

***Atlantic States Marine Fisheries Commission***

**DRAFT ADDENDUM II TO AMENDMENT 1  
TO THE INTERSTATE FISHERY MANAGEMENT PLAN  
FOR ATLANTIC MIGRATORY GROUP COBIA**

***Recreational Allocation, Recreational Harvest Target Evaluations,  
and Measures Setting Timeline***



**May 2024**



*Sustainable and Cooperative Management of Atlantic Coastal Fisheries*

## Draft Document for Public Comment

### Public Comment Process and Proposed Timeline

In October 2023, the Coastal Pelagics Management Board initiated the development of Draft Addendum II to Amendment 1 to the Interstate Fishery Management Plan for Atlantic Migratory Group Cobia to consider reallocation of the recreational harvest quota and consider changes to the overall allocation framework. In January 2024, the Board provided additional guidance expanding the scope of the Draft Addendum to address the process for future allocation updates, addressing uncertainty around harvest estimates, and the timeline for setting specifications. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission’s management of the Atlantic cobia recreational fisheries; the addendum process and timeline; and a statement of the problem. This document also provides management options for public consideration and comment.

The public is encouraged to submit comments regarding the proposed management options in this document at any time during the public comment period. The final date comments will be accepted is **July 8, 2024 at 11:59 p.m. (EST)**. Comments may be submitted at state public hearings or by mail or email. If you have any questions or would like to submit comment, please use the contact information below. Organizations planning to release an action alert in response to this Draft Addendum should contact Emilie Franke, Fishery Management Plan Coordinator, at [efranke@asmfc.org](mailto:efranke@asmfc.org) or 703.842.0740.

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(Subject: Cobia Draft Addendum II)

Date	Action
October 2023	Board initiated the Draft Addendum
January 2024	Board provided additional guidance on Draft Addendum scope
February – April 2024	Plan Development Team developed Draft Addendum document
May 2024	Board reviewed and approved Draft Addendum II for public comment
Late May – July 8, 2024	Public comment period, including public hearings; written comments accepted through July 8, 2024
August 2024	Board reviews public comment, selects management measures, final approval of Addendum II

# Draft Document for Public Comment

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## 1.0 INTRODUCTION

The Atlantic States Marine Fisheries Commission (Commission) is responsible for managing Atlantic cobia (*Rachycentron canadum*) from Rhode Island through Georgia in state waters (0-3 miles from shore) under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, and has done so through the Interstate Fishery Management Plan for Atlantic Migratory Group Cobia (FMP) since 2017. Atlantic cobia are currently managed under Amendment 1 (2019) to the FMP and Addendum I to Amendment 1 (2020). The states of Rhode Island through Florida, except Connecticut, have a declared interest in the fishery and are responsible for implementing management measures consistent with the Interstate FMP as members of the Coastal Pelagics Management Board. Although Florida has a declared interest in the fishery, their cobia fisheries are managed as part of the Gulf of Mexico Migratory Group Cobia, which is not managed by the Commission, due to the cobia stock boundary at the Georgia-Florida border.

In October 2023, the Board initiated this addendum to address reallocation of recreational cobia quota based on more recent harvest data, recognizing that the distribution of Atlantic cobia harvest has changed since the terminal year in current allocation calculations (2015). In addition, the Board expressed interest in considering alternatives to the current state-by-state allocation system as noted in the approved Board motion from October 2023:

*Move to initiate an addendum addressing recreational Atlantic cobia quota reallocation. The Board recommends that the Plan Development Team explore options outside of the current state-by-state quota allocation system, specifically a coastwide soft target with regional management measures designed to meet the coastwide soft target while considering the need for fishing opportunity based on the seasonality of the species in various regions.*

In January 2024, the Board provided additional guidance on the scope of the addendum. The Board supported adding options to consider the process for updating allocations in the future, and adding options to consider accounting for uncertainty around harvest estimates. For allocation data timeframes, the Board supported considering 2018-2023 as an option with the exclusion of 2020 due to COVID-19 impacts on data collection. The Board also requested an option to consider a timeline of five years when setting recreational measures.

