Appendix D.

1 Bycatch Practicability Analysis

1.1 Population Effects for the Bycatch Species

Background

The Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2) includes actions that could modify management of octocorals through the establishment of an annual catch limit (ACL); modify management of Special Management Zones (SMZs) off South Carolina; revise sea turtle release gear requirements for the snapper grouper fishery; and designate new essential fish habitat (EFH) and EFH-habitat areas of particular concern (EFH-HAPCs) in the South Atlantic.

The majority of species in the snapper grouper FMU are taken with hook and line gear (Table 1). Black sea bass are predominantly taken with pots; whereas, longline gear has been the predominant gear type used to capture golden tilefish. In Coastal Migratory Pelagics FMU, most king mackerel and cobia are taken with hook and line gear; however, gillnets and castnets are the predominant gear type used to harvest Spanish mackerel. *Sargassum* is a free floating seaweed that is harvested with nets. Currently, no fishery for *Sargassum* exists. Almost all commercial harvest of octocorals is done by marine life fishermen for the live aquarium trade; therefore, harvest is by hand and is done in small numbers on any given day. Because octocorals are listed as a marine life species by the state of Florida, fishermen harvesting them using a Florida SPL with ML endorsement must transport and land them in a live and healthy condition.

Table 1. Percentage of commercial catch by gear based on data from 2005-2009. H&L = hook and line; L = longline; O = other, gillnet, and castnets; S = spear; and T = black sea bass pots.

Taxon	H&L	L	O	S	T
Amberjack	100%	0%	0%	0%	0%
Greater Amberjack	93%	0%	0%	7%	0%
Lesser Amberjack	96%	2%	0%	2%	0%
Banded Rudderfish	100%	0%	0%	0%	0%
Blue Runner	54%	0%	45%	1%	0%
Crevalle Jack	92%	0%	8%	0%	0%
Graysby	100%	0%	0%	0%	0%
Black Grouper	89%	0%	0%	11%	0%
Gag	80%	0%	0%	20%	0%
Misty Grouper	99%	1%	0%	1%	0%
Red Grouper	98%	0%	0%	2%	0%
Snowy Grouper	81%	19%	0%	0%	0%
Warsaw Grouper	14%	86%	0%	0%	0%
Yellowedge Grouper	69%	30%	0%	1%	0%
Yellowfin Grouper	99%	1%	0%	0%	0%
Yellowmouth grouper	100%	0%	0%	0%	0%
Groupers	100%	0%	0%	0%	0%

Taxon	H&L	L	O	S	T
Bluestriped Grunt	97%	0%	0%	0%	2%
French Grunt	94%	0%	0%	0%	6%
Sailors Choice	0%	0%	0%	0%	100%
Tomtate	100%	0%	0%	0%	0%
White Grunt	30%	0%	0%	0%	70%
Grunts	89%	0%	1%	0%	11%
Red Hind	100%	0%	0%	0%	0%
Rock Hind	99%	0%	0%	0%	0%
Speckled Hind	98%	0%	0%	0%	1%
Hogfish	54%	0%	3%	43%	1%
Yellow Jack	60%	0%	1%	39%	0%
Almaco Jack	96%	0%	0%	4%	0%
Bar Jack	80%	0%	2%	18%	0%
Jacks Unc	16%	0%	84%	0%	0%
Margate	94%	0%	0%	1%	5%
Black Margate	91%	0%	0%	1%	7%
Grass Porgy	100%	0%	0%	0%	0%
Jolthead Porgy	98%	0%	1%	0%	0%
Knobbed Porgy	98%	0%	0%	0%	2%
Longspine Porgy	100%	0%	0%	0%	0%
Red Porgy	99%	0%	0%	0%	1%
Whitebone Porgy	90%	0%	1%	0%	9%
Porkfish	94%	0%	0%	6%	0%
Scamp	95%	0%	0%	5%	0%
Scups or Porgies, Unc	49%	0%	4%	1%	46%
Bank Sea Bass	1%	0%	0%	0%	99%
Rock Sea Bass	7%	0%	0%	0%	93%
Black Sea Bass	11%	0%	0%	0%	89%
Sheepshead	34%	0%	34%	32%	0%
Black Snapper	100%	0%	0%	0%	0%
Blackfin Snapper	29%	70%	1%	0%	0%
Cubera Snapper	74%	6%	0%	19%	0%
Dog Snapper	82%	0%	0%	18%	0%
Gray Snapper	100%	0%	0%	0%	0%
Lane Snapper	99%	0%	0%	0%	0%
Mahogony Snapper	53%	0%	0%	47%	0%
Mangrove Snapper	92%	0%	0%	8%	0%
Mutton Snapper	93%	0%	2%	4%	0%
Queen Snapper	65%	34%	0%	1%	0%
Red Snapper	94%	0%	0%	5%	0%
Schoolmaster Snapper	87%	0%	0%	13%	0%

Taxon	H&L	L	O	S	T
Silk Snapper	61%	39%	0%	0%	0%
Vermilion Snapper	100%	0%	0%	0%	0%
Yellowtail Snapper	100%	0%	0%	0%	0%
Snapper, Unc	86%	14%	0%	0%	0%
Atlantic Spadefish	11%	0%	23%	66%	0%
Tilefish	9%	91%	0%	0%	0%
Blueline Tilefish	46%	52%	0%	0%	1%
Sand Tilefish	100%	0%	0%	0%	0%
Tilefish, Unc	100%	0%	0%	0%	0%
Gray Triggerfish	96%	1%	0%	1%	2%
Ocean Triggerfish	99%	0%	0%	0%	1%
Queen Triggerfish	82%	17%	0%	1%	0%
Triggerfishes	89%	0%	0%	1%	10%
Wreckfish	100%	0%	0%	0%	0%
King mackerel	95%	0%	5%	0%	0%
Spanish mackerel	31%	0%	69%	0%	0%
Cobia	66%	1%	16%	17%	0%

Source: NMFS SEFSC Logbook Program.

