be off the coasts of Charleston, Savannah, and Jacksonville. The alleys would go no further than 150 foot depth. Investigate moving the closure inshore and North/South to accommodate the openings.	Discussed on conf call
Proposed Alternative 3. *GA Recreational.* (1) Buy-out GA commercial fishermen. No red snapper sale allowed. (2) For the recreational sector. Bag limit = 1/person/day (not including captain/crew) (3) Remove size limit (4) Off a portion of the coast, prohibit bottom-fishing for six months (Oct.1 to March 31) (5) During April 1 to September 30, when 12,000 lbs is harvested (just landed or does this include discards?), enact the same prohibition mentioned above. (6) Monitor discards through self-reporting. (7) Begin construction of artificial habitat (8) Between 98-240 feet, only single hook rigs are permitted and prohibit electric reels.	Harry Lowe (Savannah) sent to Duane 7/23/09. Authors are 8 individuals including 2 AP members.
Proposed Alternative 4. *GA Recreational (from AP).* Motion 1: In Amendment 17A, recommend that the council analyze the following recreational management measures off the coast of Georgia: --6 month closure starting Oct 1 --bag limit to 1, excluding capt and crew (keep 1st fish caught) --no min size limit --max size limit 28” --close 50% of live bottom to all snapper grouper harvest where red snapper are year-round (reconsider closure following next stock assessment) --one hook per rod and reels, manual rod and reel only Motion 2: 31 20 latitude line to be the northern end of the GA closure (northern section open to fishing).	Snapper Grouper AP Motion
Proposed Alternative 5. *Vessel Limits and Reduction in Size Limits.* Motion 5: Recommend the Council investigate methods to reduce recreational limits through vessel limits (1/person or 4/vessels whichever is more restrictive) with adjustments to vessel limits following the next assessment. Also investigate a reduction in red snapper minimum size to 16”	Snapper Grouper AP Motion
Proposed Alternative 6. *Days-at-sea* Motion 8: Move SAFMC investigate alternative effort controls to achieve multi-species management objectives. The days-at-sea concept involves controlling multispecies harvest pressure (hooks in the water) by time rather than closure of areas.	Snapper Grouper AP Motion
Proposed Alternative 7. *Commercial ACL With Observers, VMS, And Electronic Bycatch Reporting.*	Snapper Grouper AP

Motion 15: For commercial only: No new closed areas. Commercial annual catch target = 40%(annual catch limit)=40%(61,000 lbs whole weight)=24,400 lbs whole weight. Implement the following monitoring devices: VMS, real-time electronic bycatch reporting, and observers. If discards are greater than 24,400 lbs, prohibit the use of hook and line gear for fishing for mid-shelf species. Spearfishing and black sea bass pots would be allowed. If bycatch reporting is violated, lose permit. Also place a smaller closure if red snapper ACL is met but include a quota buffer from the 24,400 lbs to account for the red snapper mortality (i.e. southern FL and 32 north 80 west). Motion 16: after the red snapper commercial ACL is met, allow harvest with spearfishing gear in South Atlantic EEZ excluding any closed areas	Motion
Proposed Alternative 8. *Various ideas from SG AP.* (a) VMS (all vessels that harvest snapper grouper species in the EEZ) (b) Consider recommendations from LAPP Workgroup (c) Smaller closures closed to all fishing and target closures to spawning locations (d) Closures that change throughout the year and location changes (e) Close 50% of live bottom off GA coast 6 month closure (Nov 1 through March 31) for for-hire and pr. rec Bag limit to 1/person excluding captain and crew Eliminate 20" size limit Maximum of 28" size limit for red snapper Restrict to 1 hook per angler for hook and line fishing Prohibit use of electric reel for recreational fishermen Create mid-shelf spawning area with no fishing allowed Artificial reef placement	Snapper Grouper AP Recommendation
Proposed Alternative 9. *FL Recreational from SG AP.* For Florida red snapper regulations: 1/person 4/vessel excluding capt/crew keep size limit closure areas to protect spawning areas one hook per rod and reels, manual rod and reel only	AP Recommendation
Proposed Alternative 10. *Red Snapper Allocation by Sector and State* **Red Snapper Allocation Alternatives** **Alternative 1 (Status Quo).** Do not define allocations for red snapper. **Alternative 2. Allocate the red snapper ACL by state and sector as described in the table below.** The sector	Sent from the public to a Council member

allocation would be based upon 40% commercial, 24% for-hire (headboat & charter), and 36% private recreational (This is based upon a 40% commercial and 60% recreational allocation). The allocation between the for-hire and private recreational sectors would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

The state allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector:
State apportionment = (50% * average of long catch range (lbs) 1986-2007) + (50% * average of recent catch trend (lbs) 2006-2008).

The allocations specified for 2010 would remain in effect beyond 2010 until modified. Could to remove X lbs (X%) off top to account for expected red snapper mortality off the coasts of North Carolina and South Florida.

