

Appendix E.

1 Bycatch Practicability Analysis (BPA)

1.1 Population Effects for the Bycatch Species

Background

Regulatory Amendment 13 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 13) revises the acceptable biological catch estimates (ABCs), annual catch limits (ACLs, including sector ACLs), and annual catch targets (ACTs) implemented through the Comprehensive ACL Amendment (SAFMC 2011c), for 37 un-assessed species in the snapper grouper fishery management unit (FMU). There are 60 species in the snapper grouper FMU, many of which co-exist with each other, and are encountered by fishers. Therefore, this BPA includes landings and discard information for species in addition to the 37 species considered in Regulatory Amendment 13 (see **Table 1**).

Most of the species in the snapper grouper FMU are taken with hook and line gear (see **Chapter 3**). Black sea bass are predominantly taken with pots; whereas, longline gear has been the predominant gear type used to capture golden tilefish. **Appendix B** contains the history of management for species in the Snapper Grouper FMP, including changes in gear, size limits, trip limits, seasonal closures, etc.

During 2007-2011, total landings and discards for the 37 un-assessed snapper grouper species in Regulatory Amendment 13 were lower than those for the snapper grouper species not included in the amendment, for both the commercial and recreational sectors (**Table 1**). For all species in the snapper grouper FMU, total number of discards for the commercial sector were lower than the recreational sector (both “private” and “for-hire” headboat/charterboat categories) (**Table 1**).

Commercial Sector

During 2007-2011, regulations (50 C.F.R. § 622.5) required participants in the South Atlantic snapper grouper fishery who were selected by the Science and Research Director (SRD) to maintain and submit a fishing record on forms provided by the SRD. Fishermen in the snapper grouper fishery were also required to submit logbooks with trip and effort information. In the Snapper Grouper FMP, landings (pounds whole weight, lbs ww) during 2007-2011 were dominated by vermilion snapper (1,086,090), yellowtail snapper (949,257), greater amberjack (796,063), gag (592,108), black sea bass (489,471), red grouper (480,195), gray triggerfish (427,642), and golden tilefish (372,466) (**Table 1**). Commercial discards during 2007-2011 were highest for yellowtail snapper (128,323), followed by gray snapper (74,887), vermilion snapper (36,825), red porgy (27,671), and black sea bass (20,132) (**Table 1**).

Currently, discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in the snapper grouper fishery. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Actions that could help resolve

some of these issues are currently being considered in amendments being developed by the South Atlantic Fishery Management Council (South Atlantic Council).

Recreational Sector

For the recreational sector during 2007-2011, estimates of the number of recreational discards were available from Marine Recreational Fisheries Statistical Survey (MRFSS) and the NMFS headboat survey. The MRFSS system classified 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.

During 2007-2011, “for-hire” vessels for the snapper grouper fishery were selected to report by the SRD to maintain a fishing record for each trip, or a portion of such trips as specified by the SRD, and on forms provided by the SRD. Furthermore, the owner or operator of a vessel for which a charter vessel/headboat permit for South Atlantic snapper-grouper has been issued, who was selected to report by the SRD must participate in the NMFS-sponsored electronic logbook and/or video monitoring reporting program as directed by the SRD. Harvest and bycatch information was monitored by MRFSS. Since 2000, a 10% sample of charter vessel captains were called weekly to obtain trip level information. In addition, the standard dockside intercept data were collected from charter vessels and charter vessel clients were sampled through the standard random digital dialing of coastal households. Precision of charter vessel effort estimates has improved by more than 50% due to these changes (Van Voorhees *et al.* 2000).