Landings during 2005-2009 among species in the snapper grouper FMP were generally dominated by the for-hire and private recreational sectors (Table 2). Catches of deepwater species such as snowy grouper and golden tilefish were dominated by commercial fishermen. Cobia and Spanish mackerel are most often taken by recreational fishermen while landings of king mackerel are dominated by the commercial sector. Octocorals are taken entirely by the commercial sector and there are no landings of *Sargassum*.

Table 2. Percentage of landings among the commercial, for-hire, private recreational sectors during 2005-2009. Landings provided by the Southeast Fisheries Science Center.

Taxon	Commercial	For Hire	Recreational
almaco jack	57%	29%	15%
atlantic spadefish	12%	42%	46%
banded rudderfish	30%	56%	14%
bank sea bass	6%	76%	18%
bar jack	42%	44%	14%
black grouper	52%	10%	38%
black margate	0%	52%	48%
black sea bass	42%	20%	38%
black snapper	100%	0%	0%
blackfin snapper	39%	16%	45%
blue runner	17%	53%	30%
blueline tilefish	50%	34%	16%

Taxon	Commercial	For Hire	Recreational
bluestriped grunt	0%	46%	54%
coney	0%	12%	88%
cottonwick	0%	100%	0%
crevalle jack	27%	53%	20%
cubera snapper	26%	36%	39%
dog snapper	8%	9%	83%
french grunt	0%	5%	95%
gag	54%	14%	32%
goliath grouper	0%	2%	98%
grass porgy	0%	17%	83%
gray snapper	15%	35%	50%
gray triggerfish	43%	24%	33%
graysby	4%	54%	42%
greater amberjack and unc jacks	41%	34%	25%
hogfish	27%	3%	70%
jolthead porgy	6%	47%	48%
knobbed porgy	54%	33%	12%
lane snapper	6%	32%	61%
lesser amberjack	50%	36%	14%
longspine porgy	3%	97%	0%
mahogany snapper	2%	27%	72%
margate	16%	55%	29%
misty grouper	100%	0%	0%
mutton snapper	15%	28%	57%
nassau grouper	0	0	0
ocean triggerfish	0%	17%	83%
porkfish	0%	23%	77%
puddingwife	0%	1%	99%
queen snapper	100%	0%	0%
queen triggerfish	0%	56%	44%
red grouper	46%	9%	46%
red hind	74%	8%	18%
red porgy	51%	36%	13%
red snapper	25%	29%	46%
rock hind	66%	21%	13%
rock sea bass	26%	26%	48%
sailors choice	0%	48%	52%
sand tilefish	20%	22%	58%
saucereye porgy	0%	44%	56%

Taxon	Commercial	For Hire	Recreational
scamp	69%	18%	13%
schoolmaster	3%	12%	84%
scup	0%	95%	5%
sheepshead	13%	18%	70%
silk snapper	75%	24%	1%
snowy grouper	65%	23%	12%
spanish grunt	0%	0%	100%
speckled hind	51%	47%	2%
tilefish	83%	11%	5%
tomtate	0%	54%	46%
vermilion snapper	63%	30%	7%
warsaw grouper	6%	26%	68%
white grunt and unc grunts	32%	41%	26%
whitebone porgy	0%	35%	65%
yellow jack	0%	60%	40%
yellowedge grouper	97%	3%	0%
yellowfin grouper	43%	5%	51%
yellowmouth grouper	0%	43%	57%
yellowtail snapper	69%	12%	19%
King mackerel	45%	13%	42%
Spanish mackerel	15%	33%	51%
Cobia	10%	18%	72%

*Commercial represents unclassified triggerfish.
**Commercial triggerfish landings are not identified to species; however, most triggerfish in landings are likely gray triggerfish.

Commercial Fishery

During 2005 to 2009, approximately 20% of snapper grouper and Coastal Migratory Pelagic 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 2005 to 2009 in the South Atlantic was 19,484 (Table 3). Fishermen spent an average of 1.55 days at sea per trip.

Table 3. Snapper grouper and Coastal Migratory Pelagic fishery effort for South Atlantic.

YEAR	Trips	Days	Days per Trip
2005	16,451	25,626	1.56
2006	16,537	26,709	1.62
2007	18,464	28,115	1.52
2008	17,821	28,038	1.57
2009	19,484	30,204	1.55
Mean	17,751	27,738	1.56

Source: NMFS SEFSC Logbook Program.

For species in snapper grouper fishery Coastal Migratory Pelagics fishery management unit (FMU), the number of commercial trips that reported discards was greatest for yellowtail snapper, red porgy, vermilion snapper, scamp, and black sea bass (Table 4). Table 4 indicates many other species not included in the snapper grouper FMU including mackerel species, sharks, dolphin, and others are discarded by fishermen with federal commercial snapper grouper permits.

Table 4. The 70 most commonly discarded species during 2005-2009 for the South Atlantic. Snapper grouper species are highlighted. Note: Represents total of unexpanded data during 2005-2009.