Estimated catch limit by sector state with a 61,000 lb whole weight ACL. Percent represents proportion of 61,000 lbs whole weight taken by each sector and state.

	North Carolina		South Carolina		Georgia		Florida	
Sector	%	lbs	%	lbs	%	lbs	%	lbs
Commercial	3.0	1,822	7.4	4,544	30%; 18,034 lbs			
For-Hire	1.7	1,027	2.7	1,656	2.2	1,325	17	10,632
Private Recreational	.43	263	.64	390	1.8	1,089	33	20,218

The sector allocation would be based upon 40% commercial, 24% for-hire (headboat & charter), and 36% private recreational (This is based upon a 40% commercial and 60% recreational allocation).

Alternative 3. Allocate the red snapper ACL by state and sector as described in the table below. The sector allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

The state allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector:
State apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs)

2006-2008).

The allocations specified for 2010 would remain in effect beyond 2010 until modified. Could remove X lbs (X%) off top to account for expected red snapper mortality off the coasts of North Carolina and South Florida.

Estimated catch limit by sector state with a 61,000 lb whole weight ACL. Percent represents proportion of 61,000 lbs whole weight taken by each sector and state.

	North Carolina		South Carolina		Georgia		Florida	
Sector	%	lbs	%	Lbs	%	lbs	%	lbs
Commercial	2.1	1,275	5.2	3,181	21%; 12,624 lbs			
For-Hire	2.0	1,241	3.3	2,001	2.6	1,601	21	12,847
Private Recreational	.51	314	.76	466	2.1	1,301	40	24,149

The sector allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

Red Snapper Management Measure Alternative

Alternative 1 (Status Quo). Do not modify management regulations red snapper.

Alternative 2. Implement the following management regulations for red snapper.

Commercial Sector

Implement the following monitoring devices: VMS, real-time electronic bycatch reporting, and observers. If mortality is greater than x lbs (landings and dead discards), prohibit fishing for, possession, and retention of species in the snapper grouper fishery management unit for the commercial sector off the coast of that state.

For-Hire Sector

Implement the following monitoring devices: VMS, real-time electronic bycatch reporting, and observers. If mortality is

greater than x lbs (landings and dead discards), prohibit fishing for, possession, and retention of species in the snapper grouper fishery management unit for the for-hire sector off the coast of that state. <u>Private Recreational</u> Implement a card and tag system for the private recreational sector. X number of cards and tags will be distributed each year based upon a lottery system. The tags would be referenced to the cards which are issued. The proposed tags are numbered strips at the bottom of the cards which would be separated and attached to the fish by the fishermen. Prohibit fishing for, possession, and retention of all snapper grouper species in an area off the coast of Georgia and North Florida (need to specify area). Specify an allowable red snapper fishing area off the coast of Georgia (need to specify area). Only those individuals with a tag may fish in that area. Each red snapper caught would need to be retained and have a tag applied. Once all the tags are used, prohibit fishing for, possession, and retention of species in the snapper grouper fishery management unit for the private recreational sector off the entire coast of Georgia. **Alternative 3.** Allow harvest and retention of snapper grouper species in depths of 98 feet or less for 6 months (need to specify time of year). **Alternative 4.** Remove red snapper bag and size limit restrictions for all sectors.	

Proposed Alternative 1. *In Georgia, allow red snapper harvest with a red snapper quota (commercial), tag system (private recreational), and electronic logbooks (for-hire).*

Allow red snapper harvest, based on a quota for the commercial fishery, a quota for the for-hire fishery (utilizing electronic logbooks), and a quota for the private recreational fishery (based on a quota tag system administered by the states).

Once the catch limits are reached in Georgia, South Carolina, and Florida, bottom fishing is prohibited beyond 98 feet. Dead discards inshore of 98 feet must be taken off the top before quotas are established. Possibly eliminate the 20-inch size limit.

Discussion

This analysis will use two sets of allocations for comparison (Table 2) and evaluates two ACLs (61,000 lbs would be implemented under the Council's current preferred alternative).

Table 2. Allowable total removals or red snapper for commercial, private, and for-hire sectors based on landings data from 2003-2008.

	ALT 2 - 60% rec./40% Comm. Where 36% Private; 24% for-hire.		ALT 3 - EQUATION (.50)(86-08)+(.50)(06-08). Comm = 28%; Private 43%; For-Hire 29%.	
ACL	**ACL=61,000**	**ACL=82,000**	**ACL=61,000**	**ACL=82,000**
Commercial				
FL & GA	18,034	24,242	12,624	16,970
SC	4,544	6,109	3,181	4,276
NC	1,822	2,449	1,275	1,714
Totals	24,400	32,800	17,080	22,960
Private Recreational				
FL	20,218	27,178	24,149	32,463
GA	1,089	1,464	1,301	1,749
SC	390	524	466	626
NC	263	354	314	422
Totals	21,960	29,520	26,230	35,260
For Hire (Headboat & Charter)				
FL	10,632	14,292	12,847	17,270
GA	1,325	1,781	1,601	2,152
SC	1,656	2,226	2,001	2,689
NC	1,027	1,381	1,241	1,668
Totals	14,640	19,680	17,690	23,780

