Atlantic States Marine Fisheries Commission

Interstate Fishery Management Plan for Atlantic Migratory Group Cobia

ASMFC Vision:
Sustainably Managing Atlantic Coastal Fisheries

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Interstate Fishery Management Plan for Atlantic Migratory Group Cobia

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EXECUTIVE SUMMARY

INTRODUCTION: The Atlantic States Marine Fisheries Commission (Commission) has developed an Interstate Fishery Management Plan (FMP) for Cobia, under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). Management authority for this species is from zero to three nautical miles offshore, including internal state waters, and lies with the Commission. Regulations are promulgated by the Atlantic coastal states. Responsibility for compatible management action in the exclusive economic zone (EEZ) from 3-200 miles from shore lies with the South Atlantic Fishery Management Council (SAFMC) and NOAA Fisheries under their Coastal Migratory Pelagics Fishery Management Plan (CMP FMP) under the authority of the Magnuson-Stevens Fisheries Conservation and Management Act.

STATEMENT OF THE PROBLEM: Cobia management has historically been considered precautionary through the Gulf of Mexico and Atlantic Coastal Migratory Pelagics FMP. Both sectors of the fishery have been managed with a 2 fish possession limit and 33" fork length (FL) minimum size since formal management began in Amendment 6 to the Coastal Migratory Pelagics FMP in 1990. The Annual Catch Limits (ACL) and Accountability Measures were established through Amendment 18 (GMFMC/SAFMC 2012). The 2013 stock assessment conducted through the Southeast Data Assessment and Review (SEDAR) process indicated overfishing was not occurring and that the stock was not overfished although trending steadily downward over the previous two decades. Additionally, the stock assessment used a different stock boundary that was implemented into the FMP along with the updated ACLs in Amendment 20B (GMFMC/SAFMC 2014). The current ACL is a precautionary approach to prevent the stock from reaching an overfished status. The recent overage in 2015 exceeded the SAFMC's defined Overfishing Limit. Further quota overages could lead to the stock becoming overfished.

Efforts to more closely monitor state specific harvest to ensure that quotas are not exceeded and that overfishing is averted is the Commission's primary focus. Further, by developing a Commission plan, the impacts of a single, federal closure may be mitigated through statespecific measures designed to maintain traditional seasons at reduced harvest rates. The proposed interstate FMP considers potential management measures to maintain a healthy resource while minimizing the socio-economic impacts of seasonal closures.

IMPLEMENTATION BENEFITS: Implementation of the FMP and effective management of cobia will produce ecological, cultural and economic benefits. Ecologically, cobia are a moderately lived species and can contribute to the population if allowed to reach older ages through regulatory protections across the range of the population and age classes. Cobia support a valuable recreational and for-hire fishery and primarily bycatch fishery in the South and Mid-Atlantic regions. The implementation of a management program will maintain social and economic benefits to the fishing communities involved by ensuring a fishery for the future generations.

DESCRIPTION OF THE RESOURCE AND MANAGEMENT UNIT: Cobia are the only representative of the family Rachycentridae that occurs off the US east coast. While cobia occur throughout the temperate oceans of the Gulf and Caribbean, genetic information indicates a distinct population segment that occurs from the Georgia-Florida line though New York. Consequently, the management units for cobia under this FMP is defined as the range of the species within U.S. waters of the northwest Atlantic Ocean from the estuaries eastward to the offshore boundaries of the Exclusive Economic Zone (EEZ) from the Georgia-Florida line through New York.

LIFE HISTORY AND HABITAT REQUIREMENTS: Cobia are fast growing, moderately lived fish that occur throughout state and federal waters along the Atlantic coast. As adults, cobia have a protracted spawning season that begins in May. Habitats used by cobia are not well-known during early life stages. Larvae and juveniles may be found in coastal or estuarine waters; however, large concentrations are seldom encountered. Adult cobia travel widely and encounters from locations up coastal rivers to natural and artificial reefs offshore are common.

GOALS AND OBJECTIVES:

Goal: The goal of the Cobia FMP is to provide for an efficient management structure to implement coastwide management measures in a timely manner and complement cobia management in federal waters, which uses Allowable Catch Limits (ACL) established by the SAFMC.

Objectives:

1. Provide a management plan that achieves the long-term sustainability of the resource and strives, to the extent practicable, to implement and maintain consistent coast wide measures, while allowing the states the flexibility to implement alternative strategies to accomplish the objectives of the FMP
2. Provide for sustainable recreational and commercial fisheries.
3. Maximize cost effectiveness of current information gathering and prioritize state obligations in order to minimize costs of monitoring and management.
4. Adopt a long-term management regime which minimizes or eliminates the need to make annual changes or modifications to management measures.
5. Provide a flexible management system to address future changes in resource abundance, scientific information, and fishing patterns among user groups or area.

OVERFISHING DEFINITION: The most recent, 2012, cobia stock assessment (SEDAR 28) indicates a decline in population biomass estimates but does not indicate that the stock is overfished or that overfishing is occurring. A new stock assessment is scheduled for 2019, which will be preceded by a stock identification workshop in 2018.

MONITORING PROGRAM SPECIFICATIONS: The Cobia Technical Committee will meet annually, or as necessary, to review state management program changes, developments in the fishery, or other changes or challenges in the fishery. The Cobia Technical Committee will work closely with the SAFMC's Science and Statistics Committee to review and update or perform benchmark stock assessments on the cobia stock. This schedule may be modified as needed to incorporate new information and consideration of the cobia's biology.

The Cobia Plan Review Team (PRT) will annually review implementation of the management plan and any subsequent adjustments (addenda), and report to the Management Board on any compliance issues that may arise. The PRT will also prepare the annual Cobia FMP Review and coordinate the annual update and prioritization of research needs (see Section 6.2).

BYCATCH MONITORING AND REDUCTION: Currently, the cobia recreational fishery tends to be a targeted fishery and cobia catches in the commercial have historically been a bycatch in other directed fisheries. Current effort indicates more directed fisheries, even at low vessel limits, are increasing. While this FMP does not specify any measures to specifically reduce cobia bycatch and subsequent discard mortality, the FMP provides a summary of actions states may consider to address these issues in their respective jurisdictions.

REGULATORY PROGRAM: States and jurisdictions must implement the regulatory program requirements as per Section 7. The Management Board has the ultimate authority to determine the approval of a regulatory program. States and jurisdictions must also submit proposals to change their required regulatory programs as per Section 7.1.2. The Management Board will determine final approval for changes to required regulatory programs.

RECREATIONAL FISHERIES MANAGEMENT MEASURES: All states must establish a 1 fish bag limit, 36 inch FL minimum size limits (or equivalent TL measurement), and a maximum vessel limit by April 1, 2018. A coastwide recreational harvest limit will be allocated to non-*de minimis* states as state-specific recreational harvest targets. States will establish season and vessel limits to restrict harvest to the harvest target, and adherence to harvest targets will be evaluated as average annual harvest over a 3-year timeframe.

COMMERCIAL FISHERIES MANAGEMENT MEASURES: All states must establish a 33 inch FL minimum size limit and a 2 fish per person possession limit with up to a 6 fish vessel limit.

THREATS TO COBIA HABITAT: Threats to Cobia habitats may include the following: loss of estuarine habitats; coastal development; nutrient enrichment of estuarine waters; poor water quality; beach re-nourishment.

ALTERNATIVE STATE MANAGEMENT REGIMES: Once initial management programs are approved by the South Atlantic State/Federal Fisheries Management Board, states are required to obtain prior approval from the Management Board of any changes to their management program for which a compliance requirement is in effect. Changes to non-compliance

measures must be reported to the Management Board but may be implemented without prior Management Board approval. A state can request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Management Board's satisfaction that its alternative proposal will have the same conservation value as the measure contained in this amendment or any addenda prepared under Adaptive Management (***Section 4.5***). States submitting alternative proposals must demonstrate that the proposed action will not contribute to overfishing of the resource. All changes to state plans must be submitted in writing to the Board and to the Commission either as part of the annual FMP Review process or the Annual Compliance Reports.

***De minimis* Fishery Guidelines**

The Interstate Fisheries Management Program Charter defines *de minimis* as "a situation in which, under the existing condition of the stock and scope of the fishery, conservation, and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by a Fishery Management Plan or amendment" (ASMFC 2001b).

States may petition the South Atlantic State/Federal Fisheries Management Board at any time for *de minimis* status. Once *de minimis* status is granted, designated states must submit annual reports including commercial and recreational landings to the Management Board justifying the continuance of *de minimis* status. States must include *de minimis* requests as part of their annual compliance reports. States may apply for *de minimis* status if recreational landings for 2 of the previous 3 years are less than 1% of the coastwide recreational landings for the same time period.

ADAPTIVE MANAGEMENT: The South Atlantic State/Federal Fisheries Management Board may vary the requirements specified in this amendment as a part of adaptive management in order to conserve the Cobia resources and/or maintain complementary actions established by the SAFMC. Specifically, the Management Board may change target fishing mortality rates and harvest specifications, or other measures designed to prevent overfishing of the stock complex or any spawning component. Such changes will be instituted to be effective on the first fishing day of the following year, but may be put in place at an alternative time when deemed necessary by the Management Board.

COMPLIANCE: Full implementation of the provisions in this management plan is necessary for the management program to be equitable, efficient, and effective. States are expected to implement these measures faithfully under state laws.

MANDATORY COMPLIANCE ELEMENTS FOR STATES: A state or jurisdiction will be determined out of compliance with the provision of this fishery management plan according to the terms of Section 7 of the ISFMP Charter if:

- Its regulatory and management programs to implement *Section 4* have not been approved by the South Atlantic State-Federal Fisheries Management Board; or
- It fails to meet any schedule required by *Section 5.1.2*, or any addendum prepared under adaptive management (*Section 4.6*); or
- It has failed to implement a change to its program when determined necessary by the South Atlantic State-Federal Fisheries Management Board; or
- It makes a change to its regulations required under *Section 4* or any addendum prepared under adaptive management (*Section 4.6*), without prior approval of the South Atlantic State-Federal Fisheries Management Board.

COMPLIANCE SCHEDULE

States must implement the FMP according to the following schedule:

January 1, 2018:	States must submit programs to implement the FMP for approval by the South Atlantic State-Federal Fisheries Management Board. Programs must be implemented upon approval by the Management Board.
April 1, 2018:	States with approved management programs must implement FMP requirements. States may begin implementing management programs prior to this deadline if approved by the Management Board.

Reports on compliance must be submitted to the Commission by each jurisdiction annually, no later than July 1st, beginning in 2019.

TABLE OF CONTENTS

1. INTRODUCTION

1.1. BACKGROUND INFORMATION

At the August 2016 meeting of the Interstate Fisheries Management Program (ISFMP) Policy Board, Commissioners expressed an interest in developing an interstate fishery management plan (FMP) complementary to the South Atlantic Fishery Management Council (SAFMC) Coastal Migratory Pelagics (CMP) FMP for cobia (*Rachycentron canadum*). Concerns were raised because the Annual Catch Limits (ACL) established by the SAFMC were being exceeded and fishery closures were resulting in disproportionate impacts to member states. A concern with future stock status due to ACL overages and the need for state specific involvement in management precipitated the development of an interstate FMP. Based on current genetic data, the management unit for this FMP are the Atlantic Migratory Group cobia that range from Georgia through New York. After a review of the available information developed by staff, the South Atlantic State/Federal Fisheries Management Board recommended initiation of an FMP. Upon review of the report, the ISFMP Policy Board voted to initiate the FMP and assigned its development and administration to the South Atlantic State/Federal Fisheries Management Board (Management Board), which administers the FMPs for Atlantic croaker, black drum, red drum, Spanish mackerel, spot, and spotted seatrout.

The Management Board initiated development of an FMP for Atlantic Migratory Group (Atlantic) cobia in August 2016 and approved the Public Information Document for public comment in November 2016. Public comment was received and hearings held in December 2016, and the Management Board tasked the Plan Development Team (PDT) with developing a Draft FMP for Atlantic cobia in February 2017. A progress report was provided to the Management Board in May 2017. The Management Board discussed future management options and approved a letter to the SAFMC and GMFMC requesting a full transfer of management authority to the ASMFC. At their June, 2017, meeting in Ponte Vedra, FL, the SAFMC voted to begin developing an amendment to the CMP FMP to consider the transfer. At the same meeting, an emergency action to restore the Atlantic cobia stock boundary to include the east coast of Florida was not approved, leaving the current stock boundary from Georgia through New York.

1.1.1. Statement of the Problem

Cobia management has historically been considered precautionary through the CMP FMP. Both sectors of the fishery have been managed with a 2 fish possession limit and 33” fork length (FL) minimum size since formal management began with the federal CMP FMP in 1982, with Gulf and Atlantic cobia managed as one stock. CMP Amendment 5 (GMFMC/SAFMC 1990) provided a metric for designating a stock as overfished (spawning stock biomass), and the specified that

overfishing would be designating when the rate of harvest would prevent rebuilding (if overfished), or would lead to overfished status. Through CMP Amendment 8 (GMFMC/SAFMC 1996) and Amendment 11 (GMFMC/SAFMC 1998), the GMFMC and SAFMC refined the overfishing definition, so that overfishing is occurring when fishing mortality (F) exceeds the maximum fishing mortality threshold (MFMT), which is based on 30% Static Spawning Potential Ratio (SPR). This overfishing definition is maintained in the CMP FMP and is determined only through a stock assessment.

Amendment 8 (GMFMC/SAFMC 1996) extended cobia management into the Mid-Atlantic region, but Gulf and Atlantic cobia were managed as one stock until Amendment 18 (GMFMC/SAFMC 2012). This amendment set the stock boundary at the boundary between the GMFMC and SAFMC, and also established the ACLs and Accountability Measures. Additionally, Amendment 18 specified that because there was no Overfishing Level (OFL) recommendation available at that time, overfishing was defined as landings exceeding the ACL. The Councils specified that OFL would be revisited after the stock assessment (SEDAR 28) was complete.

The 2013 stock assessment conducted through the Southeast Data Assessment and Review (SEDAR) process indicated overfishing was not occurring (i.e., F<MFMT) and that the stock was not overfished, although biomass has been trending steadily downward over the previous two decades. Following completion of the assessment, the SAFMC's Scientific and Statistical Committee (SSC) recommended the OFL and the acceptable biological catch (ABC) for Atlantic cobia.

The stock assessment used a new stock boundary (Georgia through New York), which was implemented into the FMP along with the updated ACLs in Amendment 20B (GMFMC/SAFMC 2014). The current ACL is a precautionary approach to prevent the stock from reaching an overfished status. The recent overages of the ACL in 2015 and 2016 significantly exceeded the ACL as well as the OFL recommended by the SAFMC's SSC. Further quota overages could result in overfishing and lead to the stock becoming overfished.

Most recently, the SAFMC implemented revised harvest limits for Atlantic cobia in federal waters through CMP Framework Amendment 4 (SAFMC 2016), and these will become effective on September 5, 2017. The new recreational limits are 1/person or 6/vessel, whichever is more restrictive, with a minimum size limit of 36" FL. Commercial limits are 2/person or 6/vessel, whichever is more restrictive, but the commercial minimum size limit does not change from 33" FL. The SAFMC also modified the recreational accountability measures so that if landings exceed the ACL, first there will be a reduced vessel limit for the following fishing season. If this does not mitigate the overage, then the following fishing season will be shortened.

Efforts to more closely monitor state specific harvest to ensure that the federal ACL is not exceeded and avoid overfishing is the Commission's primary focus. Further, by developing a Commission plan, the impacts of a single, federal closure may be mitigated through

statespecific measures designed to maintain traditional seasons at reduced harvest rates. The proposed interstate FMP considers potential management measures to maintain a healthy resource while minimizing the socio-economic impacts of seasonal closures.

1.1.2. Benefits of Implementation

1.1.2.1. Social and Economic Benefits

Sustainable management practices and policies for a moderately-lived species such as cobia can increase economic benefits and provide social stability in the fishing community while ensuring a fishery for future generations. Greater cooperation and uniform management measures among the states ensure that the conservation efforts of one state or group will not be undermined or that one state is not disadvantaged over another.

Historically, the commercial market has been a bycatch fishery due to low possession limits of 2 fish per person. Directed harvest, even at these low limits, appears to be increasing. Cobia are primarily caught as bycatch in nearshore to offshore trolling and hook and line commercial fisheries that target snapper/grouper and king mackerel. Cobia are considered excellent table fare and command a high price for the fishermen and fish houses when they are seasonally available.

The recreational fishing season primarily occurs from May through August, but may begin as early as April and typically extends into September in the Mid-Atlantic region. Atlantic cobia support a significant for-hire fishery and lure manufacturing businesses.

The recreational fishery and landings far exceed the commercial fishery and management has deemed the recreational fishery as the primary goal in management.

1.1.2.2. Ecological Benefits

Consistent management goals across jurisdictions can provide greater protections to a migratory stock. Cobia are moderately lived and can have multiple opportunities to contribute to the population if allowed to reach older ages, which can be afforded by regulatory protections across the range of the population and age classes.

Concern that the peak fishery occurs during the spawning season has resulted in at least one state (South Carolina) implementing a closure during that time.

1.2. DESCRIPTION OF THE RESOURCE

1.2.1. Species Life History

Cobia are a member of the family Rachycentridae and has historically been managed in the federal CMP FMP because of its migratory behavior. Cobia are distributed worldwide in tropical, subtropical and warm-temperate waters. In the western Atlantic it occurs from Nova Scotia, Canada, south to Argentina, including the Caribbean Sea. They are abundant in warm waters off the coast of the U.S. from the Chesapeake Bay south and throughout the Gulf of Mexico (Gulf). Cobia prefer water temperatures between 68-86°F. As a pelagic fish, cobia are found over the continental shelf as well as around offshore natural and artificial reefs. Cobia frequently reside near any structure that interrupts the open water such as pilings, buoys, platforms, anchored boats, and flotsam, and are often seen under or accompanying rays, large coastal sharks, and sea turtles. Cobia are also found inshore inhabiting bays, inlets, and mangroves.

Cobia form large aggregations, spawning during daylight hours between June and August in the Atlantic Ocean near the Chesapeake Bay and off North Carolina in May and June, and in the Gulf during April through September. Spawning frequency is once every 9-12 days, spawning 15-20 times during the season. During spawning, cobia undergo changes in body coloration from brown to a light horizontal-striped pattern, releasing eggs and sperm into offshore open water. Cobia have also been observed spawning in estuaries and shallow bays with the young heading offshore soon after hatching. Cobia eggs are spherical, averaging 1.24 mm in diameter. Larvae are released approximately 24-36 hours after fertilization.

Newly hatched larvae are 2.5 mm (1 inch) long and lack pigmentation. Five days after hatching, the mouth and eyes develop, allowing for active feeding. A pale yellow streak is visible, extending the length of the body. By day 30, juveniles take on the appearance of adult cobia with two color bands running from the head to the posterior end.

Weighing up to a record 61 kg (135 pounds whole weight [lbs ww]), cobia are more common at weights of up to 23 kg (50 lbs ww). They reach lengths of 50-120 cm (20-47 inches), with a maximum of 200 cm (79 inches). Cobia grow quickly and have a moderately long life span. Maximum ages observed for cobia in the Gulf were 9 and 11 years for males and females, respectively, while off North Carolina maximum ages were 14 and 13 years, respectively. Females reach sexual maturity at 3 years of age and males at 2 years in the Chesapeake Bay region. During autumn and winter months, cobia presumably migrate south and offshore to warmer waters. In early spring, migration occurs northward along the Atlantic coast. Significant efforts are currently underway using various tagging methods to better understand the migratory behavior of cobia.

1.2.2. Stock Assessment Summary

1.2.2.1. Stock Identification and Management Unit

Microsatellite-based analyses demonstrated that tissue samples collected from North Carolina, South Carolina, east coast Florida (near St. Lucie), Mississippi, and Texas showed disparate allele frequency distributions, and subsequent analysis of molecular variance showed population structuring occurring between the states (Darden et al. 2014). Results showed that the Gulf of Mexico stock appeared to be genetically homogeneous and that a segment of the population continued around the Florida peninsula to St. Lucie, FL, with a genetic break somewhere between St. Lucie, FL, and Port Royal Sound, SC. However, no samples were available from Cape Canaveral, FL, to Hilton Head Island, SC. Tag-recapture data using conventional dart tags also suggested two stocks of fish that overlap at Brevard County, FL, corroborating the genetic findings.

The Atlantic and Gulf stocks were separated at the Florida-Georgia line during SEDAR 28 because genetic data suggested that the split is north of the Brevard/Indian River County line and tagging data did not dispute this split. The FL-GA line was selected as the stock boundary based on recommendations from the commercial and recreational work groups and comments that this boundary would allow easier management and did not conflict with the life history information available. However, there was not enough resolution in the genetic or tagging data to suggest that a biological stock boundary exists specifically at the FL-GA line, only that a mixing zone occurs around Brevard County, FL, and potentially to the north. The Atlantic stock was determined to extend northward, as far as New York.