Following an independent review by the National Research Council and a mandate from Congress, NMFS has overhauled MRFSS. The Marine Recreational Information Program (MRIP) was developed to provide more accurate recreational catch estimates. Samples under MRIP are drawn from a known universe of fishermen rather than randomly dialing coastal households. Other improvements have been and will be made that should result in better estimating recreational catches and the variances around those catch estimates. For this BPA, recreational data from 2007 to 2011 is obtained from MRIP data from Southeast Fisheries Science Center (SEFSC) Recreational ACL Dataset (October 2012) Recreational MRIP data includes official MRIP 2004-2011 re-estimates and ratio-estimated MRIP catches (1986-2003).

Harvest from headboats was monitored by NMFS at the SEFSC Beaufort Laboratory. Collection of discard data began in 2004. Daily catch records (trip records) were filled out by the headboat operators, or in some cases by NMFS approved headboat samplers based on personal communication with the captain or crew. Headboat trips were subsampled for data on species lengths and weights. Biological samples (scales, otoliths, spines, reproductive tissues, and

stomachs) were obtained as time allowed. Lengths of discarded fish were occasionally obtained but these data were not part of the headboat database.

The recreational sector can be further categorized into “private” and “for-hire” (headboat/charterboat) categories. During 2007-2011, private recreational landings (numbers of fish) for species in the Snapper Grouper FMP were dominated by blue runner (648,272), followed by gray snapper (320,071), black sea bass (303,905), white grunt (249,451), yellowtail snapper (197,021), and gray triggerfish/Atlantic spadefish (119,986/119,977) (**Table 1**). During 2007-2011, discards (numbers of fish) for snapper grouper species in the private recreational sector were highest for black sea bass (2,414,933), followed by gray snapper (1,303,945), blue runner (751,315), white grunt (638,048), tomtate (302,173), yellowtail snapper (230,731), and mutton snapper (177,604) (**Table 1**). For the same time period, the “for-hire” category (headboat/charterboat) targeted slightly different species in the snapper grouper FMU. Landings (headboat/charterboat) were highest for vermilion snapper/black sea bass (253,588/75,763), followed by white grunt (163,893/40,649), and yellowtail snapper/gray triggerfish (95,882/40,356) (**Table 1**). Discards in the headboat/charterboat categories were highest for black sea bass (333,521/177,846), followed by vermilion snapper (114,683/32,708), tomtate/white grunt (73,439/19,002), and yellowtail snapper/blue runner (32,646/15,444) (**Table 1**).

Table 1. Mean headboat, MRIP charter and private, and commercial estimates of landings and discards for species in the snapper grouper (S-G) fishery management unit in the U.S. southern Atlantic Ocean from 2007 to 2011. Headboat, MRIP charter and private landings are in numbers of fish (N); commercial landings are in pounds whole weight (lbs ww).

Name of stock or stock complex	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Deepwater complex														
Yellowedge grouper	12	9	3	24%	45	45	0	0%	221	221	0	0%	19,438	0
Blueline tilefish	1,732	1,709	23	1%	34,611	27,729	6,881	20%	10,809	9,851	958	9%	309,825	2
Silk Snapper	1,187	1,080	107	9%	1,646	1,475	171	10%	868	255	613	71%	12,559	1
Misty grouper	1	1	0	0%	0	0	0	0%	0	0	0	0%	1,765	0
Sand tilefish	1,348	903	444	33%	6,163	525	5,638	91%	24,397	5,769	18,628	76%	813	227
Queen snapper	0	0	0	0%	5	5	0	0%	0	0	0	0%	5,080	2
Black snapper	0	0	0	0%	0	0	0	0%	0	0	0	0%	147	32
Blackfin snapper	124	60	63	51%	259	259	0	0%	5,625	5,625	0	0%	1,567	1
Jacks complex														
Almaco jack	4,162	3,806	356	9%	3,788	2,660	1,128	30%	8,814	4,329	4,485	51%	204,945	106
Banded rudderfish	18,992	16,771	2,221	12%	5,559	3,829	1,729	31%	14,929	4,604	10,325	69%	53,262	739
Lesser amberjack	216	211	5	2%	62	62	0	0%	1,965	1,965	0	0%	15,268	110
Snappers complex														
Gray snapper	43,494	38,141	5,353	12%	7,291	6,142	1,149	16%	1,624,017	320,071	1,303,945	80%	109,225	74,887
Lane snapper	22,610	19,297	3,313	15%	4,988	3,661	1,327	27%	204,274	55,511	148,762	73%	4,105	697
Cubera snapper	452	425	28	6%	21	21	0	0%	4,178	3,904	275	7%	5,774	0
Dog snapper	89	60	29	32%	196	196	0	0%	3,954	3,575	379	10%	431	0
Mahogany snapper	32	31	2	6%	0	0	0	0%	853	853	0	0%	38	819
Grunts complex														
White grunt*	194,234	163,893	30,341	16%	59,651	40,649	19,002	32%	887,499	249,451	638,048	72%	149,521	564
Sailors choice	89	84	5	6%	1,249	69	1,180	94%	50,916	20,391	30,525	60%	0	0
Tomtate	122,805	49,366	73,439	60%	21,934	16,652	5,283	24%	420,317	118,144	302,173	72%	511	2,622
Margate	1,240	822	419	34%	129	30	99	77%	20,936	13,080	7,856	38%	3,494	29