## 2.0 OVERVIEW

### 2.1 Statement of the Problem

The Interstate FMP established state-by-state allocations of the coastwide recreational harvest quota based on harvest data from 2006-2015. At the time of the FMP's approval in 2017, these were the most recent data available to inform allocations. The allocation timeframe did not extend beyond 2015 due to cobia fishery closures in federal waters in 2016-2017 which impacted states' recreational harvests. In 2019, Amendment 1 to the FMP set aside one percent of the recreational harvest quota to account for harvest in *de minimis* states, and each state's allocation percentage was adjusted accordingly to account for that one percent set-aside.

It has been several years since state-by-state allocations were updated. Furthermore, the distribution of cobia landings has changed in recent years and is markedly different from the distribution of state landings observed during the initial allocation data timeframe of 2006-2015. Over the last several years, recreational landings have increased in some Mid-Atlantic states while remaining relatively stable in southern states, indicating a possible range expansion as opposed to a stock shift. Additionally, two states have recently declared into the Atlantic cobia fishery (Rhode Island and New York) due to increasing presence of cobia in state waters. Updating the allocation data timeframe would account for these recent changes in landings and the extent of the fishery. If reallocation is not considered, it is likely that some Mid-Atlantic and *de minimis* states at the northern end of the range will continue to exceed their soft targets resulting in restrictive cobia measures that may not reflect the status of the stock.

In addition to concerns about the outdated allocation data timeframe, there are concerns about continuing to use a state-by-state allocation framework. The Interstate FMP originally implemented the state-by-state allocation framework to provide states with flexibility to adjust management to ensure state access when cobia were available and to suit their specific state needs, while still adhering to the federal catch limits at the time. Due to the high level of uncertainty associated with state-level recreational harvest estimates, there are concerns about continuing to use the state-by-state allocation framework (i.e., performance and management changes based on comparing state harvest estimates to state targets). Cobia harvest estimates from the Marine Recreational Information Program (MRIP) tend to have high percent standard errors (PSEs), which indicates lower precision and higher uncertainty. This is common for species like cobia which is a pulse/rare event fishery with highly variable landings year-to-year resulting from inconsistent interactions with cobia anglers. One way to reduce uncertainty is to increase the sample size, which could be accomplished by considering a regional allocation framework or coastwide allocation framework.

Uncertainty could also be addressed by considering the number of data years included in a rolling average, whether the use of point estimates is appropriate, and/or whether a state or region's performance should be considered on its own or considered relative to other state or region performance (i.e., if one region exceeds their target, and another region is below their target, consider whether that result informs the need for management action).

If cobia harvest continues to increase at the northern end of their range, states that currently have *de minimis* status may exceed that *de minimis* threshold over the next several years. When a state loses its *de minimis* status, it must be factored into the allocation calculations to have its own harvest target. The allocation percentage calculations may also need to change if the allocation source data are updated as part of MRIP's effort to evaluate potential bias in the Fishing Effort Survey (FES) estimates. If these changes to the allocation percentages must be done through the addendum process, that process could take several months. Those changes could be accomplished more quickly if the Board had the ability to make those specific updates to the allocations via Board action, which could be specified in this addendum.

Finally, there is concern about changing management measures too frequently under Amendment 1's specification process which limits specification setting to up to three years at a time. To avoid management 'whiplash', specifications could be set for a longer period of time.