Several ongoing research projects are expanding sample collection throughout coastal Georgia and northern Florida, which may help provide better resolution for where the genetic break (or mixing zone) between the Gulf of Mexico population and the Atlantic population occurs. In addition, a few hundred cobia have been tagged with acoustic tags in South Carolina, Georgia, and the east coast of Florida to evaluate movement patterns along the South Atlantic (FL-NC) coast of the United States. This may also help determine where the stock boundary/mixing zone occurs.

1.2.2.2. SEDAR 28

The Gulf and Atlantic migratory groups of cobia were assessed by SEDAR 28 in 2013. The SEDAR 28 stock assessment for Atlantic migratory group cobia (Atlantic cobia) determined that the stock is not overfished or experiencing overfishing. The Gulf of Mexico Fishery Management Council (GMFMC) Scientific and Statistical Committee's (SSC) review of the SEDAR 28 stock assessment of Gulf migratory group cobia (Gulf cobia) determined that the stock was not overfished or experiencing overfishing.

1.2.3. Abundance and Present Condition

No coastwide index of abundance is available for cobia and no reliable regional indices of abundance can be generated due to lack of targeted monitoring programs and low incidental catch of cobia in most existing surveys. In particular, few surveys consistently encounter and sample adult fish due to their size and gear avoidance in primary survey methods such as trawls.

1.3. DESCRIPTION OF THE FISHERY

1.3.1. Commercial Fishery

Prior to 2015, the SAFMC's management area for Atlantic cobia extended from the east coast of Florida through New York. As implemented through Amendment 20B (GMFMC/SAFMC 2014) and effective in 2015, the harvests of cobia off the east coast of Florida have been considered part of the Gulf migratory group, thus the current management area for Atlantic cobia extends from Georgia through New York. The tables presented below include cobia landings and revenues from Georgia through New York, and thus exclude those from Florida. In this way, reported landings and revenues for 2010 through 2014 are consistent with those for 2015 under the new geographic designation of Atlantic cobia.

Three important issues should be recognized regarding the commercial landings data for Atlantic cobia presented in Tables 1 and 2. First, Table 1 shows 2015 landings in landed weight, while Table 2 shows 2010-2015 landings in whole weight. The Atlantic cobia ACL is specified and monitored in terms of landed weight ("as reported"), which is generally a combination of gutted and whole weight. This means landings in gutted weight are not converted to whole weight, or vice-versa, but landings in whole or gutted weight are simply added together to track landings against the ACL. The Atlantic Coastal Cooperative Statistics Program (ACCSP), which is a major data source for cobia (and other Atlantic species) landings, reports commercial landings in whole weight but may be converted to gutted weight using a conversion factor. However, the ACCSP is not currently able to provide landed weight. Second, the 2015 data shown in the tables is preliminary, but a more recent update has been made by the Southeast Fisheries Science Center (SEFSC). The updated 2015 Atlantic cobia commercial landings were 71,790 lbs landed weight (Table 1). This number is lower than that shown in the tables and is also in landed weight, not whole weight. Third, landings prior to 2015 cannot be directly converted to landed weight. However, the commercial ACL (quota) prior to 2015 was monitored in terms of whole weight. Also, commercial quotas were not instituted until 2011.

Table 1. Updated 2015 commercial landings (pounds landed weight [lw]) and revenues (2014 $).

States				
	GA/SC	**NC**	**VA**	**Total**

Pounds (lw)	3,219	42,338	26,233	71,790
Revenues (2014 $)	$28,755	$113,052	$75,394	$217,200

Source: D. Gloeckner (pers. comm., 2016) for 2015 data.

From 2010 through 2015, annual commercial landings of Atlantic cobia ranged from approximately 33,000 to 83,000 lbs ww (Table 2). Dockside revenues from those landings ranged from approximately $79,000 to $233,000 (2014 $) (Table 2). The average dockside price for those six years was $2.43 per lb ww (2014 $). The highest landings and revenues occurred in 2015, whereas the lowest for both landings and revenues occurred in 2011. When the Florida east coast zone was still part of the management area for Atlantic cobia, commercial harvest reached the sector's quota of 125,712 lbs ww in 2014 and closed on December 11, 2014. Under the modified management area, excluding the Florida east coast zone, the quota for Atlantic cobia was revised to 60,000 lbs landed weight (lw) in 2015 and 50,000 lbs lw in 2016 and thereafter. Although landings exceeded the 2015 quota, no quota closure was imposed. Preliminary commercial landings for 2016 are 48,690 lbs lw (SEFSC Quota Monitoring Program; July, 2017). The federal commercial fishery closed on December 6, 2016.

Commercial landings of Atlantic cobia have predominantly come from North Carolina, followed by Virginia and South Carolina/Georgia (Table 2). Georgia and South Carolina landings are combined for confidentiality purposes because of the relatively small amount of cobia landings in Georgia. Cobia landings north of Virginia are relatively rare and sporadic, thus, Virginia is considered the northernmost major contributor to the commercial Atlantic cobia fishery. One notable feature for Virginia is the surge in landings in 2014 and 2015, although they were still lower than landings in North Carolina.

Table 2. Commercial Atlantic cobia landings (lbs ww) and revenues (2014 $) by state/area, 2010-2015 (preliminary). GA landings are very small, so they are combined with those of SC.

	GA/SC	**NC**	**VA**	**Total**
	Pounds (ww)			
2010	3,174	43,737	9,364	56,275
2011	4,610	19,950	9,233	33,793
2012	3,642	32,008	6,309	41,959
2013	4,041	35,496	13,095	52,632
2014	4,180	41,848	23,111	69,139
2015	3,555	52,315	27,277	83,148
Average	3,867	37,559	14,732	56,158
	Dockside Revenues (2014 $)			
2010	$11,377	$70,377	$19,976	$101,730

2011	$19,666	$37,893	$21,666	$79,224
2012	$15,554	$66,887	$14,597	$97,038
2013	$15,639	$79,397	$35,792	$130,828
2014	$13,320	$95,462	$67,972	$176,754
2015	$11,151	$147,160	$75,360	$233,672
Average	$14,451	$82,863	$39,227	$136,541

Source: SEFSC Commercial ACL Dataset (December 2015) for 2010-2014 data; D. Gloeckner (pers. comm., 2016) for 2015 data.

Commercial fishermen harvest cobia using various gear types. Table 3 shows commercial Atlantic cobia landings and revenues by gear type. In Table 3, "Hook and Line" includes handline, longline, power-assisted line, and troll line while "Others" includes traps, other net gear, dredges/gigs/spears, and unclassified gear. Handline has been the foremost gear type used in harvesting cobia for most years (Table 3), followed closely by gillnets. Within the "Others" category, the largest landings were assigned to "unclassified gear." Although not shown in the table, handline accounted for the biggest share of the hook and line landings. Longline has been a minor gear type in the commercial harvest of cobia.

Table 3. Commercial Atlantic cobia landings (lb ww) and revenues (2014$) by gear, 2010-2015 (preliminary).

	Hook and Line	**Gillnets**	**Others**	**Total**
	Pounds (ww)			
2010	26,758	23,495	6,022	56,275
2011	18,322	9,177	6,294	33,793
2012	12,962	21,091	7,906	41,959
2013	28,356	13,343	10,933	52,632
2014	37,082	23,540	8,517	69,139
2015	37,702	36,417	9,030	83,148
Average	26,864	21,177	8,117	56,158
	Dockside Revenues (2014 $)			
2010	$49,095	$38,605	$14,030	$101,730
2011	$39,265	$18,242	$21,717	$79,224
2012	$29,677	$43,875	$23,486	$97,038
2013	$69,433	$30,206	$31,189	$130,828
2014	$99,959	$55,275	$21,520	$176,754

2015	$108,165	$100,130	$25,377	$233,672
Average	$65,932	$47,722	$22,886	$136,541

Source: SEFSC Commercial ACL Dataset (December 2015) for 2010-2014 data; D. Gloeckner (pers. comm., 2016) for 2015 data.

1.3.1.1. State-specific Commercial Fishery

Georgia

There is no directed commercial fishery for cobia in Georgia. Commercial landings may occur but they are typically the result of bycatch in other targeted fisheries. Some illegal sale of recreationally-caught cobia may occur; however, the total amount and value is relatively small. The greatest recorded landings in Georgia (since annual landings became available in 1979) occurred in 1993 when 2,730 pounds of cobia were landed resulting in a market value of $4,728.

South Carolina

There is a limited commercial fishery for cobia in South Carolina. Cobia are a state-designated Gamefish, and as such, cobia landed in state waters may not be sold commercially. However, cobia landed in Federal waters can be sold commercially under current regulations. Commercial cobia landings have ranged from 2,000-4,300 lbs per year with an annual mean of 3,207 lbs per year for 2005-2016 and dollar values ranging from $4,731-$17,795 annually.

North Carolina:

Commercial landings of cobia in North Carolina are available from 1950 to the present. However, monthly landings are not available until 1974. North Carolina instituted mandatory reporting of commercial landings through their Trip Ticket Program, starting in 1994. Landings information collected since 1994 are considered the most reliable. The primary fisheries associated with cobia in North Carolina are the snapper-grouper, coastal pelagic troll, and the large mesh estuarine gill net fisheries. Cobia landings from 1950 – 2016 have ranged from a low of 600 pounds (1951; 1955) to a high of 52,684 pounds (2015) with average landings of 16,611 pounds over the 66-year time series (Table 3). Recently, landings have ranged from 19,004 pounds (2007) to 52,684 pounds (2015), averaging 34,674 pounds over the last ten years.

The primary commercial gear used to harvest cobia has changed over time. This is most likely due to changing fisheries and the fact that it is mostly considered a marketable bycatch fishery, especially after North Carolina adopted the CMP FMP measures of 33-inches minimum FL and two-per person possession limit in 1991. From 1950 to the late 1970s, cobia were mostly landed out of the haul seine fishery. Most landings that occurred during the 1980s came from the pelagic troll and hand line fishery with modest landings from the haul seine and anchored gill net fishery. From 1994-2016, the majority of landings have occurred from the anchored gill net and pelagic troll and hand line fishery with gill nets being the top gear during most of those years.

Virginia

Virginia has had variable commercial landings of cobia since the Virginia Marine Resources Commission instituted mandatory reporting in 1993, with landings being high in the mid-1990s, lower in the mid-2000s, and peaking in the past three years (2014-2016; Appendix II, Table VA1). There is a small, but directed hook-and-line fishery, with mainly bycatch landings from gillnets and pound nets, although these landings can be sizable (Appendix II, Table VA2). The "Other" category is predominantly gillnet landings, but they were combined with other gears for confidentiality purposes. Hook-and-line landings have been the largest, by gear, since 2007.

1.3.2. Recreational Fishery

The recreational sector is comprised of a private component and a for-hire component. The private component includes anglers fishing from shore (including all land-based structures) and private/rental boats. The for-hire component is composed of charter boats and headboats (also called partyboats). Although charter boats tend to be smaller, on average, than headboats, the key distinction between the two types of operations is how the fee is typically determined. On a charter boat trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

1.3.2.1. Permits

A federal charter/headboat (for-hire) vessel permit is required for harvesting CMP species, including cobia, when fishing on for-hire vessels in the South Atlantic and Mid-Atlantic waters. The federal for-hire permit is an open access system. As of May 16, 2016, there were 1,494 valid (non-expired) or renewable Atlantic charter/headboat CMP permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Although the for-hire permit application collects information on the primary method of operation, the resultant permit itself does not identify the permitted vessel as either a headboat or a charter boat and does not restrict operation as either a headboat or charter boat, thus, vessels may operate in both capacities. However, only selected headboats are required to submit harvest and effort information to the National Marine Fisheries Service (NMFS) Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the SEFSC that the vessel primarily operates as a headboat. There were 73 South Atlantic vessels registered in the SRHS as of February 22, 2016 (K. Fitzpatrick, NMFS SEFSC, pers. comm.).

Information on South Atlantic charter boat and headboat operating characteristics, including average fees and net operating revenues, as reported in Holland et al. (2012), and financial and economic impact information on Southeast (FL-NC) for-hire vessels, as reported in Steinback and Brinson (2013), is incorporated herein by reference.

There are no specific federal permitting requirements for recreational anglers to fish for or harvest cobia. Instead, anglers are required to possess either a state recreational fishing permit

that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed FMP.

Recently, the states of North Carolina and Virginia have developed programs to survey recreational cobia fishermen. These programs may provide information in the future that would help characterize the cobia fisheries in these states.

1.3.2.2. Harvest

On average, from 2010 through 2015, the recreational sector landed approximately 793,000 lbs ww of Atlantic cobia (Table 4). North Carolina has been the dominant state in recreational landings of cobia, followed by Virginia, South Carolina, and Georgia. Cobia landings north of Virginia are relatively rare and sporadic, thus, Virginia is considered the northernmost major contributor to the recreational Atlantic cobia fishery. Noticeable in the table is the surge in the recreational landings of cobia for all states in 2015, resulting in 2015 landings that were more than double the recreational ACL. Preliminary landings (1,289,993 lbs ww, GA-VA; Pers. com. National Marine Fisheries Service [NMFS] [July 21, 2017]) indicate that a similar circumstance occurred in 2016.

The private/rental mode has been the most dominant fishing mode for harvesting cobia (Table 5). Headboats have provided the lowest contribution to recreational landings of cobia. Information reported in Table 5 indicates that the 2015 surge in recreational landings can be attributed to substantial landings increases by the charter and private/rental fishing modes. Charter boat landings more than doubled while private/rental mode landings more than tripled in 2015. In the particular case of the South Carolina charter boat sector, increasing landings of cobia caught from offshore waters (greater than 3 miles) partly compensated for the declining landings from estuarine and nearshore waters (0-3 miles) that have occurred since about 2007 (South Carolina Cobia Management Needs PowerPoint Presentation, SC DNR, 2016).

Table 4. Annual recreational landings (lbs ww) of Atlantic cobia, by state, 2010-2015 (preliminary).

	Georgia	**South Carolina**	**North Carolina**	**Virginia**	**Total**
2010	77,064	63,678	559,476	237,528	937,746
2011	88,049	1,554	119,678	137,931	347,213
2012	102,996	222,353	66,645	103,995	495,989
2013	28,427	19,159	492,998	354,463	895,048
2014	19,768	32,010	277,846	214,426	544,050
2015	67,250	124,057	631,024	718,647	1,540,978
Average	63,926	77,135	357,945	294,498	793,504

Source: SEFSC MRIPACLspec_rec81_15wv6_17Mar16.

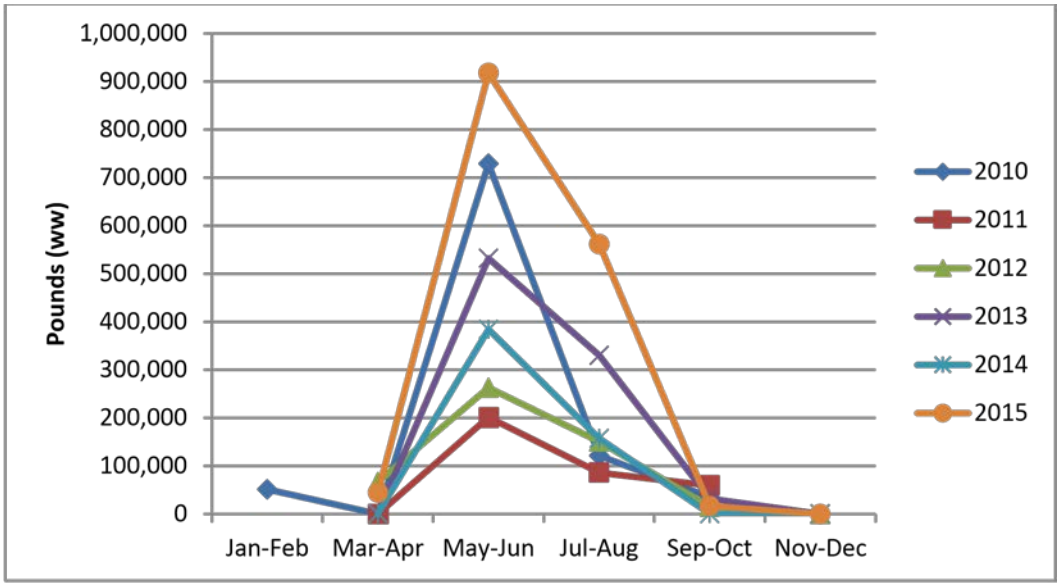
Table 5. Annual recreational landings (lbs ww) of Atlantic cobia, by fishing mode, 2010-2015 (preliminary).

	Charter	Headboat	Private/Rental	Shore	Total
2010	133,110	2,747	789,996	11,893	937,746
2011	23,608	1,886	282,728	38,990	347,213
2012	39,729	1,671	385,777	68,811	495,989
2013	73,623	5,485	815,940	0	895,048
2014	46,528	5,701	453,871	37,950	544,050
2015	102,941	1,741	1,400,338	35,957	1,540,978
Average	69,923	3,205	688,108	32,267	793,504

Source: SEFSC MRIPACLspec_rec81_15wv6_17Mar16.

Peak recreational landings of cobia occurred in the May-June wave each year from 2010 through 2015 (Figure 1). Recreational landings steeply increased from the March-April wave to their peak and also steeply declined after the peak wave. Landings are concentrated around the May-June and July-August waves.

Figure 1. Distribution of Atlantic cobia recreational harvest, by wave, 2010-2015 (preliminary).



Source: SEFSC MRIPACLspec_rec81_15wv6_17Mar16.

1.3.2.3. Effort

Recreational effort derived from the Marine Recreational Statistics Survey/Marine Recreational Information Program (Marine Recreational Fisheries Statistical Survey [MRFSS]/Marine Recreational Information Program [MRIP]) database can be characterized in terms of the number of trips as follows:

Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or second primary target for the trip. The species did not have to be caught.

Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.

Total recreational trips - The total estimated number of recreational trips in the Atlantic, regardless of target intent or catch success.

Other measures of effort are possible, such as the number of harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), but the three measures of effort listed above are used in this assessment.

Estimates of annual Atlantic cobia effort (in terms of individual angler trips) for 2010-2015 are provided in Table 6 for target trips and Table 7 for catch trips. Target and catch trips are shown by fishing mode (charter, private/rental, shore) for Georgia, South Carolina, North Carolina, and Virginia. These are trips for cobia in state or federal waters off of these states. Estimates of

cobia target and catch trips for additional years, and other measures of directed effort, are available at http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-dataquery/queries/index.

Cobia is one of the few species where target trips generally exceed catch trips. The 2010-2015 average target trips were 4,519 for the charter mode, 130,360 for the private/rental mode, and 28,293 for the shore mode (Table 6). In contrast, the average catch trips were 3,114 for the charter mode, 33,329 for the private/rental mode, and 6,840 for the shore mode (Table 7). This is suggestive of a relatively strong interest in fishing for cobia among recreational anglers across all fishing modes. For each state, the private/rental mode has been the most dominant fishing mode both in target and catch effort.

Table 6. Target trips for Atlantic cobia, by fishing mode and state, 2010-2015 (preliminary).

Year	Charter				
	Georgia	S. Carolina	N. Carolina	Virginia	Total
2010	0	3,349	3,029	358	6,736
2011	22	2,940	1,416	525	4,903
2012	0	1,025	345	156	1,526
2013	160	0	2,446	24	2,630
2014	0	1,452	1,703	295	3,450
2015	792	1,290	2,765	3,022	7,869
Average	162	1,676	1,951	730	4,519
	Private/Rental				
2010	5,453	14,228	49,358	67,730	136,769
2011	4,030	24,554	26,400	49,180	104,164
2012	2,495	57,543	23,320	37,706	121,064
2013	12,235	22,373	50,883	53,981	139,472
2014	1,322	23,365	50,112	49,075	123,874
2015	12,236	9,684	58,658	76,241	156,819
Average	6,295	25,291	43,122	55,652	130,360
	Shore				
2010	0	2,030	14,950	9,838	26,818
2011	0	0	10,090	2,366	12,456
2012	0	914	12,444	14,939	28,297
2013	0	627	15,977	5,693	22,297
2014	0	2,395	17,085	18,565	38,045

2015	0	363	21,925	19,554	41,842
Average	0	1,055	15,412	11,826	28,293

Source: http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.

Table 7. Catch trips for Atlantic cobia, by fishing mode and state, 2010-2015 (preliminary).