Name of stock or stock complex	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Shallow water groupers complex														
Red hind	667	600	67	10%	210	51	158	76%	4,239	1,985	2,254	53%	11,883	147
Rock hind	2,820	2,312	508	18%	122	94	27	23%	5,127	2,072	3,055	60%	20,289	7
Yellowmouth grouper	69	62	7	10%	167	167	0	0%	1,792	1,792	0	0%	54	0
Yellowfin grouper	72	59	13	18%	0	0	0	0%	0	0	0	0%	5,701	6
Coney	172	102	70	41%	98	57	41	42%	2,634	1,789	845	32%	48	4
Graysby	4,414	3,642	772	17%	843	737	106	13%	8,336	3,137	5,200	62%	239	13
Porgies complex														
Jolthead porgy	7,739	7,577	161	2%	1,936	1,936	0	0%	11,444	11,066	378	3%	2,586	4
Knobbed porgy	6,280	6,193	87	1%	992	992	0	0%	5,209	2,717	2,493	48%	26,042	0
Saucereye porgy	324	323	1	0%	95	95	0	0%	424	424	0	0%	0	0
Scup	12,284	10,176	2,109	17%	125	90	35	28%	1,485	1,003	482	32%	0	0
Whitebone porgy	5,064	4,809	256	5%	1,830	1,782	49	3%	10,039	9,085	954	10%	18	17
Individual stocks														
Atlantic spadefish	162	133	29	18%	298	227	71	24%	271,647	119,977	151,670	56%	27,280	0
Blue runner	15,984	13,091	2,893	18%	28,139	12,695	15,444	55%	1,399,587	648,272	751,315	54%	208,772	1,155
Bar jack	235	188	47	20%	601	189	412	69%	11,961	2,933	9,028	75%	4,661	9
Gray triggerfish*	68,648	58,654	9,995	15%	48,945	40,356	8,588	18%	255,833	119,986	135,847	53%	427,642	2,091
Scamp	9,333	6,084	3,249	35%	6,432	4,393	2,038	32%	15,179	7,123	8,056	53%	281,807	2,723
Hogfish	354	264	91	26%	41	37	4	9%	33,770	30,221	3,549	11%	50,396	265
Total (species in Reg. Am. 13)	547,442	410,937	136,505		238,471	167,910	70,560		5,323,276	1,781,181	3,542,095		1,965,183	87,281
S-G species not in Reg. Am. 13	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Bank sea bass	6,009	6,009	0	0%	2,728	550	2,178	80%	11,322	2,651	8,672	77%	431	0