## **2.2 Background**

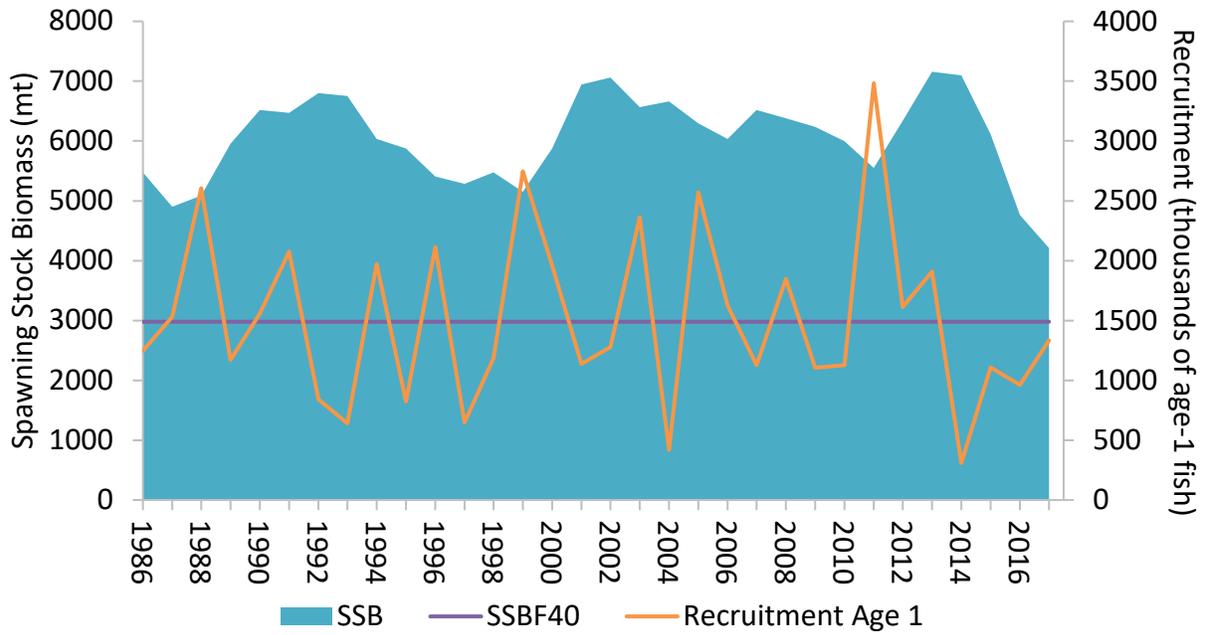
### **2.2.1 Status of the Stock**

In 2020, the Board approved the SEDAR 58 Atlantic Cobia benchmark assessment for management use. This assessment continued to use the Beaufort Assessment Model (BAM), a forward-projecting statistical catch-at-age model used in the prior assessment, SEDAR 28 (SEDAR, 2013). SEDAR 58, with a terminal year of 2017, provided new reference points (F40% and 75% of SSBF40%). These reference points were selected as they represent the fishing rate and spawning stock biomass (SSB) that allows the population to reach 40% of the maximum spawning potential. These reference points also serve as proxies for maximum sustainable yield-derived relationships due to insufficient data for cobia. Based on those reference points, the stock is not overfished and overfishing is not occurring.

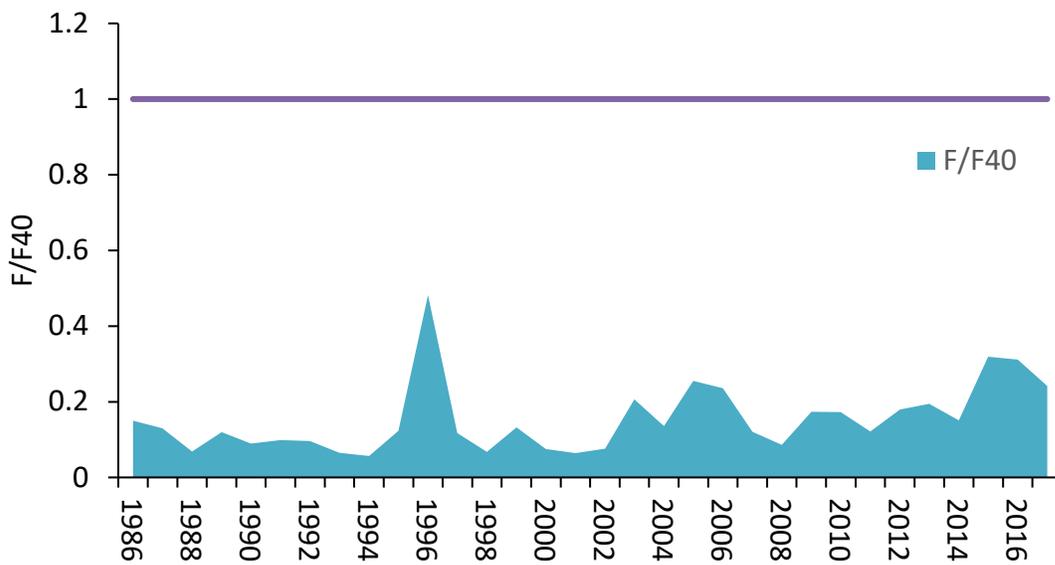
The stock assessment primarily used fishery-dependent data (i.e., data from the recreational and commercial fisheries) as well as information on Atlantic cobia biology, life history, and movement to determine stock condition. The largest changes in SEDAR 58 since the previous assessment included updating data sources with new years of data, updating the natural mortality information, and using newly recalibrated recreational catch and effort data from MRIP.