Species	Number of trips reported discarding the species	Number discarded
red porgy, unc	1,449	128,197
vermilion snapper	1,272	89,156
black sea bass, unc	896	69,027
knobbed porgy	503	27,924
yellowtail snapper	2,058	21,420
rough skin dogfish	85	14,807
red snapper	634	11,340
scamp	969	8,703
king mackerel	1,415	7,917
mangrove snapper	416	7,230
spottail pinfish	113	7,194
smooth dogfish	43	5,456
Atlantic sharpnose	204	5,055
menhaden	50	4,880
little tunny	140	4,189
greater amberjack	361	4,163
gag	618	4,045
grunts	181	3,517
dogfish shark	54	3,435
bluefish	77	3,092
red grouper	559	3,045
white grunt	168	2,695
gray triggerfish	233	2,508
scups or porgies, unc	73	2,495
blue runner	303	2,332
triggerfish	168	2,274
blacktip shark	161	2,098
amberjack	262	1,818
sandbar shark	129	1,810

Species	Number of trips reported discarding the species	Number discarded
black grouper	381	1,723
tomtate	22	1,703
tiger shark	115	1,506
mutton snapper	296	1,347
dolphin	214	1,270
unc, finfish for food	86	1,167
Atlantic bonito	218	1,049
speckled hind	122	817
remora	270	815
snappers, unc	36	681
barracuda	75	668
Spanish mackerel	106	651
ballyhoo	18	600
lane snapper	73	582
groupers	67	396
chubs	8	364
caribbean sharpnose	13	361
stingrays	29	335
hake	35	333
rays, unc	46	324
snowy grouper	59	319
margate	17	313
cobia	182	304
needlefish	72	299
cero	98	288
lesser amberjack	12	282
sand tilefish	35	264
spinner shark	33	245
hammerhead shark	69	218
almaco jack	20	203
sheepshead	21	201
sea catfish	69	188
rudderfish	33	181
black margate	3	161
yellowfin tuna	36	161
banded rudderfish	14	159
mahogany snapper	13	133
rock sea bass	11	131
squirrelfish	18	131

Species	Number of trips reported discarding the species	Number discarded
silky shark	13	114
Atlantic spadefish	21	107

According to the bycatch information for mackerel gill nets, menhaden, smooth dogfish sharks, and spiny dogfish sharks were the three most frequently discarded species (SAFMC 2004). There were no interactions of sea turtles or marine mammals reported (Poffenberger 2004). The Southeast Region Current Bycatch Priorities and Implementation Plan FY04 and FY05 reports that 26 species of fish are caught as bycatch in the Gulf king mackerel gillnet fishery. Of these, 34% are reported to be released dead, 59% released alive, and 6% undetermined. Bycatch was not reported for the Gulf Spanish mackerel fishery. The South Atlantic Spanish mackerel fishery has 51 species reported as bycatch with approximately 81% reported as released alive. For the South Atlantic king mackerel fishery 92.7% are reported as released alive with 6% undetermined. Bycatch was not reported separately for gill nets and hook-and-line gear. Additionally, the supplementary discard program to the logbook reporting requirement shows no interactions of gill-net gear with marine mammals or birds.

Because the octocorals are almost exclusively harvested one at a time by divers, there is very little bycatch. However, all octocorals most likely have communities of invertebrates living on them that may be specially adapted to each of the different species of octocorals. These invertebrates may include different types of shrimp, amphipods, nudibranchs, and starfish. Some of these organisms are occasionally seen on the specimens (in the field) or at the bottom of containers used to transport freshly harvested specimens, but the amount per colony is generally very small. Accurate bycatch species identification and counts can only be done in a laboratory, and it is unlikely that this information is available for most of the species harvested by marine life fishermen.

There is no visible bycatch among most of the shallow water, photosynthetic species of octocorals. There may be an occasional macro-alga or sponge attached to the substrate that surrounds the base of the octocorals. Experienced harvesters usually collect octocorals in areas where the target species are abundant and they can quickly and easily remove a specimen without damaging any surrounding benthic communities.

Recreational Fishery

For the recreational fishery, estimates of the number of recreational discards are available from 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.

For species in FMPs included in CE-BA 2, the number of released fish was greatest for black sea bass, followed by crevalle jack (Table 5).

Table 5. Estimated number of fish released (B2) fish in numbers for the South Atlantic during 2005-2009. Species in Comprehensive ACL Amendment are highlighted.