Name of stock or stock complex	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Black grouper	1,551	464	1,086	70%	501	389	112	22%	15,115	2,962	12,153	80%	59,427	3,031
Black sea bass	511,148	177,627	333,521	65%	253,609	75,763	177,846	70%	2,718,839	303,905	2,414,933	89%	489,471	20,132
Cottonwick	22	22	0	0%	0	0	0	0%	0	0	0	0%	0	0
Gag	8,633	3,736	4,897	57%	8,085	3,787	4,298	53%	150,501	25,430	125,072	83%	592,108	9,185
Golden tilefish	0	0	0	0%	932	932	0	0%	3,522	3,522	0	0%	372,466	16
Greater amberjack	6,232	4,239	1,994	32%	24,150	19,259	4,891	20%	56,083	20,988	35,095	63%	796,063	3,692
Longspine porgy	18	18	0	0%	11,423	11,423	0	0%	389	389	0	0%	13	0
Mutton snapper	17,572	13,984	3,588	20%	19,038	10,757	8,280	43%	291,123	113,519	177,604	61%	77,400	4,089
Ocean triggerfish	202	202	0	0%	382	300	82	22%	7,428	3,418	4,011	54%	0	0
Red grouper	11,109	2,374	8,735	79%	14,415	6,766	7,649	53%	93,235	44,063	49,171	53%	480,195	6,793
Red porgy	56,191	34,003	22,189	39%	24,792	14,996	9,796	40%	38,511	22,964	15,546	40%	179,256	27,671
Rock sea bass	0	0	0	0%	592	295	297	50%	9,190	2,945	6,245	68%	648	0
Schoolmaster	326	326	0	0%	8	8	0	0%	13,527	7,971	5,555	41%	231	0
Snowy grouper	139	95	44	32%	1,843	1,574	269	15%	1,080	893	187	17%	93,418	270
Vermilion snapper	368,271	253,588	114,683	31%	79,351	46,643	32,708	41%	205,807	85,100	120,707	59%	1,086,090	36,825
Yellowtail snapper	128,528	95,882	32,646	25%	31,652	25,573	6,079	19%	427,752	197,021	230,731	54%	949,257	128,323
Total (S-G species not in Reg. Am. 13)	1,115,952	592,567	523,384		473,500	219,014	254,486		4,043,423	837,741	3,205,682		5,176,473	240,028
Total (all S-G species)	1,663,393	1,003,504	659,889		711,971	386,924	325,047		9,366,700	2,618,922	6,747,778		7,141,657	327,308

Sources: MRIP data from SEFSC Recreational ACL Dataset (October 2012), Headboat data from SEFSC Headboat Logbook CRNF files (expanded; July 2012), Commercial landings data from SEFSC Commercial ACL Dataset (July 2012), with discard estimates from expanded SEFSC Commercial Discard Logbook (July 2012).

Note: Commercial discard estimates are for vertical line gear only. Recreational MRIP data includes official MRIP 2004-2011 re-estimates and ratio-estimated MRIP catches (1986-2003).

*Commercial gray triggerfish includes "triggerfishes, unclassified" category; commercial white grunt includes "grunts, unclassified" category.

Goliath grouper, Nassau grouper, Warsaw grouper, Speckled hind, and Red snapper are excluded from **Table 1** since they are prohibited species, and landings records are not available for all the years 2007-2011. Wreckfish landings are confidential.

Finfish Bycatch Mortality

Release mortality rates are unknown for most managed species, and as of this writing, there are no stock assessments for the 37 species in Regulatory Amendment 13. Recent Southeast Data, Assessment, and Review (SEDAR) assessments include estimates of release mortality rates based on published studies. Stock assessment reports can be found at <http://www.sefsc.noaa.gov/sedar/>.