Year	Charter				
	Georgia	South Car.	North Car.	Virginia	Total
2010	97	1,301	4,398	237	6,033
2011	400	0	1,655	135	2,190
2012	140	372	472	156	1,140
2013	160	48	2,798	24	3,030
2014	55	110	1,559	72	1,796
2015	0	879	2,652	963	4,494
Average	142	452	2,256	265	3,114
	Private/Rental				
2010	3,320	2,939	18,433	13,600	38,292
2011	4,145	606	8,156	9,291	22,198
2012	3,296	5,134	4,869	6,658	19,957
2013	1,157	3,699	21,047	14,256	40,159
2014	1,436	2,957	10,561	14,803	29,757
2015	2,351	4,396	18,740	24,121	49,608
Average	2,618	3,289	13,634	13,788	33,329
	Shore				
2010	0	0	6,192	0	6,192
2011	0	0	6,528	0	6,528

2012	0	0	7,983	2,055	10,038
2013	0	0	2,673	0	2,673
2014	0	3,268	6,128	0	9,396
2015	0	2,697	3,514	0	6,211
Average	0	994	5,503	343	6,840

Source: http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.

Headboat data in the Southeast do not support the estimation of target or catch effort because target intent is not collected and the harvest data (the data reflects only harvest information and not total catch) are collected on a vessel basis and not by individual angler. **Table 8** contains estimates of the number of headboat angler days for the South Atlantic states for 2010-2015. Georgia and South Carolina data are combined for confidentiality purposes. Virginia information was not available because only South Atlantic headboats are included in the SRHS.

Table 8. South Atlantic headboat angler days, by state, 2010-2015.

Year	GA/SC	NC	TOTAL
2010	46,908	21,071	67,979
2011	46,210	18,457	64,667
2012	42,064	20,766	62,830
2013	42,853	20,547	63,400
2014	44,092	22,691	66,783
2015	41,479	22,716	64,195
Average	43,934	21,041	64,976

Source: NMFS Southeast Region Headboat Survey (SRHS).

1.3.2.4. State Specific Recreational Fisheries

Georgia

A large recreational fishery exists for cobia in Georgia. The majority of this fishery occurs in nearshore waters around natural and artificial reefs. While there are some instances of cobia being caught inshore and on beach front piers in Georgia, most landings come from outside state waters. Anglers begin targeting cobia in late April-early May with the peak of the season typically occurring in June. Late season catches often occur on nearshore reefs through October

depending on water temperatures. However, these fall runs of fish are sporadic and are often missed by anglers.

South Carolina

The recreational fishery accounts for the majority of cobia landings in South Carolina. The fishery occurs in both nearshore waters and around natural and artificial reefs offshore. Historically, the majority of cobia landings have occurred in state waters in and around spawning aggregations from April through May. However, due to intense fishing pressure in the inshore zone, annual landings of cobia have fallen drastically since 2009, such that the majority of recreationally caught cobia in South Carolina now come from offshore (federal) waters. Anglers begin targeting cobia in late April-early May with the peak of the season typically occurring May into early June. Late season catches can occur on nearshore reefs through October depending on water temperatures. However, these fall catches are sporadic. South Carolina has accounted for an average of 1.3% of total landings in state jurisdictional waters along the Atlantic coast for 2010-2016.

North Carolina

Historically, recreational fisherman targeted cobia from a vessel by anchoring and fishing with dead, live, or a mixture of both bait types near inlets and deep water sloughs inshore (Manooch 1984). Fish were also harvested from shore or off of piers using dead or live bait, most commonly menhaden. In the early 2000s, fisherman began outfitting their vessels with towers to gain a higher vantage point to spot and target free swimming cobia along tidelines and around bait aggregations. This method of fishing actively targets cobia in the nearshore coastal zone and has become the primary mode of fishing in most parts of the state.

Recreational harvests of cobia in North Carolina from 1981-2016 have ranged from a low of 0 pounds (1983) to a high of 631,024 pounds (2015). Landings during the 1980s and 1990s remained relatively constant from year to year. Landings began to increase and become more variable beginning in the mid-2000s. From 2010-2015, recreational cobia landings in North Carolina ranged from 66,645 to 631,024 pounds (avg. = 357,945 pounds). Seasonally, cobia are landed mostly in the spring and summer months corresponding with their spring spawning migration (Smith 1995). Peak landings occur during the latter part of May into June and quickly diminish thereafter. However, recreational landings of cobia can occur through the month of October. By fishing mode, the majority of recreational landings of cobia in North Carolina occur form private vessels (73 %) with charter vessels (14 %) and shore based modes (13 %) accounting for the rest.

Virginia

According to the MRFSS/MRIP, Virginia's estimated recreational landings of cobia have been highly variable since 2000, with the lowest estimate being 26,537 pounds in 2012 and the highest being 898,542 pounds in 2006 (Appendix II, Table VA3). Although still preliminary, the estimate for 2016 is 919,992 pounds. It is believed the recreational fishery has grown in recent years, both in the number of participants, and the effectiveness of fishing due to the advent of

sight-casting— especially when aided by “cobia towers.” Traditionally, cobia had been targeted using live-bait bottom-fishing, but these new techniques are causing a shift in preference among anglers. However, the extent of this change is not clear for Virginia’s recreational fishery.

1.3.3. Subsistence Fishery

There is no known subsistence fishery for cobia.

1.3.4. Non-Consumptive Factors

No non-consumptive factors were identified that were of significance to the cobia resource.

1.3.5. Interactions with Other Fisheries, Species, or Users

The recreational cobia fishery tends to be a targeted fishery. Various small and large coastal sharks and various ray species are the most common bycatch. Cobia are encountered as bycatch in the troll and live bait fisheries for king and Spanish mackerel, dolphin, and other pelagic species. Additionally, cobia are taken incidental to offshore bottom fishing activities for snapper/grouper species.

The commercial cobia fishery is primarily bycatch in the same troll fisheries and taken incidental to snapper/grouper fisheries. Some directed harvest does occur; however, low limits preclude a large scale fishery.

1.4. HABITAT CONSIDERATIONS

1.4.1. Habitat Important to the Stocks

1.4.1.1. Description of the Habitat

1.4.1.1.1. Spawning Habitat

The SAFMC has management jurisdiction of the federal waters (3-200 nautical miles) offshore of North Carolina, South Carolina, Georgia, and Florida. Under the CMP FMP, the SAFMC manages Atlantic cobia through the Mid-Atlantic region (VA-NY).

Cobia spawn in nearshore waters along the South Atlantic coast from April through June. Nearby states (South Carolina) have documented the presence of inshore spawning aggregations of cobia (Lefebvre and Denson, 2012). However, there have been no such aggregations identified in Georgia. Eggs and larvae are typically found in nearshore waters and juveniles most often occur inshore or in protected nearshore waters.

Cobia enter nearshore waters along the south Atlantic Coast when water temperatures reach 20-21 °C, usually late April and aggregate to spawn through June. Histological evaluation of

gonads from these nearshore collections suggest cobia are mature and spawning in inshore waters of high salinity estuaries (Callibogue, Port Royal Sound and St. Helena Sound in SC)(Lefebvre and Denson, 2012). The inshore spawning aggregations in South Carolina have been determined to be genetically distinct from the Atlantic stock of cobia (Darden et al. 2014). These findings are corroborated by conventional tag-recapture information and show estuarine fidelity for spawning fish and natal homing annually into estuaries. Eggs and larvae are typically found in nearshore waters where there is significant retention time of estuarine waters; however, juveniles (< 2yrs of age) are only occasionally caught inshore or in protected nearshore waters making it unclear what habitat the majority of this life stage utilizes until they mature and join spawning aggregations (Lefebvre and Denson, 2012).

1.4.1.1.2. Larval Habitat

Little is known about the larval stages of cobia. Larvae have been collected in pelagic waters of the Gulf of Mexico (65-134 m isobaths), within a meter of the water column (Ditty and Shaw 1992).

1.4.1.1.3. Juvenile Habitat

Juveniles, like larvae, have also been found in pelagic waters of the Gulf of Mexico, and are believed to utilize floating *Sargassum* as habitat in such areas (Ditty and Shaw 1992). Early juveniles then move to high-salinity, inshore areas along beaches, river mouths, barrier islands, and bays/inlets (Benson 1982, Hoese and Moore 1977, McClane 1974, Swingle 1971).

1.4.1.1.4. Adult Habitat

Adults enter estuaries on a seasonal basis but otherwise inhabit coastal waters and the continental shelf (Benson 1982, Collette 1978, Robins and Ray 1986). Although generally considered pelagic, adult cobia are found at various depths throughout the water column (Freeman and Walford 1976). They do not appear to be substratum-specific, but extensive tagging research is currently being conducted by various states along the U.S. Atlantic coast to better determine movement and habitat usage.

1.4.1.1.4.1. South Atlantic Region

The continental shelf off the southeastern U.S., extending from the Dry Tortugas, FL, to Cape Hatteras, NC, encompasses an area in excess of 100,000 square km (Menzel 1993). Based on physical oceanography and geomorphology, this environment can be divided into two regions: Dry Tortugas, FL, to Cape Canaveral, FL, and Cape Canaveral, FL, to Cape Hatteras, NC. The continental shelf from the Dry Tortugas, FL, to Miami, FL, is approximately 25 km wide and narrows to approximately 5 km off Palm Beach, FL. The shelf then broadens to approximately 120 km off Georgia and South Carolina before narrowing to 30 km off Cape Hatteras, NC. The Florida Current/Gulf Stream flows along the shelf edge throughout the region. In the southern region, this boundary current dominates the physics of the entire shelf (Lee et al. 1994).

In the northern region, additional physical processes are important and the shelf environment can be subdivided into three oceanographic zones (Atkinson et al. 1985, Menzel 1993), the outer shelf, mid-shelf, and inner shelf. The outer shelf (40-75 meters (m)) is influenced primarily by the Gulf Stream and secondarily by winds and tides. On the mid-shelf (20-40 m), the water column is almost equally affected by the Gulf Stream, winds, and tides. Inner shelf waters (0-20 m) are influenced by freshwater runoff, winds, tides, and bottom friction. Water masses present from the Dry Tortugas, FL, to Cape Canaveral, FL, include Florida Current water, waters originating in Florida Bay, and shelf water.

Spatial and temporal variation in the position of the western boundary current has dramatic effects on water column habitats. Variation in the path of the Florida Current near the Dry Tortugas induces formation of the Tortugas Gyre (Lee et al. 1992, 1994). This cyclonic eddy has horizontal dimensions of approximately 100 km and may persist near the Florida Keys for several months. The Pourtales Gyre, which has been found to the east, is formed when the Tortugas Gyres moves eastward along the shelf. Upwelling occurs in the center of these gyres, thereby adding nutrients to the near surface (<100 m) water column. Wind and input of Florida Bay water also influence the water column structure on the shelf off the Florida Keys (Smith 1994, Wang et al. 1994). Further downstream, the Gulf Stream encounters the "Charleston Bump", a topographic rise on the upper Blake Ridge where the current is often deflected offshore resulting in the formation of a cold, quasi-permanent cyclonic gyre and associated upwelling (Brooks and Bane 1978). On the continental shelf, offshore projecting shoals at Cape Fear, Cape Lookout, and Cape Hatteras, NC, affect longshore coastal currents and interact with Gulf Stream intrusions to produce local upwelling (Blanton et al. 1981, Janowitz and Pietrafesa 1982). Shoreward of the Gulf Stream, seasonal horizontal temperature and salinity gradients define the mid-shelf and inner-shelf fronts. In coastal waters, river discharge and estuarine tidal plumes contribute to the water column structure.

The water column from Dry Tortugas, FL, to Cape Hatteras, NC, serves as habitat for many marine fish and shellfish. Most marine fish and shellfish release pelagic eggs when spawning and thus, most species utilize the water column during some portion of their early life history (Leis 1991, Yeung and McGowan 1991). Many fish inhabit the water column as adults. Pelagic fishes include numerous clupeoids, flying fish, jacks, cobia, bluefish, dolphin, barracuda, and the mackerels (Schwartz 1989). Some pelagic species are associated with particular benthic habitats, while other species are truly pelagic.

1.4.1.1.4.2. Mid-Atlantic Region

Information about the physical environment of the Mid-Atlantic region was provided by the Mid-Atlantic Fishery Management Council (MAFMC) and adapted from the 2016 Mackerel, Squid, and Butterfish Specifications Environmental Assessment, available at: http://www.greateratlantic.fisheries.noaa.gov/regs/2016/January/16msb2016specspr.html.

Climate, physiographic, and hydrographic differences separate the Atlantic Ocean from Maine to Florida into the New England-Middle Atlantic Area and the South Atlantic Area (division/mixing at Cape Hatteras, NC). The inshore New England-Middle Atlantic area is fairly uniform physically and is influenced by many large coastal rivers and estuarine areas. The continental shelf (characterized by water less than 650 ft. in depth) extends seaward approximately 120 miles off Cape Cod, narrows gradually to 70 miles off New Jersey, and is 20 miles wide at Cape Hatteras. Surface circulation is generally southwesterly on the continental shelf during all seasons of the year, although this may be interrupted by coastal indrafting and some reversal of flow at the northern and southern extremities of the area. Water temperatures range from less than 33^{o}F from the New York Bight north in the winter to over 80^{o}F off Cape Hatteras in summer.

Within the New England-Middle Atlantic Area, the Northeast U.S. Continental Shelf Large Marine Ecosystem includes the area from the Gulf of Maine to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The Northeast U.S. Continental Shelf Large Marine Ecosystem is a dynamic, highly productive, and intensively studied system providing a broad spectrum of ecosystem goods and services. This region, encompassing the continental shelf area between Cape Hatteras and the Gulf of Maine, spans approximately 250,000 km^2 and supports some of the highest revenue fisheries in the U.S. The system historically underwent profound changes due to very heavy exploitation by distant-water and domestic fishing fleets. Further, the region is experiencing changes in climate and physical forcing that have contributed to large-scale alteration in ecosystem structure and function. Projections indicate continued future climate change related to both short and medium-term cyclic trends as well as non-cyclic climate change.

A number of distinct subsystems comprise the region. The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and fast-moving currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. Detailed information on the affected physical and biological environments inhabited by the managed resources is available in Stevenson et al. (2006).

1.4.2. Identification and Distribution of Habitat and Habitat Areas of Particular Concern

Habitat information for Atlantic cobia is sparse. Few, if any, fishery independent surveys consistently interact with cobia in numbers adequate to develop any trends or conclusions. Much of the habitat data presented is generic for the coastal migratory pelagic fishes that include king and Spanish mackerel. Species-specific habitat information is a data and research need.

A description of the Habitat Areas of Particular Concern (HAPC) for CMP species is provided in Amendment 18 to the CMP FMP (GMFMC/ SAFMC 2011), and is incorporated herein by reference. Areas which meet the criteria for HAPCs include sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten- Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada (Florida); The Marathon Hump off Marathon (Florida); The "Wall" off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the Estuarine Living Marine Resources Program. Estuaries meeting this criteria for Spanish mackerel include Bogue Sound and New River (North Carolina), for cobia, Broad River (South Carolina).

1.4.2.1. Essential Fish Habitat for Coastal Migratory Pelagics

A description of the Essential Fish Habitat (EFH) for CMP species is provided in Amendment 18 to the CMP FMP (GMFMC and SAFMC 2011), and is incorporated herein by reference. EFH for CMPs include coastal estuaries from the U.S./Mexico border to the boundary between the areas covered by the GMFMC and SAFMC from estuarine waters out to depths of 100 fathoms (GMFMC 2004). In the South Atlantic, EFH for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf Stream shoreward, including *Sargassum*. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all primary nursery areas and all secondary nursery areas).

For cobia, EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an EFH because it provides a mechanism to disperse CMP larvae. For king and Spanish mackerel and cobia, EFH occurs in the South Atlantic and Mid-Atlantic Bights.

1.4.3. Present Condition of Habitats and Habitat Areas of Particular Concern

1.4.3.1. Coastal Spawning Habitat: Condition and Threats Coastal Spawning

It is reasonable to assume that areas where coastal development is taking place rapidly, habitat quality may be compromised. Coastal development is a continuous process in all states and all coastal areas in the nation are experiencing significant growth. The following section describes particular threats to the nearshore habitats in the South Atlantic that meet the characteristics of suitable spawning habitat for cobia.

One threat to the spawning habitat for cobia is navigation and related activities such as dredging and hazards associated with ports and marinas (ASMFC, 2013). According to the SAFMC (1998), impacts from navigation related activities on habitat include direct

removal/burial of organisms from dredging and disposal of dredged material, effects due to turbidity and siltation; release of contaminants and uptake of nutrients, metals, and organics; release of oxygen-consuming substances, noise disturbance, and alteration of the hydrodynamic regime and physical characteristics of the habitat. All of these impacts have the potential to substantially decrease the quality and extent of cobia spawning habitat.

Besides creating the need for dredging operations that directly and indirectly affect spawning habitat for cobia, ports also present the potential for spills of hazardous materials. The cargo that arrives and departs from ports includes highly toxic chemicals and petroleum products. Although spills are rare, constant concern exists since huge expanses of productive estuarine and nearshore habitat are at stake. Additional concerns related to navigation and port utilization are discharge of marine debris, garbage, and organic waste into coastal waters.

Maintenance and stabilization of coastal inlets is of concern in certain areas of the southeastern U.S. Studies have implicated jetty construction to alterations in hydrodynamic regimes, thus, affecting the transport of estuarine-dependent organisms' larvae through inlets (Miller *et al*. 1984, Miller 1988).

1.4.3.2. Estuarine Nursery, Juvenile and Subadult Habitat: Condition and threats

Coastal wetlands and their adjacent estuarine waters likely constitute primary nursery, juvenile, and sub-adult habitat for cobia along the coast. Between 1986 and 1997, estuarine and marine wetlands nationwide experienced an estimated net loss of 10,400 acres. However, the rate of loss was reduced over 82% since the previous decade (Dahl 2000). Most of the wetland loss resulted from urban and rural activities and the conversion of wetlands for other uses. Along the southeast Atlantic coast, the state of Florida experienced the greatest loss of coastal wetlands due to urban or rural development (Dahl 2000). However, the loss of estuarine wetlands in the southeast has been relatively low over the past decade, although there is some evidence that invasion by exotic species, such as Brazilian pepper (*Schinus terebinthifolius*), in some areas could pose potential threats to fish and wildlife populations in the future (T. Dahl, pers. comm.).

Throughout the coast, the condition of estuarine habitat varies according to location and the level of urbanization. In general, it can be expected that estuarine habitat adjacent to highly developed areas will exhibit poorer environmental quality than more distant areas. Hence, environmental quality concerns are best summarized on a watershed level.

Threats to estuarine habitats of the southeast were described in Amendment 2 to the Red Drum FMP (ASMFC 2002). Due to the cobia's similar dependence on estuarine habitats throughout its early life history, these same threats are likely to impact cobia as well.

Nutrient enrichment of estuarine waters throughout the southeast is a major threat to the quality of estuarine habitat. Forestry practices contribute significantly to nutrient enrichment in the southeast. Areas involved are extensive and many are in proximity to estuaries. Urban and

suburban developments are perhaps the most immediate threat to cobia habitat in the southeast. The almost continuous expansion of ports and marinas in the South Atlantic poses a threat to aquatic and upland habitats. Certain navigation-related activities are not as conspicuous as port terminal construction but have the potential to significantly impact the estuarine habitat upon which cobia depend. Activities related to watercraft operation and support pose numerous threats including discharge of pollutants from boats and runoff from impervious surfaces, contaminants generated in the course of boat maintenance, intensification of existing poor water quality conditions, and the alteration or destruction of wetlands, shellfish and other bottom communities for the construction of marinas and other related infrastructure.

Estuarine habitats of the southeast can be negatively impacted by hydrologic modifications. The latter include activities related to aquaculture, mosquito control, wildlife management, flood control, agriculture and silviculture. Also, ditching, diking, draining, and impounding activities associated with industrial, urban, and suburban development qualify as hydrologic modifications that may impact the estuarine habitat. Alteration of freshwater flows into estuarine areas may change temperature, salinity, and nutrient regimes as well as alter wetland coverage. Studies have demonstrated that changes in salinity and temperature can have profound effects in estuarine fishes (Serafy *et al*. 1997) and that salinity partly dictates the distribution and abundance of estuarine organisms (Holland *et al*. 1996). Cobia may be similarly susceptible to such changes in the physical regime of their environment.

1.4.3.3. Adult Habitat: Condition and Threats

Threats to the cobia's adult habitat are not as numerous as those faced by postlarvae, juveniles, and subadults in the estuary and coastal waters. Current threats to the nearshore and offshore habitats that adult cobia utilize in the South Atlantic include navigation and related activities, dumping of dredged material, mining for sand and minerals, oil and gas exploration, offshore wind facilities, and commercial and industrial activities (SAFMC 1998).

An immediate threat is the sand mining for beach nourishment projects. Associated threats include burial of bottoms near the mine site or near disposal sites, release of contaminants directly or indirectly associated with mining (i.e. mining equipment and materials), increases in turbidity to harmful levels, and hydrologic alterations that could result in diminished desirable habitat.

Offshore mining for minerals may pose a threat to cobia habitat in the future. Currently, no mineral mining activities are taking place in the South Atlantic. However, various proposals to open additional areas off the Atlantic coast to seabed mining have been introduced by the Federal Executive and Legislative branches.