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
BARRACUDAS										
BARRACUDAS	126,721	10.8	180,157	8.7	268,282	9.5	239,534	9.6	204,545	9.8
-- Species Group Subtotal --	126,721	10.8	180,157	8.7	268,282	9.5	239,534	9.6	204,545	9.8
BLUEFISH										
BLUEFISH	3,004,781	6.1	3,707,415	5.7	4,539,620	6	3,440,594	5	2,337,256	5.4
-- Species Group Subtotal --	3,004,781	6.1	3,707,415	5.7	4,539,620	6	3,440,594	5	2,337,256	5.4
CARTILAGINOUS FISHES										
DOGFISH SHARKS	151,502	28.1	91,248	17.4	132,366	42.2	129,161	22.3	92,811	24.9
OTHER SHARKS	2,888,895	5.1	2,770,853	6.8	3,128,079	4.5	2,925,490	4.4	2,638,748	5.5
SKATES/RAYS	1,387,330	6.9	1,059,210	6.7	1,183,040	5.3	1,070,743	6.2	1,431,617	10.8
-- Species Group Subtotal --	4,427,727	4.1	3,921,311	5.1	4,443,485	3.7	4,125,394	3.6	4,163,176	5.1
CATFISHES										
FRESHWATER CATFISHES	64,895	28.1	40,805	30.2	20,552	25.6	45,502	28	12,530	35.4
SALTWATER CATFISHES	1,775,623	6.2	1,362,776	5.8	2,473,885	7.1	1,912,040	6.5	1,016,001	6.6
-- Species Group Subtotal --	1,840,518	6	1,403,581	5.7	2,494,437	7	1,957,542	6.3	1,028,531	6.6
CODS AND HAKES										
OTHER CODS/HAKES	34,531	40.3	5,889	37	9,605	31	7,405	69.3	32,350	39.9
-- Species Group Subtotal --	34,531	40.3	5,889	37	9,605	31	7,405	69.3	32,350	39.9
DOLPHINS										
DOLPHINS	218,931	16.1	231,853	10.8	254,568	17.1	200,879	11.8	75,493	14
-- Species Group Subtotal --	218,931	16.1	231,853	10.8	254,568	17.1	200,879	11.8	75,493	14
DRUMS										
ATLANTIC CROAKER	2,153,037	6.6	3,439,549	6.4	2,540,696	7	2,372,758	5.9	3,113,213	5.5
BLACK DRUM	190,110	11.4	312,415	9.7	820,032	10.2	640,413	7.7	293,214	8.8
KINGFISHES	2,226,960	6.8	3,582,622	7.7	3,309,945	5.9	2,902,539	6.1	2,710,822	6.8
OTHER DRUM	581,461	11	834,383	8.8	1,049,974	10.9	1,173,266	9.5	900,754	12.3
RED DRUM	2,412,470	5.8	2,111,089	5.6	2,070,575	5.6	2,333,096	6.1	1,979,705	5.6
SAND SEATROUT	0	0	9,401	72	11,324	45.8	27,367	42.5	110,534	48.4
SILVER PERCH	480,503	13.2	726,915	11.5	584,828	12.1	491,659	15.6	595,518	15.6

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
SPOT	1,728,002	9.9	3,851,795	9.6	1,732,440	9.9	1,713,571	7.6	1,798,841	8.8
SPOTTED SEATROUT	5,336,913	5.3	4,988,541	4.7	6,114,718	5	4,715,679	5.5	3,782,693	5.4
WEAKFISH	438,519	11	538,799	11.4	346,898	14	265,383	14.1	189,614	21.8
-- Species Group Subtotal --	15,547,975	2.8	20,395,509	2.9	18,581,430	2.6	16,635,731	2.5	15,474,908	2.7
EELS										
EELS	51,553	26.3	62,029	25.8	43,847	16.3	41,653	19	27,700	17.3
-- Species Group Subtotal --	51,553	26.3	62,029	25.8	43,847	16.3	41,653	19	27,700	17.3
FLOUNDERS										
GULF FLOUNDER	4,932	64	10,047	58.5	32,472	49.1	6,181	51.8	964	100
OTHER FLOUNDERS	1,214,700	6.3	1,201,665	5.6	1,689,592	5.8	1,900,658	5.9	1,577,521	6.8
SOUTHERN FLOUNDER	131,274	17.9	257,712	13.7	190,340	13	125,290	14.8	104,871	23.9
SUMMER FLOUNDER	83,320	22.4	139,805	20.5	10,815	38.6	5,715	38	35,632	27.3
-- Species Group Subtotal --	1,434,226	5.7	1,609,229	5	1,923,219	5.4	2,037,844	5.6	1,718,988	6.4
GRUNTS										
OTHER GRUNTS	905,462	8.2	790,470	8.4	1,561,407	8.3	903,581	7.7	1,219,001	8.5
PIGFISH	743,829	7.8	553,384	9.6	868,092	10.3	821,930	8.4	841,230	10.1
WHITE GRUNT	195,770	14.8	274,926	15	241,875	11.3	434,040	14.5	148,501	24.3
-- Species Group Subtotal --	1,845,061	5.3	1,618,780	5.8	2,671,374	6	2,159,551	5.4	2,208,732	6.3
HERRINGS										
HERRINGS	1,243,180	17.4	2,640,817	12.5	1,203,718	16.9	512,502	31.7	1,698,306	15.3
-- Species Group Subtotal --	1,243,180	17.4	2,640,817	12.5	1,203,718	16.9	512,502	31.7	1,698,306	15.3
JACKS										
BLUE RUNNER	661,888	9.6	822,370	9.2	1,159,991	11.7	796,058	11.1	705,910	24.5
CREVALLE JACK	1,362,086	6.7	1,264,018	6.5	1,634,661	6	1,097,877	7	1,139,832	7.9
FLORIDA POMPANO	693,755	12.5	1,007,541	20.1	605,621	12	696,269	10.7	345,791	21.5
GREATER AMBERJACK	16,687	25.1	19,234	19.6	30,752	20.8	80,931	19.8	71,802	16.1
OTHER JACKS	332,217	17.4	180,298	14	326,798	15.8	433,050	12.2	352,874	16
-- Species Group Subtotal --	3,066,633	5	3,293,461	7.1	3,757,823	5.1	3,104,185	4.8	2,616,209	8.3
MULLETS										
MULLETS	1,384,536	13.7	1,801,720	11.3	2,263,848	9.4	1,091,237	10.7	1,367,241	11.1