SEDAR 58 estimated the last strong cobia year class entered the fishery in 2010 (age 1 in 2011) with the four most recent year classes at low levels of recruitment (age 1 in 2014-2017) (SEDAR, 2020). While the SSB remains above the overfished threshold, below-average recruitment led to a decreasing trend in SSB since 2014 (Figure 1). The fishing mortality rate has increased since the late 2000s but has not exceeded the overfishing threshold (Figure 2).

The next stock assessment for Atlantic Migratory Group Cobia (SEDAR 95) is a benchmark assessment currently underway with an estimated completion date of late 2025 or early 2026. The frequency of future stock assessments for Atlantic cobia is uncertain, and the assessment model and methods may change significantly as part of the current assessment, SEDAR 95. The time between completion of the previous stock assessment and the current assessment will be approximately 5-6 years.



**Figure 1.** Atlantic Cobia spawning stock biomass (SSB) and recruitment of year 1 fish. (SEDAR, 2020)



**Figure 2.** Atlantic Cobia fishing mortality (F) relative to the F40 reference point from 1986-2017. (SEDAR, 2020)

### 2.2.2 Status of Management

In 2019, Amendment 1 to the Interstate FMP transitioned management of Atlantic cobia from complementary management with the South Atlantic Fishery Management Council to sole management by the Commission. Amendment 1 allows the Board to specify a limited set of management measures for up to three years. This harvest specification process allows managers to specify regulations controlling future harvest through a Board vote, allowing managers to respond quickly to changes in the fishery or react following a stock assessment. Through the harvest specification process, the Board may set the coastwide total harvest quota (combined commercial and recreational harvest), vessel limits, possession or bag limits, minimum size limits, and the commercial closure triggering mechanism for up to three years.

In October 2020, the Board approved Addendum I to Amendment 1, which included modification of the allocation between the commercial and recreational sectors. Addendum I allocates 96% of the coastwide total harvest quota to the recreational sector and 4% of the quota to the commercial sector.

The recreational portion of the total harvest quota is further allocated to non-*de minimis* states as soft harvest targets with a 1% set-aside for harvest in *de minimis* states. Amendment 1 defines the process by which the recreational quota is allocated to non-*de minimis* states where 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. A 'soft' harvest target means that management measures are adjusted to reduce harvest to the target, but any overage does not need to be paid back. 'Hard' harvest targets (which would have required overage payback) were considered as part of the original Interstate FMP, but soft targets were selected as the management approach.

For the 2024-2026 fishing seasons, the total harvest quota for both sectors combined is 80,112 fish, which is the same harvest quota that has been in place since 2020. The coastwide recreational harvest quota (96% of the total harvest quota) is 76,908 fish. The current management program manages the recreational fishery with a 1 fish bag limit and a minimum size limit of 36 inches fork length (FL) or 40 inches total length (TL) for non-*de minimis* states. Season restrictions and vessel limits are determined by individual states, but may not exceed 6 fish per vessel. Recreational regulations for each state are provided in Appendix A.