According to the proposed alternative, estimates of total removals inside of 98 feet would have to be subtracted from Table 2 above before quotas would be established. A small percentage of red snapper harvest/interactions occurs outside the proposed closed areas. Dr. Nick Farmer (NMFS-SERO) is developing a program, for the Council's use at the September meeting, where various parameters could be adjusted (e.g., areas closed, release mortality, depth) to evaluate the change in percent reduction in projected red snapper mortality. It may be possible to very roughly estimate the amount of total removals inside of 98 feet via Dr. Farmer's spreadsheet. Regardless, as values in Table 2 are very small, this would leave an even smaller amount of allowable total removals for the commercial, private, and for-hire sectors.

Based on catch rates of landed and discarded red snapper in 2007 and 2008, the allowable catch for each sector would be estimated to be met in less than one month (Tables 3-7). The approach would require extensive observer coverage, implementation of electronic logbooks, and establishment of some sort of tagging system. Discarded red snapper would have to be closely tracked in addition to harvests and release mortality rates would need to be applied to the discards to ensure total removals allocated to state and sector is not exceeded.

Table 3. Monthly commercial landings (pounds whole weight) of red snapper.

Month	2007	2007 cumulative	2008	2008 cumulative
1	7,646	7,646	12,072	12,072
2	6,666	14,312	17,064	29,136
3	4,688	19,000	20,247	49,383
4	6,751	25,751	17,804	67,187
5	8,038	33,789	20,322	87,509
6	18,234	52,023	23,557	111,066
7	7,408	59,431	26,829	137,895
8	9,608	69,039	9,065	146,960
9	8,443	77,482	12,394	159,354
10	8,663	86,145	14,054	173,408
11	12,225	98,370	16,884	190,292
12	18,564	116,934	42,975	233,267

Table 4. Monthly headboat and MRFSS for-hire landings (pounds whole weight) of red snapper.

Year	2007	2007 cumulative	2008	2008 cumulative
1	7,342	7,342	14,446	14,446
2	6,733	14,075	24,720	39,166
3	4,928	19,003	18,459	57,625
4	5,904	24,908	17,332	74,957
5	13,964	38,872	39,791	114,748
6	14,661	53,533	36,198	150,946
7	5,800	59,333	49,851	200,797
8	5,748	65,081	43,596	244,394
9	2,178	67,259	3,979	248,373
10	1,863	69,122	6,658	255,031
11	13,042	82,164	10,986	266,017
12	14,689	96,853	9,319	275,336

Table 5. MRFSS non for-hire landings (pounds whole weight) of red snapper by wave.

Wave	2007	2007 cumulative	2008	2008 cumulative
1	12,390	12,390	42,227	42,227
2	5,946	18,336	53,693	95,920
3	131,202	149,538	201,827	297,747
4	44,528	194,066	72,690	370,437
5	43,618	237,684	76,744	447,181
6	6,067	243,751	94,661	541,842

Table 6. Red snapper landings and discards (numbers) from for-hire fishery (headboat and MRFSS) for 2008.

Month	number caught	number discarded
1	2,338	13,600
2	3,310	16,865
3	3,338	10,020
4	2,817	13,696
5	5,612	15,075
6	5,428	13,814
7	7,511	11,626
8	6,614	8,987
9	747	3,045
10	1,076	4,767
11	1,959	5,624
12	1,547	5,132

*Discards are only available in numbers of fish.

Table 7. Red snapper landings and discards (numbers) from non for-hire fishery (MRFSS) for 2008.

Wave	number caught	number discarded
1	9,764	72,086
2	9,772	54,883
3	28,986	85,734
4	11,612	43,470
5	11,112	35,181
6	16,700	60,860

*Discards are only available in numbers of fish.

Proposed Alternative 2. *Modify current alternatives to allow alleys.*

Allow openings in the closure alternatives currently in the amendment (alleys). These would be off the coasts of Charleston, Savannah, and Jacksonville. The alleys would go no further than 150 foot depth. Investigate moving the closure inshore and North/South to accommodate the openings.

Discussion

Dr. Nick Farmer (NMFS-SERO) is developing a spreadsheet, for the Council's use at the September meeting, where various parameters can be adjusted (e.g., areas closed, release mortality, depth) to evaluate the change in percent reduction in projected red snapper mortality. The spreadsheet will provide information on the amount of area that would have to be closed if alleys off population centers were open.