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
-- Species Group Subtotal --	1,384,536	13.7	1,801,720	11.3	2,263,848	9.4	1,091,237	10.7	1,367,241	11.1
OTHER FISHES										
OTHER FISHES	2,965,704	4.8	2,882,611	4.7	4,518,284	3.7	2,828,534	4.2	2,751,240	5.7
-- Species Group Subtotal --	2,965,704	4.8	2,882,611	4.7	4,518,284	3.7	2,828,534	4.2	2,751,240	5.7
PORGIES										
OTHER PORGIES	72,379	20.1	150,357	20.4	139,040	21.4	116,266	19.5	65,856	19.2
PINFISHES	3,917,568	5.8	5,056,606	6.2	4,960,818	5.1	5,040,941	6	3,588,516	5.8
RED PORGY	27,514	19.2	16,636	15.8	30,085	19	44,154	30	18,089	55.8
SCUP	1,620	46.5	7,721	44	5,729	30.6	9,755	36	3,293	25.3
SHEEPSHEAD	436,207	9.6	437,836	9.3	603,767	10.7	773,720	8	520,600	9.1
-- Species Group Subtotal --	4,455,288	5.2	5,669,156	5.6	5,739,439	4.5	5,984,836	5.2	4,196,354	5.1
PUFFERS										
PUFFERS	425,264	7.7	635,341	8.5	1,152,418	6.6	1,341,422	6.7	912,983	7.6
-- Species Group Subtotal --	425,264	7.7	635,341	8.5	1,152,418	6.6	1,341,422	6.7	912,983	7.6
SEA BASSES										
BLACK SEA BASS	2,483,947	5.5	2,967,099	5.6	3,764,105	7.3	2,940,795	6.2	2,716,240	6.2
EPINEPHELUS GROUPERS	254,936	9.1	165,261	9.1	107,240	17.6	97,808	11.9	128,065	11.9
MYCTEROPERCA GROUPERS	145,222	11	152,123	10.7	302,398	11.2	252,309	8.9	142,865	10.6
OTHER SEA BASSES	324,893	11.5	797,375	11.3	910,942	8.7	801,710	9.1	499,275	10.4
-- Species Group Subtotal --	3,208,998	4.5	4,081,858	4.6	5,084,685	5.7	4,092,622	4.8	3,486,445	5.1
SEAROBINS										
SEAROBINS	158,366	12.1	300,921	21.5	432,617	11.1	333,166	14.5	123,415	10.5
-- Species Group Subtotal --	158,366	12.1	300,921	21.5	432,617	11.1	333,166	14.5	123,415	10.5
SNAPPERS										
GRAY SNAPPER	1,228,211	7.8	1,457,251	5.9	2,936,755	6	1,839,406	6.5	1,725,889	7.4
LANE SNAPPER	111,276	22.7	137,572	16.8	330,770	14.1	227,775	18.4	157,594	16.6
OTHER SNAPPERS	242,324	10.6	280,948	10.1	426,284	10.4	557,020	10	314,681	10.1
RED SNAPPER	125,739	13.3	134,692	18.5	455,405	12.8	403,244	10.5	210,279	12.4
VERMILION SNAPPER	140,356	13.2	102,219	34.3	293,433	12.9	246,103	14.2	226,125	11.6
YELLOWTAIL SNAPPER	258,606	17.7	344,982	11.7	402,201	12.5	319,239	11.1	221,836	22.6

Species	Year: 2005		Year: 2006		Year: 2007		Year: 2008		Year: 2009	
	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE	TYPE B2	PSE
-- Species Group Subtotal --	2,106,512	5.5	2,457,664	4.5	4,844,848	4.3	3,592,787	4.3	2,856,404	5.2
TEMPERATE BASSES										
STRIPED BASS	136,536	16.3	85,438	19.4	50,735	18.2	86,858	19.6	93,353	21
WHITE PERCH	0	0	46,904	38.1	7,339	56.8	1,397	58.5	0	0
-- Species Group Subtotal --	136,536	16.3	132,342	18.4	58,074	17.5	88,255	19.4	93,353	21
TOADFISHES										
TOADFISHES	477,955	8.3	479,125	9.4	435,924	7.7	691,142	8	405,848	8.2
-- Species Group Subtotal --	477,955	8.3	479,125	9.4	435,924	7.7	691,142	8	405,848	8.2
TRIGGERFISHES/FILEFISHES										
TRIGGERFISHES/FILEFISHES	239,995	10.7	210,123	14.6	228,262	10.1	199,476	10.7	181,503	14
-- Species Group Subtotal --	239,995	10.7	210,123	14.6	228,262	10.1	199,476	10.7	181,503	14
TUNAS AND MACKERELS										
ATLANTIC MACKEREL	67,658	81.9								
KING MACKEREL	207,618	13.7	195,618	9.8	303,008	9.4	166,716	9.7	127,316	13.4
LITTLE TUNNY/ATLANTIC BONITO	288,459	8.5	476,296	7	780,193	8.4	511,878	7.6	585,015	8.3
OTHER TUNAS/MACKERELS	66,422	24.6	43,933	13.7	58,912	16.3	121,352	17.4	93,887	17
SPANISH MACKEREL	704,569	12.9	321,860	11.9	586,722	9.4	994,693	10.4	466,681	9.4
-- Species Group Subtotal --	1,334,726	8.5	1,037,707	5.3	1,728,835	5.3	1,794,639	6.3	1,272,899	5.4
WRASSES										
OTHER WRASSES	2,966	53.3	2,079	50.4	10,386	41.8	13,203	51.5	2,977	42.4
TAUTOG	2,885	100	5,185	52	2,905	60.9	1,755	58.9	1,922	62.6
-- Species Group Subtotal --	5,851	56.2	7,264	39.8	13,291	35.3	14,958	46	4,899	35.6
-- Grand Total --	49,741,568	1.4	58,765,863	1.6	66,691,933	1.3	56,515,888	1.3	49,238,778	1.5

Source: MRFSS Web Site http://www.st.nmfs.noaa.gov/st1/recreational/overview/overview.html.