Within the coastwide recreational harvest quota, Georgia, South Carolina, North Carolina, and Virginia have the following state recreational harvest targets based on the state-by-state-allocations defined in Amendment 1 to the FMP:

Georgia – 7,229 fish  
South Carolina – 9,306 fish  
North Carolina – 29,302 fish  
Virginia – 30,302 fish

Recreational harvest of state-specific allocations are evaluated over three-year time periods (or when the total harvest quota changes). Each non-*de minimis* state evaluates recent harvest as an average of years with the same recreational management measures against the state-specific soft targets. If a state's averaged recreational harvest exceeds its harvest target, the state must adjust its management measures to reduce harvest to achieve the target, unless otherwise specified by the Board. If a state's harvest is below their target for at least two consecutive years, the state may liberalize management measures, if desired, to achieve its target. Changes to management measures for states with overages or states that wish to liberalize must be reviewed by the Cobia Technical Committee and approved by the Board prior to implementation.

*De minimis* states collectively have a 1% set-aside of the coastwide recreational quota (769 fish) and are exempt from completing harvest target evaluations. The FMP allows states to request recreational *de minimis* status if their recreational landings in two of the previous three years are less than 1% of annual coastwide recreational landings during that time period. A recreational *de minimis* 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 limit its recreational fishery to 1 fish per vessel per trip with a minimum size of 33 inches FL (or 37 inches TL).

The commercial fishery has an annual coastwide commercial quota of 73,116 pounds (4% of total harvest quota) for the 2024-2026 fishing seasons, which is the same quota that has been in place since 2020. The current management measures for the commercial fishery include a 33 inches FL (or 37 inches TL) minimum size limit and 2 fish per person limit, with a 6 fish maximum vessel limit. Non-*de minimis* states are required to monitor commercial cobia landings in-season and submit regular landings updates to the Commission. The commercial Atlantic cobia fishery will close once the commercial quota is projected to be reached as determined by the updated Addendum I methodology to calculate the commercial trigger for in-season closures. Commercial regulations for each state are listed in Appendix A.