The analysis would have to assume that red snapper distribution is homogeneous within a grid despite the fact that it is well-known that red snapper are concentrated over areas of live bottom. The alleys where fishing would be permitted off population centers are most likely areas where fishing mortality for red snapper is already substantially high. Therefore, allowing harvest of red snapper (or fishing for any species in the Snapper-Grouper FMU) in portions of the proposed closed area will add to the discards; the increase in discard mortality increases the probability that the red snapper ACL is exceeded in any given fishing year, allowing continued overfishing. The increase in red snapper mortality through alleys may be off-set by increasing the size of the spatial closure. However, a small percentage of red snapper harvest/interactions occurs outside the proposed closed areas. The assumption for the closure alternatives in the document is that the red snapper ACL would be taken as discards outside the proposed closed areas.

Proposed Alternative 3. *Georgia recreational.*

(1) Buy-out Georgia commercial fishermen. No red snapper sale allowed.
(2) For the recreational sector. Bag limit = 1/person/day (not including captain/crew).
(3) Remove size limit.
(4) Off a portion of the coast, prohibit bottom-fishing for six months (Oct.1 to March 31).
(5) During April 1 to September 30, when 12,000 lbs is harvested (just landed or does this include discards?), enact the same prohibition mentioned above.
(6) Monitor discards through self-reporting.
(7) Begin construction of artificial habitat.
(8) Between 98-240 feet, only single hook rigs are permitted and prohibit electric reels.

Discussion

An 85% reduction in total removals is needed to end overfishing (Table 8). The alternative proposed would not end overfishing of red snapper without larger areas closed off of Florida and South Carolina. Therefore, the Georgia proposal represents a partial alternative since the other affected states would have to develop their alternatives and combine them with the Georgia proposal in order to achieve the necessary reductions in red snapper mortality.

Table 8. Reduction in total removals (landings plus dead discards) needed end overfishing. Non-shaded areas determined by comparing estimated landings in 2009 with allowable removals in 2010. Highlighted areas are estimated by interpolation.

F_{MSY} proxy	F40% proxy				F30% proxy			
Recruitment	Base Estimated	High	Very High	Extremely High	Base Estimated	High	Very High	Extremely High
Alternative 2 (F_{MSY})	85%	86%	83%	81%	80%	80%	78%	76%
Alternative 3 (85% F_{MSY})	88%	88%	86%	83%	83%	83%	81%	79%
Alternative 4 (75% F_{MSY})	89%	89%	87%	85%	85%	85%	83%	81%
Alternative 5 (65% F_{MSY})	90%	90%	88%	86%	87%	87%	85%	82%
Alternative 6 (Frebuild)	86%	86%	84%	82%	80%	80%	78%	76%

Development of a buy-out program for the commercial fishermen would require time, require a currently unidentified source of funds, and would need to be agreed to by those affected. There would be concerns about using self-reporting catches when this information would be used to trigger a fishery closure. While elimination of the size limit would be expected to reduce the number of discarded red snapper, the total removals (harvested plus discarded fish) would be expected to increase (Tables 9 and 10). This assumes fishermen who caught at least two red snapper would now be expected to retain those fish and the current level of non-compliance would continue. It also assumes that red snapper that were regulatory discards would now be retained by fishermen who did fill their two fish bag limit. The tables do not reflect the effect of area closures but do show that elimination of the size limit would not reduce the magnitude of total removals.

Construction of artificial reefs, reducing the bag limit to one fish, and prohibiting captain and crew from retaining red snapper would provide a small reduction in harvest. It is expensive to create artificial habitat on the scale needed to mimic natural habitat. In addition, artificial reefs can attract both fish and fishermen so there might not be much benefit to the species. Since the bag limit of red snapper is currently two fish per person per day and few fishermen obtained the two fish bag during 2005-2008, a reduction in the bag limit to one fish per day would provide little reduction in harvest (~5% when 40% release mortality is included). Exclusion of captain and crew is included in the estimate.

Therefore, the reduction needed for ending overfishing of red snapper can primarily be obtained from a combination of a harvest prohibition for red snapper and area closures for all snapper-grouper species that reduces red snapper discards. It is not clear if the proposed 12,000 lbs is landed catch or total kill. Either way, it would require monitoring of discards, which the Council's Scientific and Statistical (SSC) opposes due to the possibility of under reporting discards. In addition, it is likely that 12,000 lbs would reached not long after the start of the fishing year.

Commercial logbook grids 3080 and 3180 represent the 3rd and 5th highest concentrations of red snapper, respectively. Partial closures of grids 3080 and 3081 may require full or partial closures of eight additional grids in order to end overfishing of red snapper.

Proposed Alternative 3 could have National Standard 4 concerns since they would allow some harvest for Georgia recreational fishermen, but Georgia commercial fishermen would not be allowed to harvest any fish. Furthermore, harvest would have to be prohibited in all other states for red snapper along with larger closed areas from other states.

It is anticipated that Dr. Nick Farmer's spreadsheet will help determine additional closed areas to accommodate partial closure of grids 3080 and 3081. It is not clear whether

the proposal intends to close the open area after a quota/allocation is met. It is also unclear who is responsible for reporting harvest from the for-hire sector.