For species in FMPs addressed by CE-BA 2, black sea bass, vermilion snapper, tomtate, and red snapper were most often discarded by headboat fishermen during 2005-2009 (Table 6).

Table 6. Most commonly discarded species from headboats in South Atlantic. Total fish reported released alive or dead on sampled headboat trips during 2005-2009. Data are not expanded to all trips.

Species	# trips reporting discards	released	sum
black sea bass	17,087	rel_dead	18,316
		rel_live	721,640
vermilion snapper	11,601	rel_dead	19,013
		rel_live	413,854
tomtate	7,801	rel_dead	34,943
		rel_live	243,869
red snapper	9,198	rel_dead	3,214
		rel_live	212,572
red porgy	3,848	rel_dead	2,400
		rel_live	110,940
yellowtail snapper	11,797	rel_dead	3,005
		rel_live	103,625
white grunt	12,917	rel_dead	3,154
		rel_live	91,647
pinfish	3,000	rel_dead	2,850
		rel_live	81,423
sharpnose shark	10,928	rel_dead	477
		rel_live	82,816
spottail pinfish	3,450	rel_dead	199
		rel_live	35,381
red grouper	7,885	rel_dead	317
		rel_live	27,527
gag	9,520	rel_dead	339
		rel_live	20,393
gray triggerfish	14,291	rel_dead	380
		rel_live	18,599
lane snapper	7,506	rel_dead	591
		rel_live	17,561
scamp	4,809	rel_dead	275
		rel_live	16,123
bank sea bass	2,903	rel_dead	763
		rel_live	13,725
gray snapper	10,376	rel_dead	137
		rel_live	13,744

Species	# trips reporting discards	released	sum
mutton snapper	8,907	rel_dead	513
		rel_live	13,030
squirrelfish	3,012	rel_dead	155
		rel_live	9,688
bluerunner	3,958	rel_dead	298
		rel_live	8,439
scup	1,187	rel_dead	865
		rel_live	7,402
greater amberjack	4,438	rel_dead	104
		rel_live	8,155
smooth dogfish	865	rel_dead	31
		rel_live	6,830
little tunny	4,019	rel_dead	219
		rel_live	6,620
king mackerel	10,764	rel_dead	232
		rel_live	5,913
banded rudderfish	2,333	rel_dead	31
		rel_live	5,426
inshore lizardfish	1,126	rel_dead	53
		rel_live	4,804
spanish mackerel	2,117	rel_dead	154
		rel_live	4,380
remora	1,408	rel_dead	65
		rel_live	4,139
bluefish	1,420	rel_dead	412
		rel_live	3,728
bluestriped grunt	2,283	rel_dead	173
		rel_live	3,650
blacktip shark	1,001	rel_dead	18
		rel_live	3,729
porkfish	1,645	rel_dead	67
		rel_live	3,429
black grouper	2,530	rel_dead	49
		rel_live	3,026
nurse shark	1,730	rel_dead	64
		rel_live	2,964
graysby	2,736	rel_dead	213
		rel_live	2,699
cobia	3,925	rel_dead	17

Species	# trips reporting discards	released	sum
		rel_live	2,771
		rel_dead	195
sand perch	1,017	rel_live	2,279
		rel_dead	290
rock hind	1,998	rel_live	1,663
		rel_dead	60
doctorfish	873	rel_live	1,790
		rel_dead	24
almaco jack	2,652	rel_live	1,768
		rel_dead	1
sandbar shark	393	rel_live	1,694
		rel_dead	75
margate	744	rel_live	1,540
		rel_dead	45
dolphin	3,087	rel_live	1,370
		rel_dead	39
bigeye	2,098	rel_live	1,231
		rel_dead	32
whitebone porgy	4,480	rel_live	1,204
		rel_dead	0
spiny dogfish	58	rel_live	1,201
		rel_dead	80
jolthead porgy	3,667	rel_live	1,054
		rel_dead	47
great barracuda	2,085	rel_live	1,079
		rel_dead	11
pigfish	1,072	rel_live	996
		rel_dead	55
rainbow runner	669	rel_live	811
		rel_dead	40
sand tilefish	872	rel_live	823
		rel_dead	0
atlantic croaker	39	rel_live	843
		rel_dead	26
knobbed porgy	3,890	rel_live	554
		rel_dead	0
crevalle jack	265	rel_live	564

Source: NMFS Headboat survey.

Finfish Bycatch Mortality

Release mortality rates are unknown for most managed species. Recent 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 fisheries. 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). 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. 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). Release mortality of black sea bass is considered to be low (15%) (SEDAR 2-SAR 3 2005) 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 16 (2009) provided a 20% release mortality to the MRFSS fishery where king mackerel are released alive and a 33% mortality to the headboat fishery where fish were released both dead and alive. For Spanish mackerel, SEDAR 17 (2008) used the following discard mortality rates: gillnets 100%, shrimp trawls 100%, trolling 98%, hook and line 80%, and trolling/hook and line combined 88%.

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

CE-BA 2 includes actions that could modify management of octocorals through the establishment of an ACL; modify management of SMZs off South Carolina; revise sea turtle release gear requirements for the snapper grouper fishery; and designate new EFH and EFH-HAPCs in the South Atlantic.