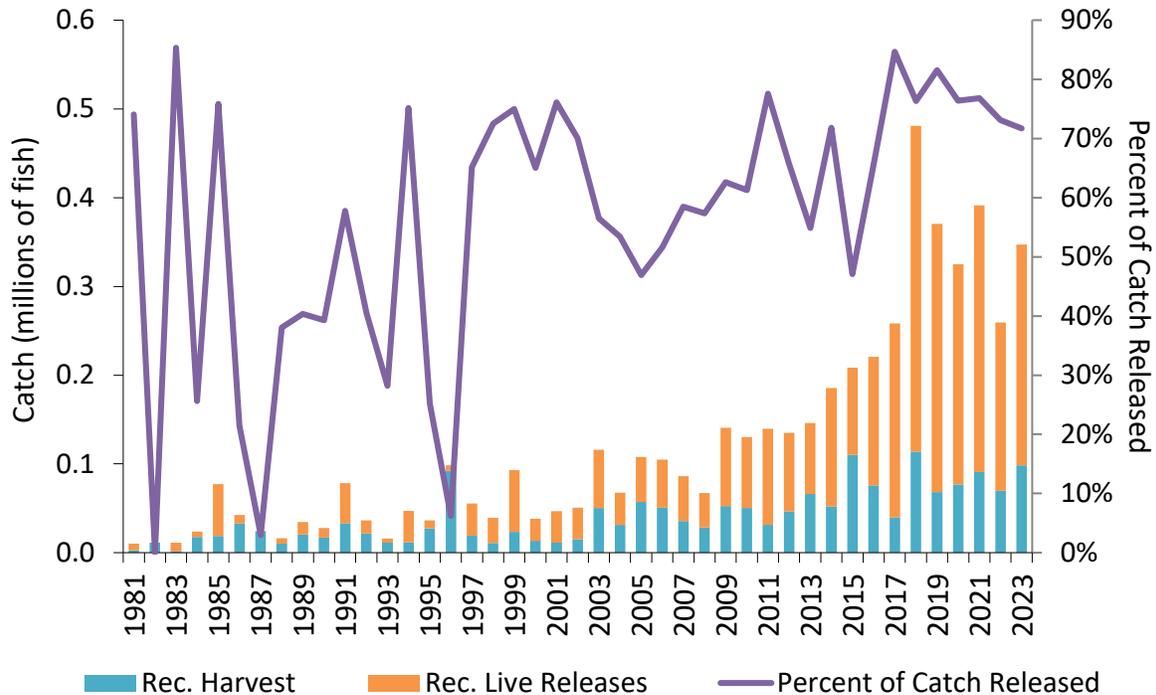
### **2.2.3 Status of the Fishery**

*Note: Since this addendum primarily considers management of the recreational fishery, the following information focuses on Atlantic cobia recreational fisheries. For information on the commercial fishery, see the [Review of the FMP for Atlantic Cobia: 2022 Fishing Year](#) (ASMFC 2023).*

Recreational harvest has fluctuated throughout the time series, often in rapid increases or declines. Average recreational harvest over the entire time series (1981-2023) is 1.1 million pounds, or about 40,557 fish (Figure 3). More recently, recreational harvest has increased to the series high of 113,939 fish coastwide in 2018, before decreasing to an average of 86,326 fish from 2018-2023.

Recreational releases of live fish have generally increased throughout the time series (Figure 3). In 2023, 248,890 recreationally-caught fish were released, a 31% increase from 2022. This

coincides with the increase in recreational landings in 2023 from 2022. From 2018-2023, an average 76% of cobia caught recreationally were released alive each year. This is higher than the average 65% released alive during the period of 2013-2017.



**Figure 3.** Recreational catch (harvest and live releases) of Atlantic cobia (numbers) and the proportion of catch that is released. Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).

From 2018-2023, Virginia has harvested the majority of the coastwide recreational cobia, with an average of 70.1% of the total fish by count (average of 60,894 fish/year) (Table 1, Figure 4). North Carolina has the second highest recreational harvest with an average of 14.5% of the total fish by count (average of 12,403 fish) for the same timeframe. South Carolina and Georgia have averaged 7.1% and 5.6% of the total coastwide harvest annually for the same timeframe (6,058 and 4,838 fish respectively), and the *de minimis* states made up the remainder (2.6% on average annually, 2,134 fish). Over the last several years, recreational landings have increased in some Mid-Atlantic states while remaining relatively stable in southern states, indicating a possible range expansion as opposed to a stock shift (Figure 4). Recent [research](#) to project future distributions of Atlantic cobia and their suitable habitat indicates similar trends, with cobia habitat during the summer projected to increase north of Virginia in the future (Crear et al. 2020).

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Virginia has harvested above its state recreational target each year since the current state-by-state targets were implemented in 2020 (Table 1). Georgia harvested above their state target in 2021 and 2023. South Carolina has been harvesting just at or under their target each year, while North Carolina has been under their harvest target each year.

From 2018-2023 the *de minimis* states (currently north of Virginia) have exceeded their 1% set-aside in 4 of the past 6 years. The highest harvest by the *de minimis* states for the time period occurred in 2021, with a total of 5,334 fish or 694% of the *de minimis* allocation. This equates to 6% of coastwide landings that year. States north of Virginia currently have recreational *de minimis* status as each of those states' recreational harvest in two of the previous three years was less than 1% of annual coastwide landings. Florida also has recreational *de minimis* status since its fishery targets Gulf of Mexico Migratory Group Cobia (not Atlantic Migratory Group Cobia).

The percent standard errors (PSEs) associated with recreational cobia harvest estimates from MRIP can be quite high due to the pulse/rare event nature of the cobia fishery. Table 2 summarizes the PSEs for each state's recreational cobia harvest estimates over the last six years.