Table 9. Number harvested, released, and total removals of red snapper taken by recreational fishermen during 2003-2006 (SEDAR 15 2008). Dead discards determined by applying 40% release mortality to discarded fish. Total removals = harvest (landed fish) + dead discards. Total removals in closed fishery, where red snapper harvest is prohibited is determined by applying a 40% release mortality rate to the total of landed plus discarded fish.

Year	landed	discarded	dead discards	total removals	Total removals in closed fishery
2003	41,367	184,646	73,858	115,225	90,405
2004	49,728	242,306	96,922	146,650	116,814
2005	42,615	155,576	62,230	104,845	79,276
2006	32,962	168,126	67,250	100,212	80,435
average	41,668	187,664	75,065	116,733	91,733

Table 10. Expected number harvested, released, and total removals of red snapper taken by recreational fishermen during 2003-2006 if there was no size limit and a 2 fish bag limit. Dead discards determined by applying 40% release mortality to discarded fish. Total removals = harvest (landed fish) + dead discards.

Year	landed	discarded	dead discards	total removals
2003	100,508	125,506	50,202	150,711
2004	124,129	167,906	67,162	191,292
2005	106,053	92,141	36,856	142,909
2006	81,252	119,833	47,933	129,185
average	102,986	126,346	50,539	153,524

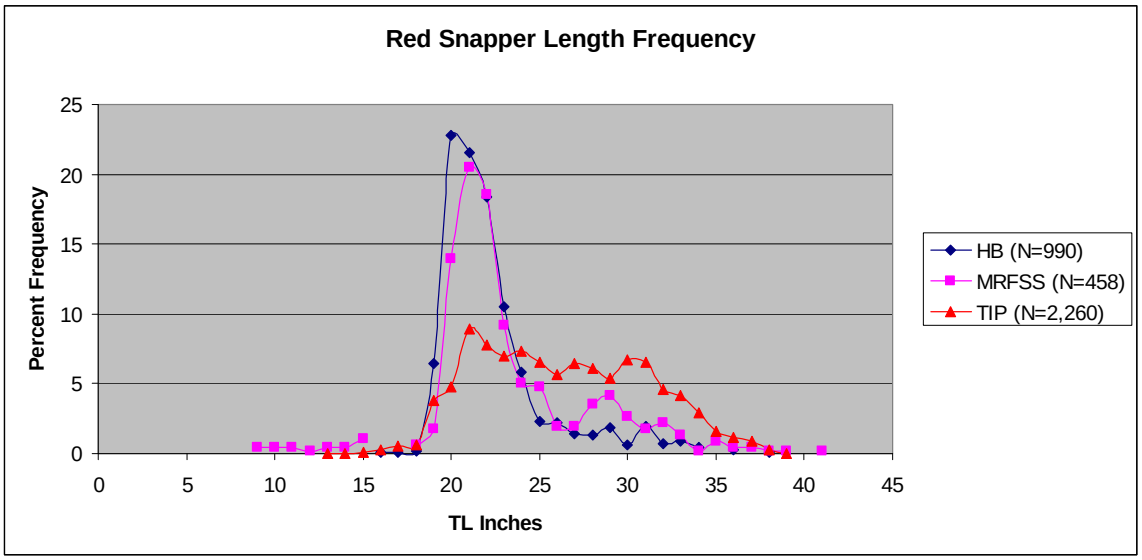
Proposed Alternative 4. *Georgia recreational from Snapper Grouper Advisory Panel).*

Motion 1: In Amendment 17A, recommend that the council analyze the following recreational management measures off the coast of Georgia:
--6 month closure starting Oct 1
--bag limit to 1, excluding captain and crew (keep 1st fish caught)
--no min size limit
--max size limit 28"
--close 50% of live bottom to all snapper grouper harvest where red snapper are year-round (reconsider closure following next stock assessment)
--one hook per rod and reels, manual rod and reel only

Motion 2: 31 20 latitude line to be the northern end of the GA closure (northern section open to fishing).

Discussion

This is very similar to Proposed Alternative 3. The major differences are Proposed Alternative 4 specifies the portion of the area to be closed and specifies maximum size limit of 28 inches. Most (92% headboat; 82% MRFSS; 66% commercial) of the red snapper taken by recreational and commercial fishermen during 2005-2008 were less than 28 inches TL. Therefore, the combination of eliminating the 20 inch TL size limit and establishing a maximum 28 inch size limit would likely increase total removals.



Proposed Alternative 5. *Vessel limits and reduction in size limits.*

Motion 5: Recommend the Council investigate methods to reduce recreational limits through vessel limits (1/person or 4/vessels whichever is more restrictive) with adjustments to vessel limits following the next assessment. Also investigate a reduction in red snapper minimum size to 16"

Discussion

Reductions in the bag limits to 1 fish per person and vessels limits of 4 red snapper would not be sufficient to end overfishing (Tables 11 and 12). Reduction in the bag limit from two fish per person per day to one fish per person per day would be expected to provide a five percent reduction in harvest when non-compliance and a 40% release mortality is considered (Table 11). Reductions in harvest with a 4 person vessel limit would be expected to provide reduction in harvest ranging from 3% for private recreational to 34% for headboats.