SEDAR 17 (2008) recommended a release mortality rate for vermilion snapper of 38% for both the commercial and recreational sectors. An update to the stock assessment for vermilion snapper in 2012 recommended a release mortality rate of 41% for the commercial and 38% for the headboat and private recreational sectors (SEDAR Update Assessment 2012a). 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. 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. SEDAR 15 (2008) estimated a 20% release mortality rate for greater amberjack. In the Gulf of Mexico, SEDAR 9 (2006) assumes a 0% release mortality rate for gray triggerfish. An update to the stock assessment for red porgy in 2012 used a release mortality rate of 35% for the commercial and headboat sectors, and 8% for the private recreational sector (SEDAR Update Assessment 2012b). The most recent stock assessment for yellowtail snapper in the South Atlantic used a release mortality of 11.5% for the commercial sector and 10% for the recreational sector (O'Hop et al. 2012). SEDAR 10 (2006) estimated release mortality rates of 40% and 25% for gag taken by commercial and recreational fishermen, respectively. SEDAR 24 (2010) used release mortality rates of 48% commercial; 41% for-hire, and 39% private recreational for red snapper. Release mortality rates were estimated as 20% for black grouper and red grouper in SEDAR 19 (2010). Snowy grouper are primarily caught in water deeper than 300 feet and golden tilefish are taken at depths greater than 540 feet; therefore, release mortality of the species are probably near 100% (SEDAR 4; 2004).

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

The snapper grouper fishery represents many species occupying the same location at the same time. Fishermen could harvest one of these species when targeting others and may return them to the water as "regulatory discards" (e.g., if the fish is under the size limit) or if undesirable. Consequently, a portion of the population would not survive. Discards for species in the snapper grouper FMU are shown in **Table 1** for both the commercial and recreational sectors, and release mortality of species with stock assessments are discussed in the section above.

Although fishery management actions can adversely impact non-target species, the proposed action in Regulatory Amendment 13 is not anticipated to increase bycatch of snapper-grouper species. As shown in **Tables 2-1** through **2-5** and discussed in detail in **Chapter 4** of Regulatory

Amendment 13, the biological, economic, social, and administrative impacts of **Alternative 2** would not differ much from **Alternative 1 (No Action)**. **Alternative 1 (no action)** would retain the ABCs, ACLs (including sector ACLs), and ACTs that were analyzed and implemented by the Comprehensive ACL Amendment (SAFMC 2011c). **Alternative 2 (Preferred)** would simply update ABCs, ACLs (including sector ACLs), and ACTs using the data described in **Section 1.5** of Regulatory Amendment 13.

Other actions have been taken in recently implemented amendments that could reduce the magnitudes of species addressed in Regulatory Amendment 13. Amendment 13C to the Snapper Grouper FMP (SAFMC 2006) required the use of 2" mesh in the back panel of black sea bass pots, which has likely reduced the magnitude of regulatory discards. Amendment 14 to the Snapper Grouper FMP (SAFMC 2007) established 8 marine protected areas for snapper grouper species where harvest and possession of snapper grouper species is prohibited. Amendment 15B to the Snapper Grouper FMP (SAFMC 2008b) implemented an action that could reduce the impacts from incidental bycatch of sea turtles and smalltooth sawfish. Seasonal closures of both commercial and recreational fisheries implemented by Amendment 16 to the Snapper Grouper FMP (Amendment 16; SAFMC 2009a) could also reduce bycatch mortality of snapper grouper species. 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).

Amendment 17A to the Snapper Grouper FMP (Amendment 17A; SAFMC 2010a) 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 2005; 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 address 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. ACLs and management measures implemented by Amendments 17A and 17B limited harvest of ten snapper grouper species and could help reduce discard mortality of co-occurring species.

The Comprehensive ACL Amendment (SAFMC 2011c) 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.

Amendment 18A to the Snapper Grouper FMP (Amendment 18A; SAFMC 2012a) contained measures to limit participation and effort for black sea bass. As shown in **Table 1** of this BPA, discards for black sea bass were very high for both the commercial and recreational sectors. Amendment 18A established an endorsement program that enables snapper grouper fishermen with a certain catch history to harvest black sea bass with pots. In addition, Amendment 18A included measures to reduce bycatch in the black sea bass pot fishery, modified 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 2011d) 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.