Offshore wind farms may also pose a threat to cobia habitat throughout different life stages in the future (ASMFC 2012). Currently, no offshore wind farms are established in the United States. However, the Atlantic coast is a potential candidate for future wind farm sites.

1.5. IMPACTS OF THE FISHERY MANAGEMENT

1.5.1. Biological and Environmental Impacts

Significant recreational fishery overages of the ACL in 2015 and 2016 raise concerns over the future status of the stock and potential of the stock becoming overfished. Adoption of coastwide management measures can provide flexibility to states while maintaining harvest within the ACL and protecting a portion of the spawning stock. Limits on catch can provide additional protection throughout cobia's geographic range to support a sustained population and fishery.

1.5.2. Social Impacts

Information on fishermen, fishing-dependent businesses, or communities that depend on the cobia fisheries Is available in CMP Amendment Framework 4 (SAFMC 2016). In order to understand the impact that any new rules and regulations may have on participants in any fishery, in-depth community profiles need to be developed that will aid in the description of communities involved, both present and historical. Limited social science research has been conducted in communities in the U.S. South Atlantic, and adequate descriptions of the potential effects on communities are not available at this time.

While not an in-depth ethnographic study, a project employing rapid assessment was completed to document the location, type, and history of fishing communities in the South Atlantic region. SAFMC staff worked collaboratively with the University of Florida to describe fishing communities in a broad manner (for example, whether the community is characterized mostly by commercial fishing, for-hire, recreational or some combination of all sectors), and link on-the-ground fieldwork with the collection of as much secondary data as possible. The secondary data included U.S. Census records, landings, permits, and state information. All of this information is used to form a baseline dataset to assist in the measurement of social and economic impacts (Jepson et al. 2006).

1.5.2.1. Recreational Fishery

The recreational sector of the cobia fishery is much larger than the commercial sector, and cobia is an important species for recreational anglers and the for-hire sector. Landings estimates indicate that the private recreational sector is the dominant component of the cobia recreational fishery (Table 5), and most landings are associated with Virginia and North Carolina (Table 4).

Implementation of the cobia FMP is expected to impact the recreational sector. Specifically it is likely that social impacts would be most significant for recreational fishermen and for-hire businesses in Virginia and North Carolina. However, the FMP will also allow management to maintain stock health and recreational participation, in addition to consistency in regulations among states.

1.5.2.2. Commercial Fishery

The commercial sector has operated primarily as a bycatch fishery for decades. The current ACL for the commercial fishery is 50,000 pounds from Georgia-New York. Current measures and those proposed in this document essentially maintain status quo for the commercial fishery. In accordance with federal policy, should the coastwide ACL be met, a closure would occur. Depending on the timing of any closure, social impacts would vary.

1.5.3. Other Resource Management Efforts

1.5.3.1. Artificial Reef Development/Management

Approximately 120,000 acres (155 nm^2) of ocean and estuarine bottom along the south Atlantic coast have been permitted for the development of artificial reefs (ASMFC 2002). The Georgia Department of Natural Resources is responsible for the development and maintenance of a network of man-made reefs both in estuarine waters and in the open Atlantic Ocean. Funding for the artificial reef program is provided by Federal Aid in Sport Fish Restoration, fishing license revenues, and private contributions. To date, there are 15 reefs within the estuary proper, which are constructed of a variety of materials including concrete rubble, metal cages, and manufactured reef units. These provide habitat for juvenile cobia and other species of recreationally important fishes. In 2001, three "beach" reefs were constructed in locations within Georgia's territorial waters just off the barrier island beaches. These are experimental in nature, but should provide some habitat for juvenile and adult cobia. There are 19 man-made reefs in the U.S. Exclusive Economic Zone (EEZ) ranging from depths of 40 to 130 feet. These reefs are constructed of a variety of materials including surplus vessels, concrete rubble, barges, bridge spans, and manufactured reef units. Both juvenile and adult cobia are known to use these reefs.

The Florida Fish and Wildlife Conservation Commission's (FWC) Division of Marine Fisheries Management administers a state artificial reef program that provides financial and technical assistance to coastal local governments, nonprofit corporations and state universities to develop artificial reefs and to monitor and evaluate these reefs. To date, there are 919 artificial reefs located in the Atlantic off Florida with 38 of these reefs being located within estuarine waters. The estuarine reefs are located in two Florida counties one being Dade County which has 32 and Palm Beach County which has six. Artificial habitats off Florida range in depth from six feet to 420 feet of water and consist of a variety of materials, i.e., concrete culverts, bridge spans, barges, and decommissioned military ships such as the ex-U.S.S. Hoyt Vandenberg which

has become a very popular dive destination. Oyster shells are also used to create artificial habitat in Florida waters, but the FWC does not keep track of these reefs. These artificial habitats should provide habitat for juvenile and adult cobia off Florida's Atlantic coast.

New Jersey has also developed and invested in an artificial reef program, with the state agency involved since 1984. Similarly, Delaware has invested in an artificial reef program, with 14 reef sites within Delaware Bay. Artificial reef construction is especially important in the Mid-Atlantic region, where near shore bottom is usually featureless sand or mud.

States should continue support for habitat restoration projects, including oyster shell recycling and oyster hatchery programs as well as seagrass restoration, to provide areas of enhanced or restored bottom habitat.

1.5.3.2. Bycatch

Cobia are uncommon bycatch components in most U.S. South and Mid-Atlantic fisheries. Mortalities resulting from cobia released from varying depths in the hook and line fisheries and regulatory discards from the large mesh gill fisheries in North Carolina are unknown.

1.6. LOCATION OF TECHNICAL DOCUMENTATION FOR FMP

1.6.1. Review of Resource Life History and Biological Relationships

The PDT has compiled available life history data on cobia, much of which is contained in this document. Readers may review the documents developed for the Coastal Migratory Pelagics FMP by the SAFMC for historical perspective (SAFMC 2016).

1.6.2. Stock Assessment Document

The most recent cobia stock assessment (SEDAR 28) was completed in 2013. The stock assessment utilized the Beaufort Assessment Model with data through 2011 (SEDAR 2013). An updated stock assessment and review of stock structure information from genetic and tagging studies is scheduled for completion in 2019.

1.6.3. Economic Assessment Document

No economic assessment has been performed.

1.6.4. Law Enforcement Assessment Document

ASMFC's Law Enforcement Committee has prepared a document titled "Guidelines for Resource Managers on the Enforceability of Fishery Management Measures' (July 2009), which can be used to evaluate the effectiveness of future measures.

2. GOALS AND OBJECTIVES

2.1. HISTORY AND PURPOSE OF THE PLAN

2.1.1. History of Prior Management Actions

No interstate fisheries management program currently exists for Atlantic cobia. At present, four states have implemented harvest regulations for cobia (Table 9).

Table 9. 2017 State Recreational Regulations for Atlantic Cobia.

State	Size Limit	Bag Limit	Vessel Limit	Season	Notes
Georgia					
South Carolina	33” FL	1	3 south of Jeremy Inlet, 2 all other areas	See notes	May closure south of Jeremy Inlet
North Carolina	36” FL	1	4	May 1 – September 1	
Virginia	40” TL	1	3	June 1 – September 15	1 fish > 50” TL, No gaffing
Maryland	none	none	none	none	
Delaware	none	none	none	none	Implement federal regulations
New Jersey	37” TL	2	none	none	
New York	37” TL	2	none	none	

Commercial regulations are consistent throughout the management unit with a 33 inch FL minimum size limit (Virginia employs a 37 inch TL size limit) and 2 fish per license holder, with up to 6 fish allowed per trip, whichever is more restrictive. The one exception is Virginia, which has no vessel limit for all gears other than hook-and-line. Commercial hook-and-line licensees are allowed 6 fish per trip regardless of the number of license holders on board.

2.1.2. Purpose and Need for Action

Currently there is no interstate management for cobia, but four main reasons have been identified as to why/how interstate management would benefit the fishery:

1) A majority of the coastwide catch occurs in state waters;

2) Need to maintain catches within the federal ACL;

3) Lack of consistent regulations and goals;

4) An Interstate FMP establishes a framework to provide greater flexibility to states and address future concerns or changes in the fishery or population.

2.2. GOAL

The goal of the Cobia FMP shall be to provide for an efficient management structure to implement coastwide management measures in a timely manner.

2.3. OBJECTIVES

1) Provide a flexible management system to address future changes in resource abundance, scientific information, and fishing patterns among user groups or area.

2) Promote cooperative collection of biological, economic, and social data required to effectively monitor and assess the status of the cobia resource and evaluate management efforts.

3) Manage the cobia fishery to protect both young individuals and established breeding stock.

4) Develop research priorities that will further refine the cobia management program to maximize the biological, social, and economic benefits derived from the cobia population.

2.4. SPECIFICATION OF MANAGEMENT UNIT

The proposed management unit is defined as the cobia (*Rachycentron canadum*) resource from Georgia through New York within U.S. waters of the northwest Atlantic Ocean, from the U.S. Atlantic coastal estuaries eastward to the offshore boundaries of the EEZ. The selection of this management unit is based on genetic analysis and tag-recapture data described in this document.

2.4.1. Management Areas

The proposed management area is the Atlantic coast distribution of the resource from Georgia through New York.

2.5. DEFINITION OF OVERFISHING

The federal The CMP FMP, as amended, specifies that overfishing is occurring when fishing mortality (F) exceeds the maximum fishing mortality threshold (MFMT), which is based on 30% Static Spawning Potential Ratio (SPR). This is determined only through a stock assessment.

Amendment 18 (GMFMC/SAFMC 2014) specified that because there was no Overfishing Level (OFL) recommendation available at that time, overfishing was defined as landings exceeding the ACL. The Councils specified that OFL would be revisited after the stock assessment (SEDAR 28) was complete. Following completion of SEDAR 28, the SAFMC's SSC recommended an OFL based on the stock assessment.

2.6. STOCK REBUILDING PROGRAM

The NMFS lists the status of the cobia population as not overfished and that overfishing is not occurring; therefore, a stock rebuilding program is not required.

3. MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

Upon approval of the FMP, the South Atlantic Species Advisory Panel (AP) will meet as necessary to review stock assessments for cobia (when available) and all other relevant data pertaining to stock status. Based on this information, the AP will prepare and submit a report of recommendations to the Management Board.

The Cobia Technical Committee (TC) will meet annually, or as necessary, to review state management program changes, developments in the fishery, or other changes or challenges in the fishery.

The Cobia Stock Assessment Subcommittee (SAS), in cooperation with the SAFMC SSC, will generally meet every five years to review and update or perform a benchmark stock assessment on Atlantic cobia. This schedule may be modified as needed to incorporate new information and consideration of the Atlantic cobia stock. A new cobia stock assessment through the SEDAR process is scheduled for completion in 2019.

The Cobia Plan Review Team (PRT) will annually review implementation of the management plan and any subsequent adjustments (addenda), and report to the Management Board on any compliance issues that may arise. The PRT will also prepare the annual Cobia FMP Review and coordinate the annual update and prioritization of research needs (see Section 6.2).

3.1. ASSESSMENT OF ANNUAL RECRUITMENT

No programs currently collect data necessary to assess annual recruitment of cobia.

The FMP recommends examination of possible surveys from which Atlantic cobia abundance indices could be developed. These indices would be valuable for informing future stock assessments.

3.2. ASSESSMENT OF SPAWNING STOCK BIOMASS

SEDAR 28 (2013) provides the most current information on spawning stock biomass. While the stock is not currently considered overfished, the 2013 stock assessment does indicate declines

in biomass over the last few years of the assessment (terminal year: 2010). New information should be revealed by the stock assessment scheduled for completion in 2019.

3.3. ASSESSMENT OF FISHING MORTALITY TARGET AND MEASUREMENT

SEDAR 28 (2013) provides the most current information on fishing mortality. The stock is not currently considered to be undergoing overfishing. While no definition currently exists for overfishing the cobia resource, recent overages of the ACL raises concerns. New information should be revealed by the stock assessment scheduled for completion in 2019.

3.4. SUMMARY OF MONITORING PROGRAMS

The proposed FMP includes no requirements regarding fishery-dependent monitoring programs, but all state fishery management agencies are encouraged to pursue full implementation of the standards of the Atlantic Coastal Cooperative Statistics Program (ACCSP). The Management Board recommends a transitional or phased-in approach be adopted to allow for full implementation of the ACCSP standards. Until the ACCSP standards are implemented, the Management Board encourages state fishery management agencies to initiate implementation of specific ACCSP modules and/or pursue pilot and evaluation studies to assist in development of reporting programs to meet the ACCSP standards. The ACCSP partners are the 15 Atlantic coast states from Maine through Florida, the District of Columbia, the Potomac River Fisheries Commission, NOAA Fisheries, the U.S. Fish and Wildlife Service, the three federal Fishery Management Councils, and the Atlantic States Marine Fisheries Commission. Participation by program partners in the ACCSP does not relieve states from their responsibilities in collating and submitting harvest/monitoring reports to the Commission as required under the proposed FMP.

3.4.1. Catch, Landings, and Effort Information

3.4.1.1. Commercial Catch and Effort Data

The ACCSP's standard for commercial catch and effort statistics is mandatory, trip-level reporting of all commercially harvested marine species, with fishermen and/or dealers required to report standardized data elements for each trip by the tenth of the following month. Refer to the ACCSP Program Design document for more details on standardized data elements.

3.4.1.2. Recreational Catch and Effort Data

The ACCSP has selected the MRIP as the base program for recreational fishing data collection for shore and private boat fishing. The MRIP provides statistics for finfish, but does not cover shellfish fisheries, which will require development of new surveys. The MRIP combines data from two independent surveys to produce estimates of fishing effort, catch, and participation.

3.4.1.2.1. Household Telephone Survey for Effort Data

For private/rental boats and shore, fishing effort data is collected through a random digit-dialed telephone survey of recreational marine fishing license holders. A "wave" is a two-month sampling period, such as January through February (Wave 1) or March through April (Wave 2). The random-digit dialing survey for effort data is conducted in two-week periods that begin the last week of each wave and continue through the first week of the next wave.

3.4.1.2.2. Intercept Survey for Catch Data

Catch data for private/rental boats and shore fishing is collected through an access-site intercept survey. State partners are encouraged to increase their involvement in conducting the intercept survey. The ACCSP is addressing transition of conduct of the intercept survey for catch from a contractor to a cooperative agreement involving states at varying levels.

3.4.1.2.3. For-Hire Catch and Effort Data

The ACCSP has selected the NOAA Fisheries For-Hire Survey as the preferred methodology for collecting data from charterboats and headboats (partyboats), also called the "for-hire" sector. The For-Hire Survey is similar to the MRIP with two major improvements; it uses: 1) a telephone survey to collect fishing effort data from vessel representatives and 2) a validation process for the self-reported data. Catch data are collected in conjunction with the MRIP with the addition of on-board samplers for headboats.

The independent survey components of the For-Hire Survey include: 1) a vessel effort survey; 2) an effort validation survey; 3) an access-site intercept survey for catch data; and 4) at-sea samplers on headboats for catch data. Using the data collected through these surveys, NOAA Fisheries generates catch and effort estimates for for-hire fisheries.

Catch and effort for federally permitted headboats operating in the South Atlantic (North Carolina – Georgia) is monitored through the Southeast Region Headboat Survey conducted by the Southeast Fisheries Science Center. Vessel operators are required to file weekly electronic reports for all trips to report catch and effort. Dockside samplers collect biological samples from the catches, and at-sea observers as mentioned above also sample South Atlantic headboats.

3.4.1.2.4. Vessel Telephone Survey for Effort Data

The vessel effort survey is a mandatory survey for for-hire vessels that uses a coastwide directory of such vessels as the sampling frame for for-hire fishing effort. The directory is continually updated as intercept and telephone interviewers identify changes in the fleet. Optimal sampling levels will be determined following evaluation of the Atlantic coast For-Hire Survey results from the first three years. Until the optimal sampling level is determined, a minimum of 10% of for-hire vessels or three charterboats and three headboats (whichever is

greater), will be randomly sampled each week in each state. A vessel representative, usually the captain, is called and asked to provide information on the fishing effort associated with that vessel during the previous week. Vessel representatives are notified in advance that they have been selected for sampling and an example form is provided. To be included in the sample frame for particular wave, a vessel record must include: 1) at least one vessel representative's telephone number; 2) the name of the vessel or a vessel registration number issued by a state or the U.S. Coast Guard; 3) the county the boat operates from during that wave, and 4) designation as either a charter or guide boat (both called "charter") or headboat.

3.4.1.2.5. Validation Survey for Effort Data

To validate the self-reported effort data collected through the vessel telephone survey, field samplers periodically check access sites used by for-hire vessels to observe vessel effort. Interviewers record the presence or absence of a for-hire vessel from its dock or slip, and if the vessel is absent, they try to ascertain the purpose of the trip. Those observations are compared to telephone data for accuracy and to make any necessary corrections.

3.4.1.2.6. Catch Data

Vessels that meet the ACCSP definition of a charterboat, "typically hired on a per trip basis," are sampled for catch data through an intercept site survey of anglers at access points, similar to the MRIP. The intercept survey has been in progress since 1981.

Some Partners collect for-hire effort data using Vessel Trip Reports (VTR), which are mandatory for some vessels and contain all minimum data elements collected by the For-Hire Survey. In areas where the survey runs concurrently with VTR programs, captains selected for the weekly telephone survey are permitted to fax their VTRs in lieu to being interviewed by phone.

3.4.1.2.7. At-Sea Sampling of Headboats

At-sea samplers collect catch data aboard headboats, defined by the ACCSP as "any vessel-forhire engaged in recreational fishing that typically is hired on a per person basis." Samples collected at-sea are supplemented by dockside sampling.

3.4.2. Biological Information

The ACCSP has set standards for how biological data should be collected and managed for commercial, recreational, and for-hire fisheries. Trained field personnel, known as port agents or field samplers, should obtain biological samples. Information should be collected through direct observation or through interviews with fishermen. Detailed fishery statistics and/or biological samples should be collected at docks, unloading sites, and fish houses. Biological sampling includes species identification of fish and shellfish; extraction of hard parts including spines and otoliths; and tissue samples such as gonads, stomachs, and scales.

3.4.3. Social and Economic Information

3.4.3.1. Commercial Fisheries

The ACCSP is testing its sociological and economic data collection standards for commercial harvesters. Standards for these types of data for dealers and fishing communities are in development with the Committee on Economics and Social Sciences. The ACCSP should collect baseline social and economic data on commercial harvesters using the following voluntary surveys:

- An annual fixed cost survey directed at the owner/operator,
- A trip cost survey to evaluate variable costs associated with a particular vessel's most recent commercial fishing trip to be directed at the vessel captain, and
- An annual owner/captain/crew/survey to gather sociological information.

Surveys may also be conducted using permit and registration data and vessel trip reports or sampling frames.

3.4.3.2. Recreational and For-hire Fisheries

The ACCSP's sociological and economic data for recreational and for-hire fisheries should come from periodic add-ons to existing telephone and intercept surveys. The standard is voluntary surveys of finfish fisheries conducted at least every three years.

3.4.4. Observer Programs

No specific observer programs are in place to monitor the cobia fishery. Observer programs already in place, whether state or federal, may observe capture of cobia in other monitored fisheries or specific gear types. A review of these programs should take place.

3.5. STOCKING PROGRAM

The Virginia Institute of Marine Science (VIMS) began an experimental stocking program in the Chesapeake Bay in 2003 to explore stock enhancement and study juvenile movement and habitat utilization (VIMS 2017). Juvenile cobia were tagged and released into the Chesapeake Bay in 2003, 2006, 2007, and 2008, with more than 300 tagged releases occurring in those first two years. Recapture information indicated habitats ranged from 1-4 m in depth and consisting of sandy and grass-bed bottoms. It is unclear whether this program had any effect on the population of cobia in Virginia, although it is assumed to have had minimal impact due to the small number of releases.

South Carolina has an experimental stock enhancement program designed to evaluate the methodology necessary for augmenting wild populations. To date experiments have been designed to determine best size and time of year to stock cobia in coastal rivers focused on augmentation of the distinct population segment of cobia in SC. Locally-caught brood stock have been conditioned to spawn in recirculating seawater systems using temperature and photoperiod conditioning and hormone implantations to facilitate final oocyte maturation. To date multiple years of spawning and growout have occurred, and more than 50,000 (60-350 mm TL) cobia have been stocked in the Colleton and Broad Rivers of Port Royal Sound. All fish are genetically identifiable to broodstock group and can be identified in the catch and distinguished genetically from wild-spawned fish. Cobia tissue samples collected from charterboat captains and from carcasses collected at tournaments and cooperating recreational anglers show that as much as 50% of the catch from the 2007 year-class were from hatchery releases and that these animals have persisted in the catch each year since release. This research has demonstrated the application of stock enhancement as an additional management tool for cobia. In addition to research on production of animals, the SCDNR has developed predictive individual-based genetic models to determine the appropriate number of cobia that should be produced and stocked each year in order to grow the population while minimizing any negative impact on the genetic health of the wild population.