Reduction or elimination of a minimum size limit would increase the total removals because previously 60% of the fish less than 20 inches TL were believed to have survived the trauma of capture. With the establishment of a 16 inch TL size limit, a greater proportion (up to the two fish bag limit) of the red snapper between 16 and 20 inches would die.

Table 11. Bag limit analysis for red snapper with 40% release mortality and elimination of captain and crew based on data from 2005 to 2008.

Sector	Bag limit 1
Private	5.21
Charter	4.05
MRFSS	4.72
Headboat	7.05
All rec	5.30

Table 12. Reduction in red snapper harvest associated vessel limits for red snapper. Assumes 40% release mortality based on data from 2005-2008.

Vessel Limit Number	Charter	Private	Headboat
50	0	0	2.73
45	0	0	3.06
40	0	0	3.55
35	0	0	4.36
30	0	0	5.57
25	0.22	0	7.41
20	0.49	0	9.88
15	0.81	0	13.47
10	1.68	0.3	19.24
9	2.12	0.37	20.99
8	2.82	0.45	22.91
7	3.58	0.75	25.14
6	4.51	1.27	27.63
5	5.70	2.09	30.66
4	7.38	3.06	34.26
3	9.99	4.55	38.59
2	13.36	6.56	43.89
1	18.19	10.21	50.72

Proposed Alternative 6. *Days-at-sea (From Snapper Grouper Advisory Panel)*

Motion 8: Move SAFMC investigate alternative effort controls to achieve multi-species management objectives. The days-at-sea concept involves controlling multispecies harvest pressure (hooks in the water) by time rather than closure of areas.

Discussion

The Council previously considered and rejected an alternative for Amendment 13C that would retain all commercial regulations currently in place for South Atlantic snapper grouper species. The alternative would allow each permit holder to designate two months when no commercial fishing for snapper grouper species would occur. These months would be printed on the permit or on a sticker to aid enforcement.

The Council rejected this alternative because it is not possible to determine if this strategy would end overfishing of snowy grouper, black sea bass, vermilion snapper, and black sea bass without knowing which months each fisherman would choose to refrain from fishing. Little reduction in harvest would be achieved if all fishermen selected months of historically lowest catches. The Council examined average aggregate snapper grouper landings by month for all permit holders to determine if the two months of lowest catch would provide an adequate reduction in harvest. If December and January (anecdotally the months when fishing is least desirable) were closed for all permit holders, approximately a 14% reduction in snapper grouper landings would result, which is not adequate to end overfishing for any of the species (black sea bass, vermilion snapper, snowy grouper, and golden tilefish).

To effectively end overfishing of red snapper, fishing for all species would need to be closed for a period of time to prevent incidental catch. Examination of Table 13 indicates that 10 month closure of red snapper (for all sectors combined) could be needed to reduce harvest of red snapper or red snapper by 85%.

Other forms of effort control could be considered by the Council such as restrictions on the number of trips or days at sea. Tables 14 shows current effort levels for red snapper (with the exception of angler days for red snapper) and the number of trips/angler days if effort was reduced by 85%.

Table 13. Average monthly catch (pounds whole weight) of red snapper during 2007 and 2008.

Month	comm	Headboat	MRFSS	Total	Percent	Cum Perc
1	9,859	2,115	22,433	34,407	4.58%	4.58%
2	11,865	6,948	22,433	41,246	5.49%	10.07%
3	12,468	9,409	17,194	39,071	5.20%	15.27%
4	12,278	9,334	17,194	38,806	5.16%	20.43%
5	14,180	9,206	98,371	121,757	16.20%	36.63%
6	20,896	10,316	98,371	129,582	17.24%	53.88%
7	17,119	6,270	50,860	74,248	9.88%	63.76%
8	9,337	3,117	50,860	63,313	8.43%	72.19%
9	10,419	2,980	30,189	43,588	5.80%	77.99%
10	11,359	4,161	30,189	45,709	6.08%	84.07%
11	14,555	6,515	30,681	51,751	6.89%	90.96%
12	30,770	6,505	30,681	67,955	9.04%	100.00%

Table 14. Average number of commercial trips that caught red snapper during 2005-2008, average number recreational trips (MRFSS all modes) that targeted red snapper during 2003-2007, and average number of angler days during 2003-2007 from Amendment 17A. Number of trips and angler days if reduced by 85%.