Additional information on fishery related actions from the past, present, and future considerations can be found in **Chapter 5** (Cumulative effects) of this document.

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. Regulatory Amendment 13 would update the existing ABCs, ACLs (including sector ACLs), and ACTs for 37 un-assessed snapper grouper species. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Ecological effects due to changes in the bycatch resulting from the action in Regulatory Amendment 13 would likely be small.

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

Regulatory Amendment 13 is not expected to affect major changes in bycatch of other fish species. Regulatory Amendment 13 incorporates MRIP landings rather than MRFSS into the ABCs and ACLs. The percent differences in the revised ABCs and ACLs in Regulatory Amendment 13 are relatively small compared to status quo levels. The primary effect of the preferred alternative in Regulatory Amendment 13 is to more accurately represent fishing effort

for the snapper grouper species addressed by the amendment. As a result, AMs are more likely to be triggered when needed, and the chances of triggering an AM when it is not needed would be reduced relative to the status quo. Furthermore, negligible biological or ecosystem effects are expected under the preferred alternative for Regulatory Amendment 13.

The intent of Regulatory Amendment 13 is to include the best scientific information available, and to prevent unnecessary negative socio-economic impacts that may otherwise be realized in the snapper grouper fishery and fishing community, in accordance with the provisions set forth in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and to ensure the use of best available science as per National Standard 2.

1.4 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot sectors, 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 sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot 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. NMFS'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. Thus, the continued operation of the snapper grouper fishery in the southeast U.S. Atlantic exclusive economic zone is not likely to adversely affect sperm, fin, sei, and blue whales (NMFS 2006).

North Atlantic right and humpback whales may overlap both spatially and temporally with the black sea bass pot sector. Revisions to the Atlantic Large Whale Take Reduction Plan have folded the Atlantic mixed species trap/pot sectors into the plan (72 FR 193; October 5, 2007).

The requirements will help further reduce the likelihood of North Atlantic right and humpback whale entanglement in black sea bass pot gear.

Observer data and vessel logbooks indicate that pelagic longline fishing for Atlantic swordfish and tunas results in catch of non-target finfish species such as bluefin tuna, billfish, and undersized swordfish, and of protected species, including threatened and endangered sea turtles. Also, this fishing gear incidentally hooks marine mammals and sea birds during tuna and swordfish operations.

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished USFWS 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 or coastal migratory pelagic fisheries are not likely to negatively affect the Bermuda petrel and the roseate tern.

Additionally, the establishment of commercial and recreational ACLs for species in the Snapper Grouper FMP in April 2012, through the Comprehensive ACL Amendment (SAFMC 2011c) could reduce or cap bycatch mortality on protected species, including marine mammals and birds.

1.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

The action in Regulatory Amendment 13 is not expected to change existing procedures and mechanisms that were implemented by the Comprehensive ACL Amendment (SAFMC 2011c). Therefore, additional costs related to fishing, processing, disposal, and marketing of the species affected by Regulatory Amendment 13 are not expected (see economic effects in **Chapter 4** and **Appendix F** for the Regulatory Impact Review). Economic effects of the action proposed in Regulatory Amendment 13 are addressed in **Chapter 4**, as well as the Regulatory Flexibility Act Analysis (**Appendix G**).

1.6 Changes in Fishing Practices and Behavior of Fishermen

The implementation of Regulatory Amendment 13 would not result in a modification of fishing practices by commercial and recreational fishermen, and are likely to have little effect on the magnitude of discards. Social effects of actions proposed in Regulatory Amendment 13 are

addressed in **Chapter 4** of this document. **Section 3.3.3** includes information on environmental justice.