3.6. BYCATCH REDUCTION PROGRAM

Bycatch is defined as "portion of a non-targeted species catch taken in addition to the targeted species. It may include non-directed, threatened, endangered, or protected species, as well as individuals of the target species below a desired or regulatory size" (ASMFC 2009a). Bycatch can be divided into two components: incidental catch and discarded catch. Incidental catch refers to retained or marketable catch of non-targeted species, while discarded catch is the portion of the catch returned to the sea because of regulatory, economic, or personal considerations.

The ACCSP's bycatch standards include both quantitative and qualitative components. The quantitative components include at-sea sampling programs and collection of bycatch data through fisherman reporting systems. The qualitative components include sea turtle and marine mammal entanglement and stranding networks, beach bird surveys, and add-ons to existing recreational and for-hire intercept and telephone surveys. Specific fisheries priorities will be determined annually by the Bycatch Prioritization Committee.

The recreational cobia fishery is largely a directed fishery with bycatch occurring in fisheries directed towards other species. Mortality associated with regulatory discards of undersized cobia or fish taken after the bag limit is reached is largely unknown but likely varies based on depth caught and methods used to boat the catch.

The commercial cobia fishery tends to be a bycatch fishery in the hook and line and large mesh gill net fisheries. Juvenile cobia have been documented as bycatch in shrimp trawls off the Atlantic coast, although this is not a frequent occurrence. All shrimp trawlers in the South

Atlantic are required to use bycatch reduction devices, as of the 1996 Amendment 2 to the Federal Shrimp Fishery Management Plan.

3.7. HABITAT PROGRAM

Particular attention should be directed toward cobia habitat utilization and habitat condition (environmental parameters). A list of existing state and federal programs generating environmental data such as sediment characterization, contaminant analysis, and habitat coverage (marsh grass, oyster beds, submerged aquatic vegetation) should also be produced and updated as new information arises. Habitats utilized by cobia range from the middle portions of estuaries and coastal rivers out to and likely beyond, the shelf break. Thus, virtually any study generating environmental data from estuarine or coastal ocean systems could be of value.

4. MANAGEMENT PROGRAM IMPLEMENTATION

The primary intent of the management program is to complement management actions taken by the SAFMC by maintaining harvest within the coastwide, Atlantic Migratory Group ACL (currently set at 670,000 pounds, with allocations of 620,000 pounds to the recreational fishery and 50,000 pounds to the commercial fishery), while providing the states the flexibility to adjust management to suit their specific state needs. Specific management measures that accomplish this are described in the following sections.

4.1. RECREATIONAL FISHERIES MANAGEMENT MEASURES

In order to complement the current federal FMP and achieve the goals of the proposed ASMFC FMP, this document establishes the following recreational measures.

4.1.1. Size Limits

All states shall establish a minimum size limit of 36 inches FL by April 1, 2018. A total length equivalent may be considered by the TC and Management Board.

4.1.2. Bag Limit Options

All states shall establish a 1 fish per person bag limit by April 1, 2018.

4.1.3. Vessel Limit Options

All states shall establish a daily vessel limit not to exceed 6 fish per vessel by April 1, 2018.

4.1.4. Season and Allocation Options

Management of the recreational harvest limit shall be accomplished by state-specific seasons and allocations of a recreational harvest limit (RHL) set equivalent to 99% of and monitored concurrently with the recreational allocation of the federal ACL (initially 620,000 pounds, resulting in an initial allocated RHL of 613,800 pounds). One percent of the amount of the recreational allocation of the federal ACL (initially 6,200 pounds) shall be set aside to account for harvests in *de minimis* states.

State-defined seasons must adhere to soft state-by-state recreational quota shares (harvest targets) of the coastwide RHL. Percentage allocations are based on states' percentages of the coastwide historical landings in numbers of fish, derived as 50% of the 10-year average landings from 2006-2015 and 50% of the 5-year average landings from 2011-2015 (Table 10 shows percentage derivations). Numbers of fish are used for allocation percentages to eliminate confusion from discrepancies in average weights applied to numbers data by the MRIP and SEFSC. Although numbers of fish are used to derive allocation percentages, harvest targets and annual landings will be evaluated in pounds (Table 11 shows state poundage allocations for the initial RHL). The coastwide RHL is only to be divided among states that do not qualify for *de minimis* status. Non-*de minimis* states shall develop harvest control measures to limit catches to their assigned soft harvest target. Proposed state measures must be reviewed and approved by the TC and Management Board for initial implementation by April 1, 2018. Measures approved by the Management Board will remain in place for 3 years.

After 3 years, if a state's average annual landings over the 3-year time period are greater than their annual soft harvest target, that state shall adjust their season length or vessel limits for the following 3 years, as necessary, to prevent exceeding their share in the future.

States reporting an under-harvest over a 3-year period may present a plan to extend seasons or increase vessel limits, if desired, to allow increased harvests that will not exceed the harvest target. Changes to management measures for states with overages or states that wish to liberalize management measures must be reviewed and approved by the TC and Management Board prior to implementation. Determination of state-by-state harvest targets may be reevaluated by the Management Board if a *de minimis* state exceeds the *de minimis* threshold.

Table 10. Average AMG Cobia recreational landings in numbers (n) and percentages of recreational landings from Georgia through Virginia for establishing hard recreational quotas for Options 1 and soft recreational harvest targets for Option 2. Averages are calculated by state for 3-year (2013-2015; Sub-option a), 5-year (2011-2015; Sub-Option b), and 10-year (2006-2015; Sub-Option c) time periods, as well as an average of the 5-year and 10-year time periods (5-yr/10-yr Average; Sub-Option d).

State	a. 3-yr Average (2013-2015)	b. 5-yr Average (2011-2015)	c. 10-yr Average (2006-2015)	d. 5-yr/10-yr Average
Georgia	n = 1,421 4.5%	n = 2,150 9.0%	n = 2,445 10.0%	n = 2,298 9.5%
South Carolina	n = 1,984 6.3%	n = 2,558 10.8%	n = 3,312 13.6%	n = 2,935 12.2%
North Carolina	n = 15,065 48.2%	n = 10,344 43.5%	n = 8,203 33.6%	n = 9,273 38.5%
Virginia	n = 12,799 40.9%	n = 8,714 36.7%	n = 10,465 42.9%	n = 9,589 39.8%
Total	N = 31,269 100%	N = 23,766 100%	N = 24,425 100%	n = 24,095 100%

Data source: SEFSC w/ headboat.

Table 11. Division of the coastwide recreational harvest limit of 613,800 pounds (equivalent to the federal ACL, which is currently 620,000 pounds, as reduced by a 1% set aside for *de minimis* states) for cobia by state based on percentages derived from Table 10.

State	a. 3-yr Average (2013-2015) (lbs.)	b. 5-yr Average (2011-2015) (lbs.)	c. 10-yr Average (2006-2015) (lbs.)	d. 5-yr/10-yr Average (lbs.)
GA	27,621	55,242	61,380	58,311
SC	38,669	66,290	83,477	74,885
NC	295,852	267,003	206,237	236,313
VA	251,044	225265	263,320	244,292

Data source: SEFSC w/ headboat.

4.2. COMMERCIAL FISHERIES MANAGEMENT OPTIONS

This document establishes commercial fishery management measures for cobia that complement the existing commercial regulations contained in CMP Amendment 20 (with a 50,000 pound commercial allocation of the coastwide ACL). In accordance with federal policy, should the coastwide ACL be met, a coastwide commercial closure will occur.

4.2.1. Size Limit Options

All states shall establish a 33-inch FL minimum size limit for commercial cobia fisheries by April 1, 2018. An equivalent total length may be considered by the TC and Management Board.

4.2.2. Possession Limit Options

All states shall establish a maximum commercial possession limit of 2 cobia per person, not to exceed 6 cobia per vessel, by April 1, 2018.

4.3. HABITAT CONSERVATION AND RESTORATION

4.3.1. Threats to Cobia Habitat

Threats to Cobia habitats include the following: loss of estuarine and marine wetlands, coastal development, nutrient enrichment of estuarine waters, poor water quality, hydrologic modifications, and alteration of freshwater flows into estuarine waters.

4.3.2. Recommendations

1. Where sufficient knowledge is available, states should designate cobia habitat areas of particular concern for special protection. These locations should be accompanied by requirements that limit degradation of habitat, including minimization of non-point source and specifically storm water runoff, prevention of significant increases in contaminant loadings, and prevention of the introduction of any new categories of contaminants into the area.
2. Where habitat areas have already been identified and protected, states should ensure continued protection of these areas by notifying and working with other federal, state, and local agencies. States should advise these agencies of potential threats to cobia and recommend measures that should be employed to avoid, minimize, or eliminate any threat to current habitat quality or quantity.
3. States should minimize loss of wetlands to shoreline stabilization by using the best available information, incorporating erosion rates, and promoting incentives for use of alternatives to vertical shoreline stabilization measures, commonly referred to as living shorelines projects.
4. All state and federal agencies responsible for reviewing impact statements and permit applications for projects or facilities proposed for cobia spawning and nursery areas should ensure that those projects will have no or only minimal impact on local stocks. Any project that would result in the elimination of essential habitat should be avoided, if possible, or at a minimum, adequately mitigated.
5. Each state should establish windows of compatibility for activities known or suspected to adversely affect cobia life stages and their habitats. Activities may include, but are not limited to, navigational dredging, bridge construction, and dredged material disposal, and notify the appropriate construction or regulatory agencies in writing.
6. Each state should develop water use and flow regime guidelines, where applicable, to ensure that appropriate water levels and salinity levels are maintained for the long-term protection and sustainability of the stocks. Projects involving water withdrawal or interruption of water flow should be evaluated to ensure that any impacts are minimized, and that any modifications to water flow or salinity regimes maintain levels within cobia tolerance limits.

7. The use of any fishing gear that is determined by management agencies to have a negative impact on cobia habitat should be prohibited within habitat areas of particular concern. Further, states should protect vulnerable habitat from other types of nonfishing disturbance as well.
8. States should conduct research to evaluate the role of submerged aquatic vegetation (SAV) and other submersed structures in the spawning success, survival, growth and abundance of cobia. This research could include regular mapping of the bottom habitat in identified areas of concern, as well as systematic mapping of this habitat where it occurs in estuarine and marine waters of the states.
9. States should continue support for habitat restoration projects, including oyster shell recycling and oyster hatchery programs as well as seagrass restoration, to provide areas of enhanced or restored bottom habitat.
10. Water quality criteria for cobia spawning and nursery areas should be established, or existing criteria should be upgraded, to ensure successful reproduction of these species. Any action taken should be consistent with Federal Clean Water Act guidelines and specifications.
11. State fishery regulatory agencies, in collaboration with state water quality agencies, should monitor water quality in known habitat for cobia, including turbidity, nutrient levels, and dissolved oxygen.
12. States should work to reduce point-source pollution from wastewater through such methods as improved inspections of wastewater treatment facilities and improved maintenance of collection infrastructure.
13. States should develop protocols and schedules for providing input on water quality regulations and on Federal permits and licenses required by the Clean Water Act, Federal Power Act, and other appropriate vehicles, to ensure that cobia habitats are protected and water quality needs are met.

4.4. ALTERNATIVE STATE MANAGEMENT REGIMES

States shall obtain prior approval from the Management Board for any changes to their management program for which a compliance requirement is in effect. Changes to noncompliance measures shall be reported to the Management Board but may be implemented without prior Management Board approval. A state may request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Management Board's satisfaction that its alternative proposal would have the same conservation value as the measures contained in this FMP or subsequent amendments or addenda. States submitting alternative proposals shall demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans shall be submitted in writing to the Management Board either as part of the annual FMP Review process or in the Annual Compliance Reports.

4.4.1. General Procedures

A state may submit a proposal to change its regulatory program or any mandatory compliance measure under the Cobia Fishery Management Plan to the Management Board, including a proposal for *de minimis* status. Such proposals shall be submitted to the Chair of the PRT, who will distribute the proposal to the Management Board, PRT, TC, SAS, and AP.

The PRT shall be responsible for gathering the comments of the TC, SAS, and AP and presenting these comments as soon as possible to the Management Board for decision.

The Management Board shall decide whether to approve the state proposal for an alternative management program if it determines that it is consistent with the goals and objectives of this FMP.

4.4.2. Management Program Equivalency

The TC, under the direction of the PRT, shall review any alternative state proposals under this section and provide to the Management Board its evaluation of the adequacy of such proposals.

Following the first full year of implementation of an alternate management program, the PRT shall be responsible for evaluating the effects of the program to determine if the measures were equivalent with the standards of the FMP and subsequent amendments or addenda. The PRT will report to the Management Board on the performance of the alternate program.

4.4.3. *De minimis* Fishery Guidelines

The ASMFC ISFMP Charter defines *de minimis* as "a situation in which, under the existing condition of the stock and scope of the fishery, conservation, and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by a Fishery Management Plan or amendment" (ASMFC 2009b).

States may petition the Management Board at any time for *de minimis* status. Once *de minimis* status is granted, designated states must submit annual reports including commercial and recreational landings to the Management Board, justifying the continuance of *de minimis* status. States must include *de minimis* requests as part of their annual compliance reports.

One percent (1%) of the amount of the recreational allocation of the federal ACL (initially 6,200 pounds) shall be set aside to account for harvests in *de minimis* states. To qualify for *de minimis*, a state's recreational landings for 2 of the previous 3 years must be less than 1% of the coastwide recreational landings for the same time period. If a state qualifies for *de minimis*, the state may choose to match the recreational management measures implemented by an adjacent non-*de minimis* state (or the nearest non-*de minimis* state if none are adjacent) or the state may choose to limit its recreational fishery to 1 fish per vessel per trip with a minimum

size of 29 inches FL. A total length equivalent may be considered by the TC and Management Board. Should a *de minimis* state choose to match an adjacent (or the nearest) non-*de minimis* state, the *de minimis* state shall be subject to all recreational cobia regulations, including bag, size, vessel, and season restrictions, of their adjacent (or nearest) non-*de minimis* state. *De minimis* states that choose to limit their recreational fisheries to 1 fish per vessel per trip will not be subject to recreational restrictions in fishing season.

Commercial fisheries in *de minimis* states will be subject to coastwide measures outlined in Section 4.2.

4.5. ADAPTIVE MANAGEMENT

The Management Board may vary the requirements specified in this FMP as a part of adaptive management in order to conserve the cobia resource. Specifically, the Management Board may change target fishing mortality rates, harvest specifications, or other measures designed to prevent overfishing of the stock complex or any spawning component. Such changes shall be instituted to become effective on the first fishing day of the following year, but may be put in place at an alternative time when deemed necessary by the Management Board.

4.5.1. General Procedures

The PRT shall monitor the status of the fisheries and the resources and report on that status to the Management Board annually or when directed to do so by the Management Board. The PRT shall consult with the TC, SAS, and AP in making such review and report. The report will contain recommendations concerning proposed adaptive management revisions to the management program.

The Management Board shall review the report of the PRT, and may consult further with the TC, SAS, or AP. The Management Board may, based on the PRT Report or on its own discretion, direct the PDT to prepare an addendum to make any changes it deems necessary. An addendum shall contain a schedule for the states to implement its provisions.

The PDT will prepare a draft addendum, as directed by the Management Board, and distribute to the board for approval for public comment. The document will be released for public comment for a minimum of 30 days. A public hearing will be held in any state that requests one. After the comment period, the PDT will summarize the comments and present them to the Board along with the recommendations of the TC, SAS, LEC, and AP, when applicable. The Management Board will choose a management program and approve a final document.

Upon adoption of an addendum implementing adaptive management by the Management Board, states will prepare plans to carry out the addendum and submit them to the Management Board for approval, according to the schedule contained in the addendum.

4.5.2. Measures Subject to Change

The following measures are subject to change under adaptive management upon approval by the Management Board:

(1) Fishing year and/or seasons;
(2) Area closures;
(3) Overfishing definition, MSY and OY;
(4) Rebuilding targets and schedules;
(5) Fishery Specifications
(6) Catch controls, including bag and size limits;
(7) Effort controls;
(8) Bycatch allowance
(9) Reporting requirements;
(10) Gear limitations;
(11) Measures to reduce or monitor bycatch;
(12) Observer requirements;
(13) Management areas;
(14) Recommendations to the Secretaries for complementary actions in federal jurisdictions;
(15) Research or monitoring requirements;
(16) Frequency of stock assessments;
(17) De minimis specifications;
(18) Management unit;
(19) Maintenance of stock structure;
(20) Catch allocation; and
(21) Any other management measures currently included in the FMP.

4.6. EMERGENCY PROCEDURES

Emergency procedures are able to be used by the Management Board to require any emergency action that is not covered by or is an exception or change to any provision in the FMP. Procedures for implementation are addressed in the ISFMP Program Charter, Section Six (c) (11) (ASMFC 2009b).

4.7. MANAGEMENT INSTITUTIONS

The management institution for cobia will be subject to the provisions of the ISFMP Charter

(ASMFC 2009b). The following are not intended to replace any or all of the provisions of the ISFMP Charter. All committee roles and responsibilities are included in detail in the ISFMP Charter and are only summarized here.

4.7.1. ASMFC and the ISFMP Policy Board

The ASMFC and the ISFMP Policy Board are generally responsible for the oversight and management of the Commission's fisheries management activities. The Commission must approve all fishery management plans and amendments, and must make all final determinations concerning state compliance or non-compliance. The ISFMP Policy Board reviews any non-compliance recommendations of the various Management Boards and Sections and, if it concurs, forwards them on to the Commission for action.

4.7.2. South Atlantic State/Federal Fisheries Management Board

The South Atlantic State/Federal Fisheries Management Board (Management Board) was established under the provisions of the Commission's ISFMP Charter (Section Four; ASMFC 2009b) and will be generally responsible for carrying out all activities under this FMP.

The Management Board establishes and oversees the activities of the Cobia FMP's PDT, PRT, TC, and SAS, as well as the South Atlantic Species AP. Among other things, the Management Board makes changes to the management program under adaptive management and approves state programs implementing the amendment and alternative state programs under Sections 4.4 and 4.5. The Management Board reviews the status of state compliance with the management program, at least annually, and if it determines that a state is out of compliance, reports that determination to the ISFMP Policy Board under the terms of the ISFMP Charter.

4.7.3. Cobia Plan Development Team / Plan Review Team

The Cobia Plan Development Team (PDT) and Cobia Plan Review Team (PRT) will be composed of a small group of scientists and/or managers whose responsibility is to provide all of the technical support necessary to carry out and document the decisions of the Management Board. An ASMFC FMP Coordinator chairs the PDT and PRT. The PDT and PRT will be directly responsible to the Management Board for providing information and documentation concerning the implementation, review, monitoring and enforcement of the species management plan. The PDT and PRT will be comprised of personnel from state and federal agencies who have scientific and management ability and knowledge of the relevant species. The Cobia PDT is responsible for preparing all documentation necessary for the development of the FMP, using the best scientific information available and the most current stock assessment information. The PDT will either disband or assume inactive status upon completion of the FMP. Alternatively, the Board may elect to retain PDT members as members of the species-specific PRT or appoint new members. The PRT provide annual advice concerning the implementation, review, monitoring, and enforcement of the FMP once it has been adopted by the Commission.

4.7.4. Technical Committee

The Cobia Technical Committee (TC) will consist of representatives from state and/or federal agencies, Regional Fishery Management Councils, Commission, university or other specialized personnel with scientific and technical expertise and knowledge of the relevant species. The Management Board will appoint the members of a TC and may authorize additional seats as it sees fit. Its role is to act as a liaison to the individual state and federal agencies, provide information to the management process, and review and develop options concerning the management program. The TC will provide scientific and technical advice to the Management Board, PDT, and PRT in the development and monitoring of a fishery management plan or amendment.

4.7.5. Stock Assessment Subcommittee

The Cobia Stock Assessment Subcommittee (SAS) will be appointed and approved by the Management Board, with consultation from the TC, and will consist of scientists with expertise in the assessment of the relevant population. Its role is to assess the species population and provide scientific advice concerning the implications of proposed or potential management alternatives, or to respond to other scientific questions from the Management Board, TC, PDT or PRT. The SAS will report to the TC and work closely with the Southeast Fishery Science Center and SAFMC SSC in developing upcoming stock assessments.

4.7.6. Advisory Panel

The South Atlantic Species Advisory Panel (AP) was established according to the Commission's Advisory Committee Charter. Members of the AP are citizens who represent a cross-section of commercial and recreational fishing interests and others who are concerned about the conservation and management of cobia, as well as Spanish mackerel, spot, black drum, red drum, and spotted seatrout, and Atlantic croaker. The AP provides the Management Board with advice directly concerning the Commission's management program for these six species.