	Comm trips	Red snapper rec targeted trips	Headboat angler days
current avg	1,357	43,469	240,980
85% reduction	204	6,520	36,147

Proposed Alternative 7. *Commercial ACL with observers, VMS, and electronic bycatch reporting (From Snapper Grouper Advisory Panel).*

Motion 15: For commercial only:
No new closed areas. Commercial annual catch target = 40%(annual catch limit)=40%(61,000 lbs whole weight)=24,400 lbs whole weight. Implement the following monitoring devices: VMS, real-time electronic bycatch reporting, and observers. If discards are greater than 24,400 lbs, prohibit the use of hook and line gear for fishing for mid-shelf species. Spearfishing and black sea bass pots would be allowed. If bycatch reporting is violated, lose permit. Also place a smaller closure if red snapper ACL is met but include a quota buffer from the 24,400 lbs to account for the red snapper mortality (i.e. southern FL and 32 north 80 west).

Motion 16: after the red snapper commercial ACL is met, allow harvest with spearfishing gear in South Atlantic EEZ excluding any closed areas

Discussion

Proposed Alternative 7 would allow for a commercial harvest of 24,000 lbs of red snapper with some quota buffer that would be closely monitored. Once this catch limit is met a small closure would be put in place.

The 24,000 lb allowable catch value represents the total removals that would be allowed. Examination of monthly commercial data in Table 3 indicates 24,000 lbs of harvest could be met in 2 to 4 months. This value does not include the amount of discards that could be expected. Unless all snapper grouper fishing was closed for the remainder of the year, it is expected that this scenario would greatly exceed the allowable level of total removals due to incidental catch of red snapper.

Development of an electronic reporting program for the commercial fishermen would take time and require a currently unidentified source of funds. There would be concerns about using self reporting catches when this information would be used to close a fishery.

Proposed Alternative 8. *Various ideas from the Snapper Grouper Advisory Panel.*

(a) VMS (all vessels that harvest snapper grouper species in the EEZ)
(b) Consider recommendations from LAPP Workgroup
(c) Smaller closures closed to all fishing and target closures to spawning locations
(d) Closures that change throughout the year and location changes
(e)

Close 50% of live bottom off GA coast
6 month closure (Nov 1 through March 31) for for-hire and pr. rec
Bag limit to 1/person excluding captain and crew
Eliminate 20" size limit
Maximum of 28" size limit for red snapper
Restrict to 1 hook per angler for hook and line fishing
Prohibit use of electric reel for recreational fishermen
Create mid-shelf spawning area with no fishing allowed
Artificial reef placement

Discussion

With the exception of establishing mid-shelf spawning areas, these ideas are included in the other proposed alternatives

Proposed Alternative 9. *Florida recreational from Snapper Grouper Advisory Panel.*

For Florida red snapper regulations:
1/person
4/vessel
excluding capt/crew
keep size limit
closure areas to protect spawning areas
one hook per rod and reels, manual rod and reel only

Discussion

As discussed under Proposed Alternative 5, reductions in the bag limits to 1 fish per person and vessels limits of 4 red snapper would not be sufficient to end overfishing (Tables 10 and 11). Reduction in the bag limit from two fish per person per day to one fish per person per day would be expected to provide a five percent reduction in harvest when non-compliance and a 40% release mortality is considered (Table 10). Reductions in harvest with a 4 person vessel limit would be expected to provide reduction in harvest ranging from 3% for private recreational to 34% for headboats. Excluding captain and crew as well as requiring one hook rod and reels would provide small reductions in total removals but would not be sufficient to end overfishing when combined with other components of the action.

Proposed Alternative 10. *Red Snapper Allocation by Sector and State*

Red Snapper Allocation Alternatives

Alternative 1 (Status Quo). Do not define allocations for red snapper.

Alternative 2. Allocate the red snapper ACL by state and sector as described in the table below. The sector allocation would be based upon 40% commercial, 24% for-hire (headboat & charter), and 36% private recreational (This is based upon a 40% commercial and 60% recreational allocation). The allocation between the for-hire and private recreational sectors would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

The state allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector:
State apportionment = (50% * average of long catch range (lbs) 1986-2007) + (50% * average of recent catch trend (lbs) 2006-2008).

The allocations specified for 2010 would remain in effect beyond 2010 until modified. Could remove X lbs (X%) off top to account for expected red snapper mortality off the coasts of North Carolina and South Florida.

Table 15. Estimated catch limit by sector state with a 61,000 lb whole weight ACL. Percent represents proportion of 61,000 lbs whole weight taken by each sector and state.

	North Carolina		South Carolina		Georgia		Florida	
Sector	%	lbs	%	lbs	%	lbs	%	lbs
Commercial	3.0	1,822	7.4	4,544	30%; 18,034 lbs			
For-Hire	1.7	1,027	2.7	1,656	2.2	1,325	17	10,632
Private Recreational	.43	263	.64	390	1.8	1,089	33	20,218

The sector allocation would be based upon 40% commercial, 24% for-hire (headboat & charter), and 36% private recreational (This is based upon a 40% commercial and 60% recreational allocation).