Because the octocorals are almost exclusively harvested one at a time by divers, there is very little bycatch. However, all octocorals most likely have communities of invertebrates living on them that may be specially adapted to each of the different species of octocorals. These invertebrates may include different types of shrimp, amphipods, nudibranchs, and starfish. Some of these organisms are occasionally seen on the specimens (in the field) or at the bottom of containers used to transport freshly harvested specimens, but the amount per colony is generally very small. Furthermore, regulations require that all incidentally take coral be returned to the water. Almost all commercial harvest of octocorals is done by marine life fishermen for the live

aquarium trade; therefore, harvest is by hand and is done in small numbers on any given day. Because octocorals are listed as a marine life species by the state of Florida, fishermen harvesting them using a Florida SPL with ML endorsement must transport and land them in a live and healthy condition. Actions in CE-BA 2 would not be expected to modify the level of octocoral bycatch.

Tables 2 through 6 list the snapper grouper and coastal migratory pelagic species most commonly discarded by commercial and recreational fishermen. CE-BA 2 includes an action that would limit harvest and possession of snapper grouper and coastal migratory species to the bag limit in SMZs off South Carolina. This action could reduce bycatch of regulatory discards around SMZs by restricting commercial harvest in the area but it would probably have very little effect on the magnitude of overall bycatch of snapper grouper and coastal migratory species in the South Atlantic.

There is currently no fishery for *Sargassum*. As *Sargassum* is a free-floating seaweed, pieces of *Sargassum* is sometimes brought aboard when fishermen reel in lines. However, this is extremely minimal relative to the vast amount of *Sargassum* in the ocean. CE-BA 2 would amend Council FMPs as needed to designate new or modify existing EFH and EFH-HAPCs to meet the Magnuson-Stevens Act requirement that all managed species have EFH designated, CE-BA 2 amends the Pelagic *Sargassum* Habitat FMP to designate EFH. Modifying existing EFH and EFH-HAPCs would not directly affect bycatch of species in the affect FMPs.

Amendment 15B to the Snapper Grouper FMP implemented an action in December 2009 that could reduce the impacts from incidental bycatch of sea turtles and smalltooth sawfish by requiring all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques; (2) have a copy of the document, provided by NOAA Fisheries Service, titled "Careful Release Protocols for Sea Turtle Release with Minimal Injury" posted inside the wheelhouse, or within a waterproof case in an readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; and (4) carry the sea turtle release equipment. Reducing the impacts of incidental take on sea turtles and smalltooth sawfish could help increase population biomass, which could have ecological effects on community structure and predator prey relationships. CE-BA 2 includes an action to modify sea turtle release gear requirements for the snapper grouper fishery. Fishermen have expressed concern that the current sea turtle handling and release gear requirements are intended for larger longline vessels using heavy tackle and are ineffective and unwieldy for smaller snapper grouper hook and line vessels. Any modification is not expected to reduce benefits to sea turtles and smalltooth sawfish. Instead, the action is intended to make it easier for fishermen to comply with the requirement.

Other actions have been taken in recently implemented amendments that could reduce the magnitudes of species addressed in CE-BA 2. Snapper Grouper Amendment 13C required the use of 2" mesh in the back panel of black sea bass pots, which has likely reduced the magnitude

of regulatory discards. Snapper Grouper Amendment 16 required the use of dehooking devices, which could help reduce bycatch mortality of vermilion snapper, black sea bass, gag, red grouper, black grouper, and red snapper. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. If a fish does need to be removed from the water, dehookers could still reduce handling time in removing hooks, thus increasing survival (Cooke et al. 2001). Furthermore, Snapper Grouper Amendment 17A required circle hooks for snapper-grouper species north of 28 degrees latitude, which is expected to reduce bycatch mortality of snapper grouper species.

Action was taken in Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1) that could reduce bycatch as well as protect deepwater coral habitat. CE-BA 1 became effective on July 22, 2010. The CE-BA 1 created allowable gear areas for the golden crab fishery and shrimp fishery access areas for the deepwater shrimp fishery. The establishment of these areas allows for the continuation of these fisheries in their historical fishing grounds with little or no negative impacts to protected deepwater coral habitat.

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. Because the octocorals are almost exclusively harvested one at a time by divers, there is currently very little bycatch. Under the current alternatives in CE-BA2, no change in expected in the magnitude of ocotocoral bycatch. There is currently no fishery for *Sargassum* and bycatch is not an issue for this species.

CE-BA 2 includes an action that would limit harvest and possession of snapper grouper and coastal migratory species to the bag limit in SMZs off South Carolina. This action could reduce bycatch of regulatory discards around SMZs by restricting commercial harvest in the area but it would probably have very little effect on the magnitude of overall bycatch of snapper grouper and coastal migratory species in the South Atlantic.

Ecosystem interactions among coastal migratory pelagic species in the marine environment is poorly known. Most species are migratory, interacting in various combinations of species groups at different levels on a seasonal basis. With the current state of knowledge, it is not possible to evaluate the potential ecosystem wide impacts of these species interactions, or the ecosystem impacts from the limited mortality estimated to occur from mackerel fishing effort.

Amendment 15B to the Snapper Grouper FMP implemented an action in December 2009 that could reduce the impacts from incidental bycatch of sea turtles and smalltooth sawfish by requiring all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard to carry sea turtle release equipment. CE-BA 2 includes an action to modify sea turtle release gear requirements for the snapper grouper fishery due to concern that the current sea turtle handling and release gear requirements are intended for larger longline vessels using heavy

tackle and are ineffective and unwieldy for smaller snapper grouper hook and line vessels. Any modification is not expected to reduce benefits to sea turtles and smalltooth sawfish. Instead, the action is intended to make it easier for fishermen to comply with the requirement.

Amendment 18A to the Snapper Grouper FMP, which is under development, includes actions that could reduce bycatch of black sea bass and the potential for interactions protected species. Actions in Amendment 18A could limit the number of participants in the black sea bass pot sector, require fishermen bring pots back to port at the completion of a trip, and limit the number of pots a fishermen can deploy.