4.7.7. Federal Agencies

4.7.7.1. Management in the Exclusive Economic Zone (EEZ)

Management of cobia in the EEZ is within the jurisdiction of the SAFMC under the MagnusonStevens Fishery Conservation and Management Act, as amended (16 U.S.C. 1801 et seq.). In the absence of a Council Fishery Management Plan for cobia, management of this species is the responsibility of the NOAA National Marine Fisheries Service (NOAA Fisheries) as mandated by the Atlantic Coastal Fisheries Cooperative Management Act (16 U.S.C. 5105 et seq.).

4.7.7.2. Federal Agency Participation in the Management Process

The Commission has accorded the United States Fish and Wildlife Service (USFWS) and NMFS NOAA Fisheries voting status on the ISFMP Policy Board and the South Atlantic State/Federal Fisheries Management Board in accordance with the Commission's ISFMP Charter. NOAA Fisheries and the USFWS may also participate on the Management Board's supporting committees described in *Sections 4.7.3-4.7.6*.

4.7.7.3. Consultation with Fishery Management Councils

In carrying out the provisions of this FMP, the states, as members of the South Atlantic State/Federal Fisheries Management Board, will closely coordinate with the SAFMC to cooperatively manage the Atlantic Migratory Group of cobia. In accordance with the Commission's ISFMP Charter, a representative of the SAFMC shall be invited to participate as a full member of the Management Board.

4.8. RECOMMENDATIONS TO THE SECRETARIES FOR COMPLEMENTARY ACTIONS IN FEDERAL JURISDICTIONS

The SAFMC manages cobia in the EEZ through bag, size limits, trip limits and seasons. It is in the interest of the Interstate FMP to achieve consistency in management efforts in state waters and the EEZ. At present, NOAA fisheries has closed the EEZ to cobia harvest in the recreational fishery to maintain harvest within the prescribed ACL. Because reliance on the EEZ for cobia harvest varies by state, closure impacts vary from south to north. The majority of the recreational harvest off Georgia occurs in the EEZ, while little harvest occurs in the EEZ off Virginia. A primary consideration for the Interstate cobia FMP may be to recommend consistent measures in state and federal waters to avoid in season closures.

4.9. COOPERATION WITH OTHER MANAGEMENT INSTITUTIONS

At this time, no other management institutions have been identified that will be involved with management of cobia on the Atlantic coast. Nothing in the FMP precludes the coordination of future management collaborations with other management institutions, should the need arise.

5. COMPLIANCE

Full implementation of the provisions of this FMP will be necessary for the management program to be equitable, efficient, and effective. States will be expected to implement these measures faithfully under state laws. Although the ASMFC does not have authority to directly compel state implementation of these measures, it will continually monitor the effectiveness of state implementation and determine whether states are in compliance with the provisions of this fishery management plan. This section sets forth the specific elements states will be required to implement in order to be in compliance with this FMP, and the procedures that will

govern the evaluation of compliance. Additional details of the procedures are found in the ASMFC ISFMP Charter (ASMFC 2009b).

5.1. MANDATORY COMPLIANCE ELEMENTS FOR STATES

A state will be determined to be out of compliance with the provisions of this fishery management plan, according to the terms of Section Seven of the ISFMP Charter if:

- Its regulatory and management programs to implement *Section 4* have not been approved by the Management Board; or

- It fails to meet any schedule required by *Section 5.1.2*, or any addendum prepared under Adaptive Management (*Section 4.5*); or

- It has failed to implement a change to its program when determined necessary by the South Atlantic State-Federal Fisheries Management Board; or
- It makes a change to its regulations required under *Section 4* or any addendum prepared under Adaptive Management (*Section 4.5*), without prior approval of the Management Board.

5.1.1. Mandatory Elements of State Programs

To be considered in compliance with this FMP, all state programs will include harvest controls on cobia fisheries consistent with the requirements of *Sections 4.1, 4.2, 4.3*; except that a state may propose an alternative management program under *Section 4.5*, which, if approved by the Management Board, may be implemented as an alternative regulatory requirement for compliance.

5.1.1.1. Regulatory Requirements

Each state will be required to submit its cobia regulatory program to the Commission through the ASMFC staff for approval by the Management Board. During the period from submission until the Board makes a decision on a state's program, a state may not adopt a less protective management program than contained in this amendment or contained in current state law. The following lists the specific compliance criteria that a state/jurisdiction will be required to implement in order to be in compliance with this FMP:

1. All states will establish a maximum possession limit of 1 fish per person and a minimum size limit of 36 inches FL, or an equivalent measure in TL, for their recreational fisheries by April 1, 2018.

2. All states will establish a maximum vessel limit not to exceed 6 fish for all recreational and commercial fisheries by April 1, 2018.

3. States will establish a recreational fishing season to correspond with specific harvest goals for the individual state by April 1, 2018.

4. States will be able to apply for *de minimis* status if for the preceding three years for which data are available, their averaged combined commercial and recreational landings (by weight) constitute less than 1% of the average coastwide combined, commercial and recreational landings for the same period.

Once approved by the Management Board, states will be required to obtain prior approval from the Board for any changes to their management program for which a compliance requirement is in effect. Other measures will be required to be reported to the Board but may be implemented without prior Board approval. A state will be able to request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Board's satisfaction that its alternative proposal would have the same conservation value as the measure contained in this FMP or any subsequent amendments or addenda. States submitting alternative proposals will be required to demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans will need to be submitted in writing to the Board and to the Commission either as part of the annual FMP Review process or the Annual Compliance reports.

5.1.1.2. Monitoring Requirements

There are currently no requirements for additional monitoring. Monitoring may be implemented in the future through the Commission's addendum process.

5.1.1.3. Research Requirements

The PDT has prioritized the research needs for cobia (*Section 6.2*). Appropriate programs for meeting these needs may be implemented under Adaptive Management (*Section 4.5*) in the future.

5.1.1.4. Law Enforcement Requirements

All state programs will be required to include law enforcement capabilities adequate for successfully implementing that state's cobia regulations. The adequacy of a state's enforcement activity will be monitored annually by reports of the ASMFC Law Enforcement Committee to the PRT. The first reporting period will cover the period from January 1, 2018 to December 31, 2018.

5.1.1.5. Habitat Requirements

There are no mandatory habitat requirements in the FMP, although requirements may be

added under Adaptive Management (*Section 4.5*). See *Section 4.3* for Habitat Recommendations.

5.1.2. Compliance Schedule

States will be required to implement the FMP according to the following schedule:

January 1, 2018:	States must submit programs to implement the FMP for approval by the South Atlantic State-Federal Fisheries Management Board. Programs must be implemented upon approval by the Management Board.
April 1, 2018:	States with approved management programs must implement FMP requirements. States may begin implementing management programs prior to this deadline, if approved by the Management Board.

Reports on compliance will be submitted to the Commission by each jurisdiction annually, no later than July 1st, beginning in 2019.

5.1.3. Compliance Reporting Content

Each state will be required to submit an annual report concerning its cobia fisheries and management program for the previous calendar year on July 1. A standard compliance report format has been prepared and adopted by the ISFMP Policy Board. States should follow this format in completing the annual compliance report.

5.2. PROCEDURES FOR DETERMING COMPLIANCE

Detailed procedures regarding compliance determinations are contained in the ISFMP Charter, Section Seven (ASMFC 2009b). Future revisions to the ISFMP Charter may take precedence over the language contained in this FMP, specifically in regards to the roles and responsibilities of the various groups contained in this section. The following summary is not meant in any way to replace the language found in the ISFMP Charter.

In brief, all states are responsible for the full and effective implementation and enforcement of fishery management plans in areas subject to their jurisdiction. Written compliance reports as specified in the FMP (or subsequent amendments and/or addenda) must be submitted annually by each state with a declared interest. Compliance with the FMP will be reviewed at least annually. The Management Board, ISFMP Policy Board or the Commission, may request that the PRT conduct a review of plan implementation and compliance at any time.

The Management Board will review the written findings of the PRT within 60 days of receipt of a state's compliance report. Should the Management Board recommend to the Policy Board that a state be determined to be out of compliance, a rationale for the recommended noncompliance finding will be included addressing specifically the required measures of the FMP that the state has not implemented or enforced, a statement of how failure to implement

or enforce the required measures jeopardizes cobia conservation, and the actions a state must take in order to comply with the FMP requirements.

The ISFMP Policy Board shall, within thirty days of receiving a recommendation of noncompliance from the Management Board, review that recommendation of non-compliance. If it concurs in the recommendation, it shall recommend to the Commission that a state be found out of compliance.

The Commission shall consider any FMP non-compliance recommendation from the Policy Board within 30 days. Any state which is the subject of a recommendation for a non-compliance finding is given an opportunity to present written and/or oral testimony concerning whether it should be found out of compliance. If the Commission agrees with the recommendation of the Policy Board, it may determine that a state is not in compliance with the FMP, and specify the actions the state must take to come into compliance.

Any state that has been determined to be out of compliance may request that the Commission rescind its non-compliance findings, provided the state has revised its cobia conservation measures or shown to the Management Board and/or Commission's satisfaction that actions taken by the state provide for conservation equivalency.

5.3. RECOMMENDED (NON-MANDATORY) MANAGEMENT MEASURES

The Management Board through this FMP requests that those states outside the management unit (New York through Maine, and Pennsylvania) implement complementary regulations to protect the cobia spawning stock.

5.4. ANALYSIS OF ENFORCEABILITY OF PROPOSED MEASURES

The ASMFC Law Enforcement Committee will, during the implementation of this FMP, analyze the enforceability of new conservation and management measures as they are proposed.

6. MANAGEMENT AND RESEARCH NEEDS

Characterized as High (H), Medium (M), or Low (L) priority, these management and research needs will be reviewed annually as part of the Commission's FMP Review process. The annual Cobia FMP Review will contain an updated list for future reference.

6.1. STOCK ASSESSMENT AND POPULATION DYNAMICS

An updated stock assessment for the Atlantic Migratory Group cobia has been scheduled for completion in 2019, led by SEFSC Beaufort Lab. The assessment will provide updated status information since the terminal year of the last assessment (2012). Anticipated results will include updated stock status and reference points and contribute to recommendations for additional management needs, if any.

6.2. RESEARCH AND DATA NEEDS

6.2.1. Biological

- Conduct studies to estimate catch and release mortality estimates.
- Obtain better estimates of harvest from the cobia recreational fishery (especially in the for hire sector).
- Increase spatial and temporal coverage of age samples collected regularly in fishery dependent and independent sources. Prioritize collection of age data from fishery dependent and independent sources in all states.
- Collect genetic material to continue to assess the stock identification and any Distinct Population Segments that may exist within the management unit.
- Conduct a high reward tagging program to obtain improved return rate estimates. Continue and expand current tagging programs to obtain mortality and growth information and movement at size data.
- Continue to collect and analyze current life history data from fishery independent and dependent programs, including full size, age, maturity, histology workups and information on spawning season timing and duration. Any additional data that can be collected on any life stages of cobia would be highly beneficial.
- Conduct studies to estimate fecundity-at-age coastwide and to estimate batch fecundity.
- Obtain better estimates of bycatch and mortality of cobia in other fisheries, especially juvenile fish in South Atlantic states.
- Obtain estimates of selectivity-at-age for cobia through observer programs or tagging studies.
- Define, develop, and monitor adult abundance estimates

6.2.2. Social

- Obtain better coverage of shore and nighttime anglers.

6.2.3. Economic

- Obtain better data on the economic impacts of recreational and commercial cobia fishing on coastal communities.

6.2.4. Habitat

- If possible, expand existing fishery independent surveys in time and space to better define and cover cobia habitats.

- Conduct otolith microchemistry studies to identify regional recruitment contributions.

- Conduct new and expand existing satellite tagging programs to help identify spawning and juvenile habitat use and regional recruitment sources.

6.2.5. State-specific

Georgia

Little is known regarding cobia stocks off Georgia. It is unclear if Georgia has a unique subpopulation of East-West migration cobia as seen in other nearby states (South Carolina). Furthermore, the range of habitat types (inshore vs. nearshore) utilized by cobia in Georgia remains unknown. It would be beneficial to better explain the range of habitat utilized by cobia in Georgia as well as identify overwintering locations for Georgia cobia. This could be easily done through a simple acoustic telemetry study. Identifying these basic life history characteristics for cobia in Georgia will aid in the management of the species both at a state and a regional level. Additionally, better socio-economic estimates of the impact of cobia fishing in Georgia would aid in understanding how regulatory changes may impact the economic benefit cobia fishing has throughout Georgia.

7. PROTECTED SPECIES

In the fall of 1995, Commission member states, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) began discussing ways to improve implementation of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in state waters. Historically, these policies have been minimally enforced in state waters (0-3 miles). In November 1995, the Commission, through its Interstate Fisheries Management Program (ISFMP) Policy Board, approved amendment of its ISFMP Charter (Section Six (b)(2)) so that interactions between ASMFC-managed fisheries and species protected under the MMPA, ESA, and other legislation, including the Migratory Bird Treaty Act be addressed in the Commission's fisheries management planning process. Specifically, the Commission's fishery management plans describe impacts of state fisheries on certain marine mammals and endangered species (collectively termed "protected species"), and recommend ways to minimize these impacts. The following section outlines: (1) the federal legislation which guides protection of marine mammals, sea turtles, and marine birds; (2) the protected species with potential fishery interactions; (3) the specific type(s) of fishery interactions; (4) population status of the affected protected species; and (5) potential impacts to Atlantic coastal state and interstate fisheries.

7.1. Marine Mammal Protection Act (MMPA) Requirements

Since its passage in 1972, one of the primary goals of the MMPA has been to reduce the incidental mortality and serious injury of marine mammals permitted in the course of commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate. Under the 1994 Amendments, the MMPA requires the NMFS to develop and

implement a take reduction plan to assist in the recovery or prevent the depletion of each strategic stock that interacts with a Category I or II fishery. Specifically, a strategic stock is defined as a stock: (1) for which the level of direct human caused mortality exceeds the potential biological removal (PBR) level; (2) which is declining and is likely to be listed under the Endangered Species Act (ESA) in the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA or as a depleted species under the MMPA. Category I and II fisheries are those that have frequent or occasional incidental mortality and serious injury of marine mammals, respectively, whereas Category III fisheries have a remote likelihood of incidental mortality and serious injury of marine mammals. Each year, NMFS publishes an annual List of Fisheries which classifies commercial fisheries into one of these three categories.

Under the 1994 mandates, the MMPA also requires fishermen participating in Category I and II fisheries to register under the Marine Mammal Authorization Program (MMAP), the purpose of which is to provide an exception for commercial fishermen from the general taking prohibitions of the MMPA for non-ESA listed marine mammals. All fishermen, regardless of the category of fishery they participate in, must report all incidental injuries and mortalities caused by commercial fishing operations within 48 hours.

Section 101(a)(5)(E) of the MMPA allows for the authorization of the incidental taking of individuals from marine mammal stocks listed as threatened or endangered under the ESA in the course of commercial fishing operations if it is determined that: (1) incidental mortality and serious injury will have a negligible impact on the affected species or stock; (2) a recovery plan has been developed or is being developed for such species or stock under the ESA; and (3) where required under Section 118 of the MMPA, a monitoring program has been established, vessels engaged in such fisheries are registered in accordance with Section 118 of the MMPA, and a take reduction plan has been developed or is being developed for such species or stock. Permits are not required for Category III fisheries; however, any mortality or serious injury of a marine mammal must be reported.

7.2. Endangered Species Act (ESA) Requirements

The taking of endangered sea turtles and marine mammals is prohibited and considered unlawful under Section 9(a)(1) of the ESA. In addition, NMFS or the USFWS may issue Section 4(d) protective regulations necessary and advisable to provide for the conservation of threatened species. There are several mechanisms established in the ESA to allow exceptions to the take prohibition in Section 9(a)(1). Section 10(a)(1)(A) of the ESA authorizes NMFS to allow the taking of listed species through the issuance of research permits for scientific purposes or to enhance the propagation or survival of the species. Section 10(a)(1)(B) authorizes NMFS to permit, under prescribed terms and conditions, any taking otherwise prohibited by Section 9(a)(1)(B) of the ESA, if the taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Finally, Section 7(a)(2) requires federal agencies to consult with NMFS to ensure that any action that is authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or

adverse modification of critical habitat of such species. If, following completion of consultation, an action is found to jeopardize the continued existence of any listed species or cause adverse modification to critical habitat of such species, reasonable and prudent alternatives will be identified so that jeopardy or adverse modification to the species is removed and Section 7(a)(2) is met (see Section 7(b)(3)(A)). Alternatively, if, following completion of consultation, an action is not found to jeopardize the continued existence of any listed species or cause adverse modification to critical habitat of such species, reasonable and prudent measures will be identified that minimize the take of listed species or adverse modification of critical habitat of such species (see Section 7(b)(4)). Section (7)(o) provides the actual exemption from the take prohibitions established in Section 9(a)(1), which includes Incidental Take Statements that are provided at the end of consultation via the ESA Section 7 Biological Opinions.

7.3. Migratory Bird Treaty Act (MBTA) Requirements

Under the Migratory Bird Treaty Act it is unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory birds except as permitted by regulation (16 USC. 703). Section 50 CFR 21.11 prohibits the take of migratory birds except under a valid permit or as permitted in the regulations. Many migratory waterbirds occur within the boundaries of cobia fisheries. USFWS Policy on Waterbird Bycatch (October 2000) states: "It is the policy of the U.S. Fish and Wildlife Service that the Migratory Bird Treaty Act of 1918, as amended, legally mandates the protection and conservation of migratory birds. The USFWS seeks to actively expand partnerships with regional, national, and international organizations, States, tribes, industry, and environmental groups to address seabird bycatch in fisheries, by promoting public awareness of waterbird bycatch issues, and facilitating the collection of scientific information to develop and provide guidelines for management, regulation, and compliance."

Birds of Management Concern are a subset of MBTA-protected species which pose special management challenges because of a variety of factors (e.g., too few, too many, conflicts with human interests, societal demands). These species are of concern because of: documented or apparent population declines; small or restricted populations; dependence on restricted or vulnerable habitats; or overabundant to the point of causing ecological and economic damage.

7.4. Protected Species with Potential Fishery Interactions

The management unit of the cobia Atlantic Migratory Group extends from the Georgia/Florida line through New York. There are numerous protected species that inhabit the range of the cobia management unit covered under this FMP. Listed below are ESA and MMPA protected species found in coastal and offshore waters of the Atlantic Ocean within the range of cobia fisheries. USFWS species of management concern that have the potential to interact with cobia fisheries are also listed. Species of management concern are protected under the MBTA, but lack the protections mandated by the ESA.

ESA – Endangered[1]

- Atlantic sturgeon *(Acipenser oxyrinchus oxyrinchus)*, NY Bight, Chesapeake Bay, Carolina, and South Atlantic Distinct Population Segments (DPSs)[2]
- Shorthnose sturgeon (*Acipenser brevirostrum*)
- Smalltooth sawfish (*Pristis pectinata*)
- Blue whale (Balaenoptera musculus)
- Fin whale (Balaenoptera physalus)
- Humpback whale (Megaptera novaeangliae)
- North Atlantic right whale (*Eubalaena glacialis)*
- Sei whale (Balaenoptera borealis)
- Sperm whale (Physeter microcephalus)
- Hawksbill sea turtle (Eretmochelys imbricata)
- Kemp's ridley sea turtle *(Lepidochelys kempii)*
- Leatherback sea turtle (*Dermochelys coriacea)*
- Bermuda petrel (*Pterodroma cahow*)
- Roseate tern *(Sterna dougallii dougallii*)*,* northeastern U.S. and Nova Scotia breeding population

ESA – Threatened[3]

- Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), Gulf of Maine DPS
- Nassau grouper (Epinephelus striatus)
- Green sea turtle (*Chelonia mydas),* North Atlantic and South Atlantic DPSs
- Loggerhead sea turtle *(Caretta caretta)*, Northwest Atlantic Ocean DPS
- Roseate tern *(Sterna dougallii dougallii*)*,* Southeastern U.S. and Caribbean breeding population (FL, GA, NC, SC, Puerto Rico, Virgin Islands)
- Piping plover (Charadrius melodus)

MMPA – Protected[4]

Includes all marine mammals above in addition to:

[1] http://www.nmfs.noaa.gov/pr/species/esa/listed.htm

[2] A distinct population segment (DPS) is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The ESA provides for listing species, subspecies, or DPS of vertebrate species.