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

Research and monitoring is ongoing to update data in Regulatory Amendment 13 and other recently implemented amendments to reduce bycatch. As data are collected, the effectiveness of measures in recently implemented amendments, and by future actions being proposed by the South Atlantic Council to reduce bycatch can be evaluated. Some observer information has recently been provided by MARFIN and Cooperative Research Programs, but more is desired. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. The SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Electronic logbook reporting is in place for headboats in the southeast, which is expected to improve the quality of data in that sector. Further, the South Atlantic Council is developing an amendment that could require vessel monitoring systems for snapper grouper vessels, which would be expected to improve data quality.

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information on the snapper grouper fishery in the South Atlantic. For example, Stephen and Harris (2010) characterized the entire (retained and discarded) catch of reef fishes from a selected commercial fisherman in the South Atlantic including total catch composition and disposition of fishes that were released. The Gulf and South Atlantic Fisheries Foundation, Inc. conducted a fishery observer program within the snapper grouper vertical hook-and-line (bandit rig) fishery of the South Atlantic United States. Through contractors they randomly placed observers on cooperating vessels to collect a variety of data quantifying the participation, gear, effort, catch, and discards within the fishery.

In the spring 2010, Archipelago Marine Research Ltd. worked with North Carolina Sea Grant and several South Atlantic Unlimited Snapper Grouper Permit holders to test the effectiveness of electronic video monitoring to measure catch and bycatch. A total of 93 trips were monitored with video monitoring, 34 by self-reported fishing logbooks, and 5 by observers. Comparisons between electronic video monitoring data and observer data showed that video monitoring was a reliable source of catch and bycatch data.

Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Foundation, Marine Fisheries Initiative (MARFIN), Saltonstall-Kennedy (S-K) program, and the CRP. Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast US waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery-independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

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

The preferred management measure, and any changes in economic, social, or cultural values are discussed in **Chapter 4** of Regulatory Amendment 13.

1.9 Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from the action in Regulatory Amendment 13 are expected to be negligible and discussed in **Chapter 3**. Economic and social effects of the action proposed in Regulatory Amendment 13 are addressed in **Chapter 4**.

1.10 Social Effects

The social effects of all the measures are described in **Chapter 4** of Regulatory Amendment 13.

1.11 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, measures proposed in Regulatory Amendment 13 are intended to revise the ABCs, ACLs (including sector ACLs), and annual catch targets implemented by the Comprehensive ACL Amendment (SAFMC 2011 c) for 37 un-assessed snapper-grouper species using the best scientific information available. Relative to the status quo, very little change in bycatch of snapper grouper species is expected from the implementation of Regulatory Amendment 13.

Recreational landings are now based on the new MRIP survey rather than MRFSS. However, the Comprehensive ACL Amendment used information from MRFSS in the determination of the ACLs. The revisions in Regulatory Amendment 13 update ACLs using MRIP data to prevent a disjunction between the ACLs and on landings data to determine if AMs are triggered. The primary effect of the preferred alternative in Regulatory Amendment 13 is more accurately represent the fishing effort for the snapper grouper species addressed by the amendment. As a result, AMs are more likely to be triggered when needed, and the chances of triggering an AM when it is not needed would be reduced relative to the status quo. Furthermore, negligible

biological or ecosystem effects are expected under the preferred alternative for Regulatory Amendment 13.

The intent of Regulatory Amendment 13 is to use the best scientific information available and to prevent unnecessary negative socio-economic impacts that may otherwise be realized in the snapper-grouper fishery and fishing community, in accordance with the provisions set forth in the Magnuson-Stevens Act.

Management measures have been put into place through many amendments to reduce bycatch and efforts are ongoing to collect information on nature and magnitude of bycatch. Further, future actions are planned to improve the quality of data collected, which could serve to enhance information in bycatch. Better bycatch and discard data would provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, provide better estimates of interactions with protected species, and lead to better decisions regarding additional measures to reduce bycatch.