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

CE-BA 2 is not expected to affect major changes in bycatch of other fish species. Measures proposed in the CE-BA 2 are intended to prevent overfishing octocoral species, prevent excessive harvest from occurring on SMZs, make sea turtle release gear requirements easier for smaller vessels. There is little bycatch in the octocoral fishery and actions proposed in CE-BA 2 would likely prevent a cap in harvest and any associated bycatch of fish and invertebrate species. These measures would ensure harvest levels of octocorals would not increase above levels that could jeopardize the sustainability of the resource and would help to ensure ecological changes were not a function of overexploitation of octocorals. Preventing commercial harvest of snapper grouper and coastal migratory species on SMZs could prevent localized depletion from occurring. This action could reduce bycatch of other fish species associated with SMZs but would have little effect on overall bycatch changes in the South Atlantic.

The designation of additional EFH-HAPCs for coral and *Sargassum* would not result in direct impacts to the biological resources of the west-central Atlantic Ocean. Rather, the EFH-HAPC designation under this option would provide a future opportunity for the South Atlantic Council to establish regulations to protect EFH from fishing activities in the EEZ and to review and recommend EFH conservation measures to protect habitat from non-fishing activities which are undertaken, authorized, or funded by Federal agencies.

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 2010 proposed LOF classifies as a Category II (74 FR 27739; June 11, 2009). Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals. For the snapper grouper fishery, the best available data on protected species interactions are from the Southeast Fisheries Science Center (SEFSC) Supplementary Discard Data Program (SDDP) initiated in July of 2001 and 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 bottom longline/hook-and-line component of the South Atlantic snapper grouper fishery remains a Category III under the LOF.

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. Thus, the continued operation of the snapper grouper fishery in the southeast U.S. Atlantic EEZ 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 fishery. Recent revisions to the Atlantic Large Whale Take Reduction Plan have folded the Atlantic mixed species trap/pot fisheries into the plan (72 FR 193; 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.

Of the gear used in the coastal migratory pelagics fishery only the gillnet gear components pose entanglement risks to Northern right, fin, and humpback whales. However, there are no documented interactions between coastal migratory pelagic gillnets and large whales. Large whale entanglements have been documented in other gillnet fisheries. Both the Southeast Atlantic gillnet fishery and the Gulf of Mexico gillnet fishery are listed as category II fisheries (72 FR 14466, March 28, 2007). Neither fishery has any documented interactions with large whales or any other marine mammal species, but NMFS classifies these fisheries as Category I1 based on analogy (is., similar risk to marine mammals) with other gillnet fisheries.

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.

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

Actions in CE-BA 2 are not expected to significantly affect the cost of fishing operations. Economic effects of actions proposed in CE-BA 2 are addressed in Section 4 of this document.

1.6 Changes in Fishing Practices and Behavior of Fishermen

Actions proposed in CE-BA 2 are not likely to result in a significant 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 CE-BA 2 are addressed in Section 4 of this document.

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

Research and monitoring is needed for proposed measures in CE-BA 2 and other recently implemented amendments in reducing bycatch. Additional work is needed to determine the effectiveness of measures in the Comprehensive ACL Amendment, recently implemented amendments, and by future actions being proposed by the Council to reduce bycatch. Amendment 18A, which proposes to enhance current data collection programs, is being developed by the Council. Some observer information has recently been provided by MARFIN and Cooperative Research Programs but more is needed. 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 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. Additional administrative and enforcement efforts will be needed to implement and enforce these regulations. NOAA Fisheries Service 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

Preferred management measures, and any changes in economic, social, or cultural values are discussed in Section 4.

1.9 Changes in the Distribution of Benefits and Costs

Little change in the distribution of benefits and costs are expected from actions in CE-BA 2. Measures proposed in the CE-BA 2 are intended to prevent overfishing octocoral species, prevent excessive harvest from occurring on SMZs, make sea turtle release gear requirements

easier for smaller vessels. CE-BA 2 also would designate new EFH and EFH-HAPCs in the South Atlantic. These measures would ensure harvest levels of octocorals would not increase above levels that could jeopardize the sustainability of the resource and would help to ensure ecological changes were not a function of overexploitation of octocorals. Preventing commercial harvest of snapper grouper and coastal migratory species on SMZs could result in some negative benefits and costs for commercial fishermen but effects would likely be positive for recreational fishermen (Section 4.4.2).

1.10 Social Effects

The social effects of all the measures are described in **Section 4**.

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 the CE-BA 2 are intended to prevent overfishing octocoral species, prevent excessive harvest from occurring on SMZs off South Carolina, and make sea turtle release gear requirements easier for smaller vessels. CE-BA 2 also would designate new EFH and EFH-HAPCs in the South Atlantic. These measures would ensure that harvest levels of octocorals would not increase above levels that could jeopardize the sustainability of the resource and would help to ensure ecological changes were not a function of overexploitation of octocorals. Preventing commercial harvest of snapper grouper and coastal migratory species on SMZs off South Carolina could prevent localized depletion from occurring but would have little effect on potential ecological changes in the South Atlantic.

The designation of additional EFH-HAPCs for coral and *Sargassum* would not result in direct impacts to the biological resources of the west-central Atlantic Ocean. Rather, the EFH-HAPC designation under this option would provide a future opportunity for the Council to establish regulations to protect EFH from fishing activities in the EEZ and to review and recommend EFH conservation measures to protect habitat from non-fishing activities which are undertaken, authorized, or funded by Federal agencies.