Alternative 3. Allocate the red snapper ACL by state and sector as described in the table below. The sector allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

The state allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector: State apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

The allocations specified for 2010 would remain in effect beyond 2010 until modified. Could remove X lbs (X%) off top to account for expected red snapper mortality off the coasts of North Carolina and South Florida.

Table 16. Estimated catch limit by sector state with a 61,000 lb whole weight ACL. Percent represents proportion of 61,000 lbs whole weight taken by each sector and state.

	North Carolina		South Carolina		Georgia		Florida	
Sector	%	lbs	%	lbs	%	lbs	%	lbs
Commercial	2.1	1,275	5.2	3,181	21%; 12,624 lbs			
For-Hire	2.0	1,241	3.3	2,001	2.6	1,601	21	12,847
Private Recreational	.51	314	.76	466	2.1	1,301	40	24,149

The sector allocation would be based upon landings from the commercial, MRFSS, and headboat databases based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1986-2008) + (50% * average of recent catch trend (lbs) 2006-2008).

Red Snapper Management Measure Alternative

Alternative 1 (Status Quo). Do not modify management regulations red snapper.

Alternative 2. Implement the following management regulations for red snapper.

Commercial Sector

Implement the following monitoring devices: VMS, real-time electronic bycatch reporting, and observers. If mortality is greater than x lbs (landings and dead discards), prohibit fishing for, possession, and retention of species in the snapper grouper fishery management unit for the commercial sector off the coast of that state.

For-Hire Sector

Implement the following monitoring devices: VMS, real-time electronic bycatch reporting, and observers. If mortality is greater than x lbs (landings and dead discards), prohibit fishing for, possession, and retention of species in the snapper grouper fishery management unit for the for-hire sector off the coast of that state.

Private Recreational

Implement a card and tag system for the private recreational sector. X number of cards and tags will be distributed each year based upon a lottery system. The tags would be referenced to the cards which are issued. The proposed tags are numbered strips at the bottom of the cards which would be separated and attached to the fish by the fishermen.

Prohibit fishing for, possession, and retention of all snapper grouper species in an area off the coast of Georgia and North Florida (need to specify area). Specify an allowable red snapper fishing area off the coast of Georgia (need to specify area). Only those individuals with a tag may fish in that area. Each red snapper caught would need to be retained and have a tag applied. Once all the tags are used, prohibit fishing for, possession, and retention of species in the snapper grouper fishery management unit for the private recreational sector off the entire coast of Georgia.

Alternative 3. Allow harvest and retention of snapper grouper species in depths of 98 feet or less for 6 months (need to specify time of year).

Alternative 4. Remove red snapper bag and size limit restrictions for all sectors.

Discussion

Based on catch rates of landed and discarded red snapper in 2007 and 2008, the allowable catch for each sector, with some as low as 390 lbs for some sectors/states, would be met would be met in less than one month (Tables 3-7). The approach would require extensive observer coverage, implementation of electronic logbooks, and establishment of some sort of tagging system. Development of an electronic reporting program for the commercial and for-hire fishermen would take time and require a currently unidentified source of funds. There would be concerns about using self reporting catches when this information would be used to close a fishery.

For the commercial and for-hire sectors under **Management Alternative 2**, catch of red snapper would be monitored by means of VMS, real-time electronic bycatch reporting, and observers. If total removals (landings and discards) are greater than specified in Tables 15 and 16 for **Allocation Alternatives 2 and 3**, respectively, fishing for, possession, and retention of species in the snapper grouper fishery management unit for the commercial sector off the coast of that state would be prohibited. Based on monthly commercial landings provided in Tables 3 and 4, the commercial and for-hire catch limits for red snapper could be met in a month.

For the private recreational sector, a closed area would be established off Georgia and Florida where no snapper grouper fishing would be allowed. Tags would be issued to allow some fishermen to target red snapper within a closed area off of Georgia. Once all the tags are used, fishing for, possession, and retention of species in the snapper grouper fishery management unit would be prohibited for the private recreational sector off the entire coast of Georgia. Development of a tag program for the private recreational sector would take time. There would be concerns about using self-reporting catches when this information would be used to close a fishery.

This alternative could prevent overfishing if all fishing for snapper grouper species was prohibited once the limits were met. However, **Management Alternative 2** would allow fishing for snapper grouper species by private recreational fishermen outside of Georgia

after tags are depleted. If red snapper were incidentally taken and killed after limits for all three sectors had been met, overfishing would be occurring.

Management Alternative 3 would allow harvest and retention of snapper grouper species in depths of 98 feet or less for 6 months. It is assumed that all fishing for snapper grouper species would be prohibited at depths greater than 98 feet. Red snapper are know to occur in depths shallower than 98 feet but there are not good estimates of what proportion of the population occurs in those depths (Moe 1962). Therefore, data are not adequate, at this time, to determine if this alternative would end overfishing of red snapper. If Proposed **Management Alternative 3** is adopted (allow harvest in depths of 98 feet or less), the state/sector ACLs would need to be lowered to incorporate the estimated red snapper mortality.