[3] http://www.nmfs.noaa.gov/pr/species/esa/listed.htm

[4] http://www.nmfs.noaa.gov/pr/species/mammals

- Atlantic spotted dolphin *(Stenella frontalis)*
- Bottlenose dolphin (Tursiops truncatus)
- Atlantic white-sided dolphin *(Lagenorhynchus acutus)*
- Clymene dolphin (Stenella clymene)
- Pantropical spotted dolphin *(Stenella attenuata)*
- Risso's dolphin (Grampus griseus)
- Rough-toothed dolphin (Steno bredanensis)
- Short-beaked common dolphin *(Delphinus delphis)*
- Spinner dolphin (Stenella longirostris)
- Striped dolphin (Stenella coeruleoalba)
- Gray seal (Halichoerus grypus)
- Harbor porpoise (Phocoena phocoena)
- Harbor seal (Phoca vitulina)
- Minke whale (Balaenoptera acutorostrata)
- Cuvier's beaked whale (Ziphius cavirostris)
- Gervais' beaked whale (Mesoplodon europaeus)
- True's beaked whale *(Mesoplodon mirus)*
- Bryde's whale (Balaenoptera edeni)
- Dwarf sperm whale *(Kogia sima)*
- False killer whale (Pseudorca crassidens)
- Killer whale (Orcinus orca)
- Long-finned pilot whale *(Globicephala melas)*
- Melon-headed whale (Peponocephala electra)
- Pygmy killer whale (Feresa attenuate)
- Pygmy sperm whale (Kogia breviceps)
- Short-finned pilot whale (Globicephala macrorhynchus)

ESA – Species of Concern[5]

- Alewife (Alosa pseudoharengus)
- Blueback herring (Alosa aestivalis)
- Dusky shark (Carcharhinus obscures)
- Porbeagle shark *(Lamna nasus)*
- Rainbow smelt (Osmerus mordax)
- Sand tiger shark (Carcharias taurus)

[5] http://www.nmfs.noaa.gov/pr/species/concern/

- Speckled hind (Epinephelus drummondhayi)
- Striped croaker (Bairdiella sanctaeluciae)
- Warsaw grouper (Epinephelus nigritus)

MBTA—USFWS Species of Management Concern

- Canvasback (Aythya valisineria)
- Redhead (Aythya americana)
- Greater scaup (*Aythya marila*)
- Lesser scaup (*Aythya affinis*)
- Surf scoter (Melanitta perspicillata)
- White-winged scoter (*Melanitta fusca*)
- Black scoter (Melanitta americana)
- Long-tailed duck (*Clangula hyemalis*)
- Common goldeneye (*Bucephala clangula*)
- Red-throated loon (*Gavia stellata)*
- Black-capped petrel (Pterodroma hasitata)
- Greater shearwater (*Puffinus gravis*)
- Audubon's shearwater (*Puffinus lherminieri*)
- Band-rumped storm-petrel (*Oceanodroma castro*)
- Masked booby (*Sula dactylaria*)
- Brown booby (Sula leucogaster)
- Pied-billed grebe (*Podilymbus podiceps*)
- Horned grebe (Podiceps auritus)
- Magnificent frigatebird (*Fregata magnificens*)
- Least tern (*Sternula antillarum*), non-listed Atlantic coast subspecies
- Gull-billed tern (Gelochelidon nilotica)

7.5. Protected Species Interactions with Existing Fisheries

7.5.1. Brief overview of the Cobia fishery and gears used

Recreational fisheries are prosecuted similarly along the coast. The directed cobia fishery is prosecuted in two distinct ways. Bottom fishing with live or dead baits, often while chumming, in estuarine waters or around inlets or offshore around structure, buoys, markers, natural and artificial reefs. More recently, an active method of searching for fish traveling alone or in small groups on the surface or associated with schools of Atlantic menhaden or other bait fishes has grown in popularity. This newer method has resulted in the further development of the for-hire sector for cobia, as well as the development of specific artificial baits and boat modifications (e.g., towers) to facilitate spotting and catching the fish. A third method primarily prosecuted in

offshore waters is to target large rays, large sharks, sea turtles or floating debris around which cobia congregate. Additionally, the Atlantic coast of Florida is starting to see more directed spearfishing pressure on cobia. Specifically, spearfishers are chumming for bull shark and then diving/free-diving to spear cobia that associate with them. Spearfishing also occurs off North Carolina, along with a popular pier fishery.

The recreational fishery also takes cobia as bycatch in offshore bottom fisheries such as snapper/grouper, nearshore trolling for king mackerel, bluefish, and dolphin and any other fishery that employs live or dead bait fished on or near the bottom. While the directed fishery appears to focus more on the spring-summer spawning migration, bycatch, especially offshore, can yield cobia virtually year round. The average recreational cobia landings in Atlantic states north of Florida from 2010-2015 was almost 800,000lb.[6]

The commercial fishery has traditionally been a bycatch in other directed fisheries such as the snapper/grouper hook and line fishery and troll fisheries for various species (e.g., king mackerel, dolphin, wahoo, amberjack). Directed fisheries are generally precluded as a result of the low possession limits, but do occur, specifically Virginia's commercial hook and line fishery. Cobia from for-hire trips may also be sold commercially, depending on the state's permit requirements for selling fish. According to the 2015 biological opinion conducted for the Coastal Migratory Pelagic (CMP) resources in the Atlantic and Gulf of Mexico (GOM), in 2013, the predominant gear types used to capture cobia commercially were hook-and-line (78.2%), followed by diving (i.e., spearfishing; 10.4%), longline (7.5%), and gill net (2.5%); all other gears each accounted for less than 0.5% of the total catch (NMFS, 2015). The average commercial cobia landings in Atlantic states north of Florida from 2010-2015 was 56,158 lbs (ASMFC, 2016). In 2015, the predominant gear types that were used to capture cobia in the Atlantic north of Florida were hook-and-line (46%), gill net (44%), pound net (9%), and unknown gear type (1%)[7].

7.5.2. Marine Mammals

NMFS completed a biological opinion on June 18, 2015, evaluating the impacts of the CMP fishery on ESA-listed species. In the biological opinion, NMFS determined that the proposed continued authorization of the CMP Fishery, is not likely to adversely affect any listed whales (i.e., blue, sei, sperm, fin, humpback, or North Atlantic right whales). NMFS also determined that the CMP fishery will have no effect on designated critical habitat for North Atlantic right whale (NMFS, 2015).

The Gulf and South Atlantic CMP hook-and-line fishery (which includes fisheries that capture cobia) is classified in the 2017 MMPA List of Fisheries as a Category III fishery (82 FR 3655; January 12, 2017). This means the annual mortality and serious injury of a marine mammal resulting from the fishery is less than or equal to 1% of PBR, the maximum number of animals, not including natural moralities, that may be removed from a marine mammal stock while

[6] SEFSC, recreational ACL dataset

[7] http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/landings-by-gear/index

allowing that stock to reach or maintain its optimum sustainable population. In other words, there is a remote likelihood of or no known incidental mortality and serious injury of marine mammals resulting from these fisheries.

The Gulf and South Atlantic CMP gillnet fishery is classified as Category II fishery in the 2017 MMPA List of Fisheries. This classification indicates an occasional incidental mortality or serious injury of a marine mammal stock resulting from the fishery (1-50% annually of PBR). The fishery has no documented interaction with marine mammals; NMFS classifies this fishery as Category II based on analogy (i.e., similar risk to marine mammals) with other gillnet fisheries.

7.5.3. Sea Turtles

7.5.3.1. Overview

As mentioned above, the NMFS completed a biological opinion on June 18, 2015, evaluating the impacts of the CMP fishery (including King mackerel, Spanish mackerel, and cobia) on ESA-listed species (NMFS, 2015). According to the biological opinion, green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all likely to be adversely affected by the CMP fishery. Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory, travel widely throughout the GOM and South Atlantic, and are known to occur in area of the fishery. The biological opinion evaluated the potential for the following gears to interact with protected species: hook-and-line gear, cast net gear, and gill net gear. The biological opinion found that gill net gear is the only gear used in the CMP fisheries that may adversely affect sea turtles. Gill net gear is used to target both Spanish and king mackerel, but not cobia.

7.5.3.2. Hook-and-line fishing

The 2015 biological opinion for CMP resources concluded that sea turtles (as well as smalltooth sawfish and Atlantic sturgeon) are not likely to be adversely affected by CMP hook-and-line fishing. The 2015 biological opinion stated: "*The hook-and-line gear used by both commercial and recreational fishers to target CMP species is limited to trolled or, to a much lesser degree (e.g., historically ~2% by landings for king mackerel), jigged handline, bandit, and rod-and-reel gear. Sea turtles, Atlantic sturgeon, and smalltooth sawfish are both vulnerable to capture on hook-and-line gear, but the techniques commonly used to target CMP species makes effects on these listed species extremely unlikely and, therefore, discountable. Sea turtles are unlikely to be caught during hook-and-line trolling because of the speed (4-10 kt) at which the lure is pulled through the water. As cedar plugs and spoons are generally used when trolling, it is unlikely that a sea turtle of any size would actively pursue the gear and get hooked. Likewise, we also believe sea turtles would be unlikely to be snagged by jigged gear as it is deployed at or near the surface and constantly reeled and jigged back to the boat. It is possible that a sea turtle could be incidentally snagged if it comes in contact with a trolled or jigged hook, but the chances of this occurring are extremely low… We believe that CMP species caught on bandit gear or standard*

rod-and-reel gear (i.e., baited and deployed as passive, vertical gear) are largely bycatch when targeting other species closer to the bottom (e.g., snapper and grouper); use of the gear in this method (i.e., mid-water placement) is not effective at catching mackerel based on available information (e.g., landings data). In summary, we believe effects from these gear types on Atlantic sturgeon, smalltooth sawfish, and sea turtles are extremely unlikely to occur, and are therefore discountable" (NMFS, 2015).

There is limited information about protected species interactions within recreational fisheries. In 2015, The North Carolina Division of Marine Fisheries conducted a project funded under the ACCSP to examine potential protected species interactions and finfish discards and releases in the recreational cobia hook-and-line fishery. Observations were made via an alternative observer platform, where recreational fishing activity was monitored at close proximity from individuals on state owned vessels. From April 27, 2015, through October 29, 2015, 552 recreational hook-and-line observations (observed fishing trips) were completed over 138 observed fishing days with 16.2% of fishing trips targeting cobia. Observations occurred in inshore (estuarine) and near-shore waters (≤ 3 miles) of Carteret County. No protected species interactions were observed (Boyd 2016).

7.5.3.3. Gill net

Cobia are generally considered a bycatch species within gill net fisheries. The 2015 biological opinion for CMP resources concluded that gill net gear used in the federal CMP fisheries of the Atlantic and GOM have adversely affected sea turtles, smalltooth sawfish, and Atlantic sturgeon in the past via entanglement and, in the case of sea turtles, via forced submergence (NMFS, 2015).

7.5.3.4. Targeting of large animals

One known method used to prosecute cobia in offshore waters is to target large rays, large sharks, sea turtles, or floating debris around which cobia congregate. Not much is known about this method or its impacts on protected species.

7.5.4. Sturgeon, smalltooth sawfish, Nassau grouper

The 2015 biological opinion for CMP resources concluded that gill net gear used in the federal CMP fisheries of the Atlantic and GOM have adversely affected smalltooth sawfish[8] and Atlantic sturgeon in the past via entanglement.

The biological opinion also concluded that smalltooth sawfish and Atlantic sturgeon are not likely to be adversely affected by CMP hook-and-line fishing. Fishers who capture smalltooth sawfish most commonly report that they were fishing for snook, redfish, or sharks

[8] Although smalltooth sawfish are typically found in the peninsula of Florida, there have been recent interactions as far north as North Carolina.

(Simpfendorfer and Wiley 2004), not CMP species. Additionally, Atlantic sturgeon and smalltooth sawfish are largely bottom-dwelling species, whereas CMP lures and baits are typically fished near the surface of the water. This also greatly reduces the likelihood of Atlantic sturgeon and smalltooth sawfish interactions with trolling gear (NMFS, 2015).

On June 29, 2016, NMFS published a final rule listing Nassau grouper as threatened under the ESA. Reinitiation of Section 7 consultation on the CMP FMP is needed to address newly listed species. NMFS is currently prioritizing completion of the consultation along with other consultations required after recent listings.

7.5.5. Seabirds

The roseate tern, Bermuda petrel, and piping plover are the only ESA listed bird species within the South and Mid-Atlantic maritime regions. The roseate tern and Bermuda petrel are uncommon in inshore and coastal waters of the South and Mid-Atlantic and thus, have relatively low likelihoods of interacting with cobia fisheries. Nevertheless, exceptional efforts to avoid deleterious interactions with these species are warranted as they are rare and highly vulnerable to even minimal levels of mortality. The piping plover could be impacted by shore-based fishing activity if individuals were disturbed or killed by vehicles related to fishing efforts. However, during the nesting season, when plovers are highly vulnerable to beach disturbance, sensitive areas are posted and beach access is often restricted.

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. 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 CMP fishery. Framework Amendment 4 to the FMP for CMP resources in the Gulf of Mexico and Atlantic Region concluded that the CMP fishery is not likely to negatively affect the Bermuda petrel and the roseate tern.

7.6. Population Status Review of Relevant Protected Species

7.6.1. Marine Mammals

The status review of marine mammal populations inhabiting the Southwest Atlantic are discussed in detail in U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments. The most recent assessment was published in 2016 (Waring et al. 2016). The report presents information on stock definition, geographic range, population size, productivity rates, PBR, fishery specific mortality estimates, and compares the PBR to estimated human-caused mortality and serious injury for each stock.

7.6.2. Sea Turtles

All sea turtles that occur in U.S. waters are listed as either endangered or threatened under the ESA. The Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*) are listed as endangered. The Northwest Atlantic Ocean DPS of loggerhead turtles (*Caretta caretta*) and the North Atlantic and South Atlantic DPSs of green turtle (*Chelonia mydas*) are listed as threatened. All five of these species inhabit the waters of the U.S. Atlantic and Gulf of Mexico.

Atlantic coastal waters provide important developmental, migration, and feeding habitat for sea turtles. The distribution and abundance of sea turtles along the Atlantic coast is related to geographic location, reproductive cycles, food availability, and seasonal variations in water temperatures. Water temperatures dictate how early northward migration begins each year and are a useful factor for assessing when turtles will be found in certain areas. Sea turtles can occur in offshore as well as inshore waters, including sounds and embayments. More information about sea turtles can be found here: http://www.nmfs.noaa.gov/pr/species/turtles/index.html.

7.6.3. Sturgeon, smalltooth sawfish, and Nassau grouper

No estimate of the historical population size of shortnose sturgeon is available. While the shortnose sturgeon was rarely the target of a commercial fishery, it often was taken incidentally in the commercial fishery for Atlantic sturgeon. In the 1950s, sturgeon fisheries declined on the east coast, which resulted in a lack of records of shortnose sturgeon. Shortnose sturgeon has been listed as endangered since 1967. A status assessement of shortnose sturgeon was last published in 2010 (SSSRT, 2010).[9]

In 2012, NOAA Fisheries listed four DPSs of Atlantic sturgeon *(Acipenser oxyrinchus oxyrinchus)* as endangered (NY Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs) and one as threatened (Gulf of Maine). More information about Atlantic sturgeon can be found here: http://www.fisheries.noaa.gov/pr/species/fish/atlantic-sturgeon.html#documents.

The U.S. DPS of smalltooth sawfish was listed as endangered in 2003. No accurate estimates of abundance trends over time are available, but available data, including museum records and anecdotal observations from fishers, indicate that the population has declined dramatically by about 95%. Smallooth sawfish were once common throughout their historic range, but they have declined dramatically in U.S. waters over the last century. Still, there are few reliable data available, and no robust estimates of population size exist.[10]

In 2016, NOA Fisheries listed Nassau grouper as threatened under the ESA (81 FR 42268; June 29, 2016). While the species still occupies its historical range, overutilization through historical

[9] http://www.fisheries.noaa.gov/pr/species/fish/shortnose-sturgeon.html

[10] http://www.fisheries.noaa.gov/pr/species/fish/smalltooth-sawfish.html

harvest has reduced the number of individuals which in turn has reduced the number and size of spawning aggregations. Although harvest of Nassau grouper has diminished due to management measures, the reduced number and size of spawning aggregations and the inadequacy of law enforcement continue to present extinction risk to Nassau grouper. The Nassau grouper's confirmed distribution currently includes Bermuda and Florida (U.S.A.), throughout the Bahamas and Caribbean Sea. Many earlier reports of Nassau grouper up the Atlantic coast to North Carolina have not been confirmed.

7.6.4. Seabirds

The overall population status of the Bermuda Petrel is unknown. The Bermuda Petrel is a pelagic seabird, and its range and distribution at sea make it very difficult to survey. It is known to nest only on five small islets in Bermuda. Surveys are limited to the breeding grounds. The total population of the Bermuda Petrel is estimated as 101 breeding pairs (USFWS, 2013).

The roseate tern is a federally protected and endangered seabird that is mainly found in the Northern Hemisphere on the northeastern coast of North America, extending from Nova Scotia to the southern tip of Florida, as well as several islands in the Caribbean Sea. Populations in the northeastern U.S. greatly declined in the late 19th century due to hunting for the millinery, or hat trade. In the 1930s, protected under the MBTA, the population reached a high of about 8,500, but since then, population numbers have declined and stayed in the low range of 2,500 to 3,300. The species was listed in 1987 as endangered in the northeastern U.S. Populations in Florida, Georgia, North Carolina, Puerto Rico, South Carolina and the Virgin Islands are listed as threatened.[11]

The piping plover breeds on coastal beaches from Newfoundland and southeastern Quebec to North Carolina. These birds winter primarily on the Atlantic Coast from North Carolina to Florida, although some migrate to the Bahamas and West Indies. Piping plovers were common along the Atlantic Coast during much of the 19th century, but nearly disappeared due to excessive hunting for the millinery trade. The current population decline is attributed to increased development and recreational use of beaches. The most recent surveys place the Atlantic population at less than 2000 pairs.[12]

7.7. Existing and Proposed Federal Regulations/Actions Pertaining to Relevant Protected Species

7.7.1. Marine Mammals

Species of large whales protected by the ESA that occur throughout the Atlantic Ocean include the blue whale, humpback whale, fin whale, North Atlantic right whale, sei whale, and the

[11] https://www.fws.gov/northeast/pdf/Roseatetern0511.pdf
[12] https://www.fws.gov/northeast/pipingplover/overview.html

sperm whale. Additionally, the West Indian manatee also occurs in both the Gulf of Mexico and the Atlantic Ocean. These species are also considered depleted under the Marine Mammal Protection Act (MMPA). Depleted and endangered designations afford special protections from captures, and further measures to restore populations to recovery or the optimum sustainable population are identified through required recovery (ESA species) or conservation plans (MMPA depleted species). Numerous other species of marine mammals listed under the MMPA occur throughout the Atlantic Ocean.

The MMPA mandates NOAA's NMFS to develop and implement Take Reduction Plans for preventing the depletion and assisting in the recovery of certain marine mammal stocks that are seriously injured or killed in commercial fisheries. In the Atlantic, the following Take Reduction Plans have been developed, which address in part, gears that have been used to capture cobia (gillnet):

- The Atlantic Large Whale Take Reduction Plan is designed to reduce the risk of mortality and serious injury of large whales (right, fin, humpback) incindental to U.S. commercial trap/pot and gillnet fisheries, including Southeast Atlantic gillnet.

- The Bottlenose Dolphin Take Reduction Plan is designed to reduce the incidental mortality and serious injury of the western North Atlantic coastal bottlenose dolphin stock in several coastal fisheries, including the Southeast Atlantic gillnet fishery.

7.7.2. Sea turtles

Under the ESA, and its implementing regulations, taking sea turtles – even incidentally – is prohibited, with exceptions identified in 50 CFR 223.206. The incidental take of endangered species may only legally be authorized by an incidental take statement or an incidental take permit issued pursuant to Section 7 or 10 of the ESA, respectively. According to the 2015 biological opinion on CMP fisheries, green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all likely to be adversely affected by the CMP fishery (NMFS, 2015). Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory, travel widely throughout the GOM and South Atlantic, and are known to occur in the area of the fishery. The 2015 biological opinion for CMP established an incidental take statement with reasonable and prudent measures and terms and conditions for incidental take coverage in the federal CMP fisheries for sea turtles takes throughout the action area.

On April 6, 2016, NMFS published a final rule (81 FR 20058) listing 11 distinct population segments (DPSs) for green sea turtles. The listing of the DPSs of green turtles triggers reinitiation of consultation under Section 7 of the ESA because the previous opinion did not consider what effects the CMP fishery is likely to have on this species, therefore NMFS must analyze the impacts of these potential interactions. NMFS is also in the process of identifying critical habitat, which will be proposed in a future rulemaking.

In 2013, the North Carolina Division of Marine Fisheries was issued a permit for the incidental take of listed sea turtles associated with the otherwise lawful large and small mesh gill net fishing in specified inshore estuarine areas. This permit requires North Carolina to close designated areas to avoid approaching the take limit.

Existing NMFS regulations specify procedures that NMFS may use to determine that unauthorized takings of sea turtles occur during fishing activities, and to impose additional restrictions to conserve sea turtles and to prevent unauthorized takings (50 CFR 223.206(d)(4)). Restrictions may be effective for a period of up to 30 days and may be renewed for additional periods of up to 30 days each. In 2007, NMFS issued a regulation (50 CFR 222.402) to establish procedures through which each year NMFS will identify, pursuant to specified criteria and after notice and opportunity for comment, those fisheries in which the agency intends to place observers (72 FR 43176, August 3, 2007). NMFS issues a notice or regulation each year maintaining or updating the fisheries listed on the annual determination. The most recent determination was in December 2016 (81 FR 90330, December 14, 2016). NMFS may place observers on U.S. fishing vessels, either recreational or commercial, operating in U.S. territorial waters, the U.S. exclusive economic zone (EEZ), or on the high seas, or on vessels that are otherwise subject to the jurisdiction of the U.S. Failure to comply with the requirements under this rule may result in civil or criminal penalties under the ESA.

7.7.3. Sturgeon, smalltooth sawfish, and Nassau grouper

Shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*A. oxyrinchus*) were listed under the ESA in 1967 and 2012, respectively. The Commission and federal government implemented a coastwide moratorium on sturgeon harvest in late 1997 and early 1998. Bycatch remains an important issue in the recovery of Atlantic sturgeon populations throughout their range (ASMFC 2007). The National Marine Fisheries Service established a recovery plan for shortnose sturgeon in 1998.[13]

In 2013, the Georgia Department of Natural Resources was issued a permit for the incidental take of shortnose and Atlantic sturgeon associated with the otherwise lawful commercial shad fishery in Georgia. In 2014, the North Carolina Division of Marine Fisheries was issued a permit for the incidental take of Atlantic sturgeon DPSs associated with the otherwise lawful commercial inshore gillnet fishery in North Carolina.

The 2015 biological opinion for the Federal CMP fisheries established an incidental take statement with reasonable and prudent measures and terms and conditions for incidental take of Atlantic sturgeon (as well as sea turtles and smalltooth sawfish) throughout the action area (NMFS, 2015). In June 2016, NOAA Fisheries published proposed rules to designate critical habitat for Atlantic sturgeon (81 FR 36077; 6/3/2016 and 81 FR 35701; 6/3/2016).

[13] http://www.nmfs.noaa.gov/pr/pdfs/recovery/sturgeon_shortnose.pdf

The U.S. DPS of smalltooth sawfish was listed as endangered in 2003. Critical habitat was designated for it in 2009 (74 FR 45353; 9/2/2009) and a recovery plan was finalized in 2009 as well.[14]

Harvest and possession of Nassau grouper is prohibited in the United States, Puerto Rico, and the U.S. Virgin Islands. NMFS is evaluating potential management actions, such as critical habitat or application of the 4(d) rule in the ESA. When NMFS listed Nassau grouper as threatened, it solicited information from the public that may be relevant to the designation of critical habitat for Nassau grouper. A 4(d) rule provides regulations necessary for the conservation of any threatened species

7.7.4. Seabirds

Under the ESA and its regulations, take of Bermuda petrels, roseate terns, and piping plovers, even incidentally, is prohibited. The incidental take of an ESA listed species may only be legally authorized by an incidental take statement or incidental take permit issued pursuant to Section 7 or 10 of the ESA. No incidental takes of ESA listed bird species is currently authorized for cobia fisheries.

Section 316(c) of the Magnuson-Stevens Fishery Conservation and Management Act authorizes the Interior and Commerce Departments to undertake projects, in cooperation with industry, to improve information and technology to reduce seabird-fisheries interactions. USFWS seeks to partner with State, regional, and Federal agencies; industry; tribes; and NGOs to facilitate outreach and improve information and technology to reduce seabird bycatch in fisheries within state and Federal waters. A Memorandum of Understanding between NMFS and the USFWS (July 2012) describes additional collaborative efforts recommended to better understand and reduce bird bycatch in fisheries.[15]

Most actions to understand and reduce marine bird bycatch in the U.S. have occurred in Pacific waters. However, in 2011, the USFWS issued a business plan for addressing and reducing marine bird bycatch in U.S. Atlantic fisheries. The plan identified priority goals and actions to target the following marine bird-fisheries interactions: greater shearwaters in the New England groundfish fishery, and red-throated loons in the Mid-Atlantic gillnet fisheries.[16]

7.8. Potential Impacts to Atlantic Coastal State and Interstate Fisheries

Regulations under the take reduction plans for Atlantic large whales and bottlenose dolphins have the potential to impact gill net fisheries that capture cobia as bycatch.

[14] http://www.nmfs.noaa.gov/pr/pdfs/recovery/smalltoothsawfish.pdf
[15] https://www.fws.gov/migratorybirds/pdf/management/mounmfs.pdf
[16] https://www.fws.gov/migratorybirds/pdf/management/focal-species/GreaterShearwater.pdf

7.9. Identification of Current Data Gaps and Research Needs

7.9.1. General Bycatch Related Research Needs

The following activities would improve our understanding of bycatch of fish and protected species in the Southeast Region. These activities were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan[17]:

- In coordination with the Marine Recreational Information Program (MRIP), test and validate the use of on-board recording systems (e.g., electronic logbooks) for capturing information on discarded fishes and bycatch of protected species in the commercial and recreational fisheries including species, length, depth, location, and disposition; priority fisheries include shrimp (including assessing TED compliance), South Atlantic snappergrouper, other Southeast Region recreational hook-and-line fisheries, and fisheries under take reduction teams.
- Enhance existing tools (e.g., observers, logbook requirements, electronic technologies) to collect bycatch data that inform agency bycatch priorities; priority fisheries include shrimp (including assessing TED compliance), South Atlantic snapper-grouper, other Southeast Region recreational hook-and-line fisheries, and fisheries under take reduction teams.
- Invest in new, innovative fishery monitoring techniques, such as electronic fishing logbooks and video monitoring, to provide a cost effective means of producing more information to effectively quantify bycatch; priority fisheries include shrimp (including assessing TED compliance), South Atlantic snapper-grouper, other Southeast Region recreational hook-and-line fisheries, and fisheries under take reduction teams.
- Improve the discard estimates needed for informing snapper-grouper, reef fish, dolphin wahoo, and coastal migratory pelagic SEDAR assessments in the next 3-5 years.

7.9.2. Marine Mammals

The following bycatch related research needs were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan[18]:

- Characterize frequency, scope, and scale of bottlenose dolphin interactions with recreational rod/reel fishing gear.
- Enhance and increase observer coverage for gillnet fisheries under the bottlenose dolphin take reduction plans by focusing observer coverage in specific geographic areas

[17] http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf

[18] http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf

and fisheries, improving observer data collection and quality, and measures of fishing effort, as well as coordinating with state observer programs.

- Experimentally investigate possible attractants/deterrents for pilot whale/Risso's dolphins to pelagic longline gear and gear modifications to decrease the likelihood of hooking and/or entanglement.

7.9.3. Sea Turtles

Observer coverage of recreational fisheries has been relatively limited (Boyd, 2016). Expansion of observer programs to recreational hook-and-line fisheries would help determine the level of protected species interactions in those fisheries.

The following bycatch related research needs were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan[19]:

- Improved methods/models/techniques for estimating sea turtle bycatch in commercial fisheries including accounting for life stage and recovery unit (where applicable) impacts.
- Produce annual bycatch estimates for the shrimp trawl fisheries, pelagic longline, Gulf and South Atlantic reef fish, and Gulf and South Atlantic shark gillnet and bottom longline fisheries.
- Implement monitoring program to assess bycatch of sea turtles in recreational fisheries, including piers, jetties, head boats and FMP covered recreational fisheries.
- Develop tools to reduce recreational fishing bycatch including on piers/jetties.
- Develop and improve analytic methods for sea turtle bycatch estimation and sampling design to optimally allocate observer coverage and identify gaps and recommend improvements/changes to improve sea turtle bycatch information.
- Ensure sea turtle bycatch data collected across fisheries is standardized and contains all necessary elements to assess post interaction mortality and to inform conservation management.
- Conduct gear research and technology transfer to reduce sea turtle interactions and mortalities in both domestic and foreign trawl, longline, and gill net fisheries.
- Develop sea turtle observer programs for commercial fisheries not currently observed but for which data are needed.

[19] http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf

7.9.4. Sturgeon

NOAA Fisheries Southeast Regional Office has identified the following research needs for Atlantic sturgeon[20]:

- Identification of spawning and nursery grounds and overwintering areas.
- Long-term population monitoring programs.
- Population genetics.
- Toxic contaminant and biotoxin impacts and thresholds.
- Develop fish passage devices for sturgeon.
- Impacts of dredging.
- Reducing bycatch and bycatch mortality.

Regarding bycatch, very little information is available on current levels of bycatch and bycatch mortality occurring in fisheries in the Southeast. Research is needed to identify the spatial and temporal distribution of bycatch throughout the species range, and to identify measures that can be implemented to reduce bycatch and/or bycatch mortality.

NOAA Fisheries Southeast Regional Office has identified the following research needs for shorthnose sturgeon[21]:

- Genetic assessments.
- Surveys and presence/absence studies.
- Identification of spawning and nursery grounds and overwintering areas.
- Develop fish passage devices for sturgeon.
- Contaminant research.
- Impacts of dredging.

7.9.5. Sawfish

The following research needs were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan[22]:

- Develop a functional assessment model of juvenile sawfish habitat use within the critical habitat units.
- Determine the post-release mortality of sawfish from various types of fishing gear.

[20] http://sero.nmfs.noaa.gov/protected_resources/sturgeon/documents/ats_research_priorities.pdf

[21] http://sero.nmfs.noaa.gov/protected_resources/sturgeon/documents/sns_research_priorities.pdf

[22] http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf

- Investigate movements (short-term and seasonal) of adult sawfish to identify aggregation habitats and habitat use patterns.
- Develop habitat models to identify potential sawfish nursery habitats in areas unsurveyed or outside of the currently known habitat areas.
- Continue current sawfish surveys as these will be the basis of monitoring recovery.
- Conduct juvenile sawfish surveys beyond the boundaries of current surveys (e.g., east coast or north of Charlotte Harbor) to refine a baseline abundance estimates and monitor recovery.
- Conduct adult surveys throughout the range of smalltooth sawfish to determine a relative abundance estimate, the distribution of adults, and to identify sawfish mating and pupping habitats.

7.9.6. Seabirds

- Initiate and expand observer coverage/bycatch monitoring and collection and analysis of bird bycatch data to better understand extent of bird bycatch and identify bycaught bird species within the target fisheries (state waters).
- Collaborate with fishermen to develop and test gear and identify deployment practices that reduce bird bycatch within the target fisheries (state waters).
- Conduct outreach activities to facilitate sharing of bird bycatch information in the target fisheries among agencies, industry and the public.

8. REFERENCES

ASMFC. 2002. Amendment 2 to the Red Drum Interstate Fishery Management Plan. Washington (DC): ASMFC. 162 p.

ASMFC. 2007. Estimation of Atlantic sturgeon bycatch in coastal Atlantic commercial fisheries of New England and the Mid-Atlantic. Special report to the ASMFC Atlantic Sturgeon Fishery Management Board. Washington (DC), ASMFC. 95 p.

ASMFC. 2009a. Guide to fisheries science and stock assessments. Washington (DC), ASMFC. 66 p.

ASMFC. 2009b. Interstate Fisheries Management Program Charter. Washington (DC): ASMFC. 27 p.

ASMFC. 2012. Offshore Wind in My Backyard? Habitat Management Series #11. Arlington (VA): 10 p.

ASMFC. 2013. Harbor Deepening: Potential Habitat and Natural Resources Issues. Habitat Management Series #12. Arlington (VA): ASMFC. 10 p.

ASMFC, 2016. Public Information Document for the Interstate Fishery Management Plan for Cobia.

Atkinson L.P., D.W. Menzel, and K.A.E. Bush. 1985. *Oceanography of the southeastern U.S. continental shelf*. American Geophysical Union: Washington, DC

Blanton, J.O., L.P. Atkinson, L.J. Pietrafesa, and T.N. Lee. 1981. The intrusion of Gulf Stream water across the continental shelf due to topographically-induced upwelling. Deep-Sea Research 28:393-405.

Brooks, D.A., and J.M. Bane. 1978. Gulf Stream deflection by a bottom feature off Charleston, South Carolina. Science 201:1225-1226.

Boyd, J. 2016. North Caroline Division of Marine Fisheries. Final Report to National Marine Fisheries Service and Atlantic Coastal cooperative Statistics Program. Grant Award #NA14NMF47400367. 36pp.

Cobia Tagging. 2017. Virginia Institute of Marine Science. http://www.vims.edu/research/departments/fisheries/programs/tagging_research/cobia/index.php

Collette, B., J. L. Russo, and L. A. Zavala-Camin. 1978. Scomberomorus brasiliensis, a new species of Spanish mackerel from the western Atlantic. Fish. Bull. 76: 273-280.

Dahl, T.E. 2000. Status and trends of wetlands in the conterminous United States I986 to 1997.U.S. Dept. of Interior, USFWS, Washington, DC. 8lp.

Darden, T.L., M.J. Walker, K.Brenkert, J.R. Yost, and M.R. Denson. 2014. Population genetics of Cobia (*Rachycentron canadum*): implications form fishery management along thr coast of the southeastern United States. Fish. Bull. 112: 24-35

Ditty, J.G., and R.F. Shaw. 1992. Larval development, distribution, and ecology of cobia *Rachycentron canadum* (Family: Rachycentridae) in the northern Gulf of Mexico. Fish. Bull. 90:668-677

GMFMC and SAFMC. 1983. Fishery Management Plan, Final Environmental Impact Statement/Regulatory Review, Final Regulations for the Coastal Migratory Pelagic Resource (Mackerels). Prepared by the Gulf of Mexico and South Atlantic Fishery Management Councils, February, 1983. Tampa, Florida and Charleston, South Carolina. 399 pp.

GMFMC/SAFMC. 1992. Amendment 6 to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and Atlantic Region. Gulf of Mexico Fishery Management Council, Tampa, Florida, and South Atlantic Fishery Management Council, Charleston, South Carolina.

GMFMC/SAFMC. 2011. Amendment 18 to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and Atlantic Region. Gulf of Mexico Fishery Management Council, Tampa, Florida, and South Atlantic Fishery Management Council, North Charleston, South Carolina.

GMFMC/SAFMC. 2014. Amendment 20B to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and Atlantic Region. Gulf of Mexico Fishery Management Council, Tampa, Florida, and South Atlantic Fishery Management Council, North Charleston, South Carolina.

SAFMC. 2016 (in preparation). Framework Amendment 4 to the Fishery Management Plan for

Holland, A.F., G.H.M. Riekerk, S.B. Lerberg, L.E. Zimmerman, D.M. Sanger, G.l. Scott and M.H. Fulton. 1996. Assessment of the impact of watershed development on the nursery functions of tidal creek habitats. ***In:*** G.S. Kleppel and M.R DeVoe (eds.) The South Atlantic Bight land use

coastal ecosystems study (LU-CES), pp. 28-31. Univ. of Georgia Sea Grant and S.C. Sea Grant Program. Report of a planning workshop.

Janowitz, G.S., and L.J. Pietrafesa. 1982. The effects of alongshore variation in bottom topography on a boundary current - topographically-induced upwelling. Continental Shelf Research 1:123-141.

Lee, T.N., C. Rooth, E. Williams, M.F. McGowan, A.F. Szmant, and M.E. Clarke. 1992. Influence of Florida Current, gyres and wind-driven circulation on transport of larvae and recruitment in the Florida Keys coral reefs. Continental Shelf Research 12:971-1002.

Lee, T.N., M.E. Clarke, E. Williams, A.F. Szmant, and T. Berger. 1994. Evolution of the Tortugas Gyre. Bulletin of Marine Science 54(3):621-646.

Lefebvre, L.S., and M.R. Denson. 2012. Inshore spawning of cobia (*Rachycentron canadum*) in South Carolina. Fish. Bull. 110:397-412.

Lovell, SJ, J Hilger, S Steinback, and C Hutt. 2016. The Economic Contribution of Marine Angler Expenditures on Durable Goods in the United States, 2014. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-165, 72 pp.

Manooch, Charles S. 1984. Fisherman's guide to fishes of the Southeastern United States. North Carolina Museum of Natural History. Raleigh, North Carolina. 362 pp.

McClane, A.J. 1974. McClane's new standard fishing encyclopedia and international angling guide. Holt, Rinehart & Winston, NY, 1156 p.

Menzel D.W., editor. 1993. Ocean processes: U.S. southeast continental shelf. DOE/OSTI -- 11674. U.S. Department of Energy.

Miller, J.M. 1988. Physical processes and the mechanisms of coastal migrations of immature marine fishes. In: M.P. Weinstein (ed.) Larval fish and shellfish transport through inlets, pp. 68-76. American Fisheries Society, Bethesda, MD.

Musick, S, and L Gillingham. 2016. Virginia Game Fish Tagging Program Annual Report, 2015. Virginia Institute of Marine Science Marine Resources Report No. 2016-05. 102 pp.

National Marine Fisheries Service. 2015. Endangered Species Act - Section 7 Consultation Biological Opinion. 2015 Reinitiation of Endangered Species Act (ESA) Section 7 Consultation on the Continued Authorization of the Fishery Management Plan (FMP) for Coastal Migratory Pelagic (CMP) Resources in the Atlantic and Gulf of Mexico under the Magnuson-Stevens Fishery Management and Conservation Act (MSFMCA). Available at: http://sero.nmfs.noaa.gov/protected_resources/section_7/freq_biop/documents/fisheries_bo/2015_cmp_opinion.pdf.

SAFMC. 1998. Habitat plan for the South Atlantic region: essential fish habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. SAFMC, Charleston, SC. 457 p. + appendices.

Schwartz, F. J. 1989. Zoogeography and ecology of fishes inhabiting North Carolina's marine waters to depths of 600 meters. Pages 335-374 *In* R. Y. George, and A. W. Hulbert, editors. North Carolina coastal oceanography symposium. U.S. Dep. Commerce, NOAANURP Rep. 89-2.

Scott, G. P., D. M. Burn and L. J. Hansen. 1988. The dolphin die off: Long term effects and recovery of the population. Proceedings: Oceans '88, IEEE Cat. No. 88-CH2585-8, Vol. 3: 819-823.

Serafy, J.E., K.C. Lindeman, T.E Hopkins and J.S. Ault. 1997. Effects of freshwater canal discharges on subtropical marine fish assemblages: field and laboratory observations. Mar. Ecol. Prog. Ser. 160: 161-172.

SEDAR. 2013. SEDAR 28 – South Atlantic Cobia Stock Assessment Report. SEDAR, North Charleston, SC. 420 pp., available online at: http://www.sefsc.noaa.gov/sedar.

Shaffer, R.V., and E.L Nakamura. 1989. Synopsis of biological data on the cobia Rachycentron canadum (Pisces: Rachycentridae). NMFS, NOAA Technical Report 82.

Shortnose Sturgeon Status Review Team (SSSRT). 2010. A Biological Assessment of shortnose sturgeon (Acipenser brevirostrum). Report to National Marine Fisheries Service, Northeast Regional Office. November 1, 2010. 417 pp.

Simpfendorfer, C.A., and T.R., Wiley. 2004. Determination of the distribution of Florida's remnant sawfish population, and identification of areas critical to their conservation. Mote Marine Laboratory, Technical Report July 2, 2004, 37 pp.

South Atlantic Fishery Management Council. 2016. Framework Amendment 4 to the Fishery Management Plan for Coastal Migratory Pelagics Resources in the Gulf of Mexico and Atlantic Region. NOAA award # FNA10NF4410012. Charleston SC. 148 pp.

Smith, N.P. 1994. Long-term Gulf-to-Atlantic transport through tidal channels in the Florida Keys. Bulletin of Marine Science 54:602-609.

Smith, Joseph W. 1995. Life history of cobia *Rachycentron canadum* (Osteichthyes: Rachycentridae), in North Carolina Waters. Brimleyana 23:1-23.

U.S. Fish and Wildlife Service. 2013). Cahow of Bermuda Petrel (Pterodroma cahow). 5-year review: Summary and Evaluation. https://ecos.fws.gov/docs/five_year_review/doc4326.pdf

Wang, J.D., J. van de Kreeke, N. Krishnan, and D. Smith. 1994. Wind and tide response in Florida Bay. Bulletin of Marine Science 54:579-601.

Waring, G.T., E. Josephson, K. Maze-Foley, and P.E. Rosel, editors. 2016. US Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2015. NOAA Technical Memorandum NMFS-NE-238. http://www.nmfs.noaa.gov/pr/sars/region.htm.

Yeung, C., and M.F. McGowan. 1991. Differences in inshore-offshore and vertical distribution of phyllosoma larvae of *Panulirus, Scyllarus, and Scyllarides* in the Florida Keys in May-June, 1989. Bulletin of Marine Science 49:699-714.