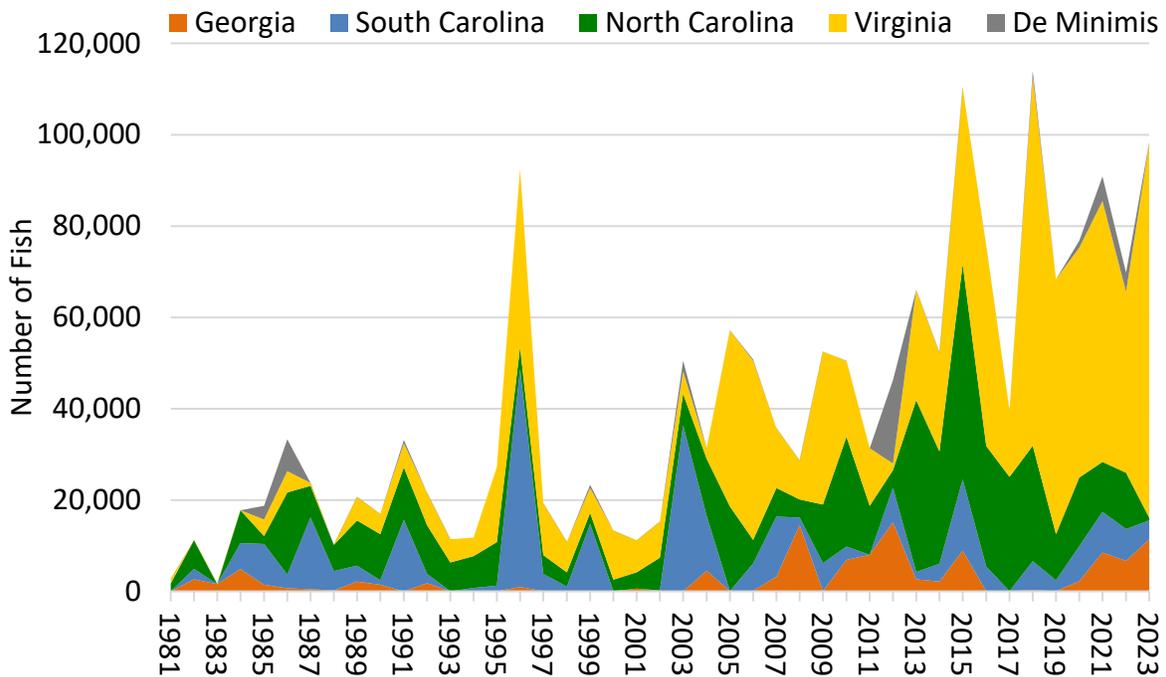
**Table 1.** Cobia recreational harvest by state in number of fish from 2018-2023 . Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).

Year	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	Total Rec. Harvest
2018		569			581	206	80,679	25,331	6,340	233	<b>113,939</b>
2019							55,770	10,090	2,381	72	<b>68,313</b>
2020		219				1,360	50,287	15,067	7,650	2,203	<b>76,786</b>
2021				250		5,084	57,135	10,970	8,858	8,510	<b>90,807</b>
2022			3,462	711			39,668	12,330	6,988	6,641	<b>69,800</b>
2023	361						81,824	629 <sup>+</sup>	4,129	11,368	<b>98,311</b>
<i>Soft Target for 2020-24</i>	<i>769 de minimis set-aside</i>						<i>30,302</i>	<i>29,302</i>	<i>9,306</i>	<i>7,229</i>	<b><i>76,908</i></b>

\*Note: North Carolina Division of Marine Fisheries (NCDMF) staff looked into the very low harvest estimate for 2023 and found that windy weather limited the number of fishable days, and cobia were available for about a week. Data showed that MRIP intercepts in North Carolina were considerably lower in 2023 (38) compared to 2019 (85), 2021 (60), and 2022 (78). NCDMF staff noted that the low harvest estimate is also likely influenced by high percent standard error (PSE) because cobia is a rare event species and a pulse fishery.

**Table 2.** Percent standard error (PSE) for each state’s recreational cobia harvest estimate in number of fish from 2018-2023. Red indicates a PSE greater than 50 (MRIP does not support use of the estimate). Yellow indicates a PSE between 30 and 50 (MRIP cautions use of the estimate in fisheries management). Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).

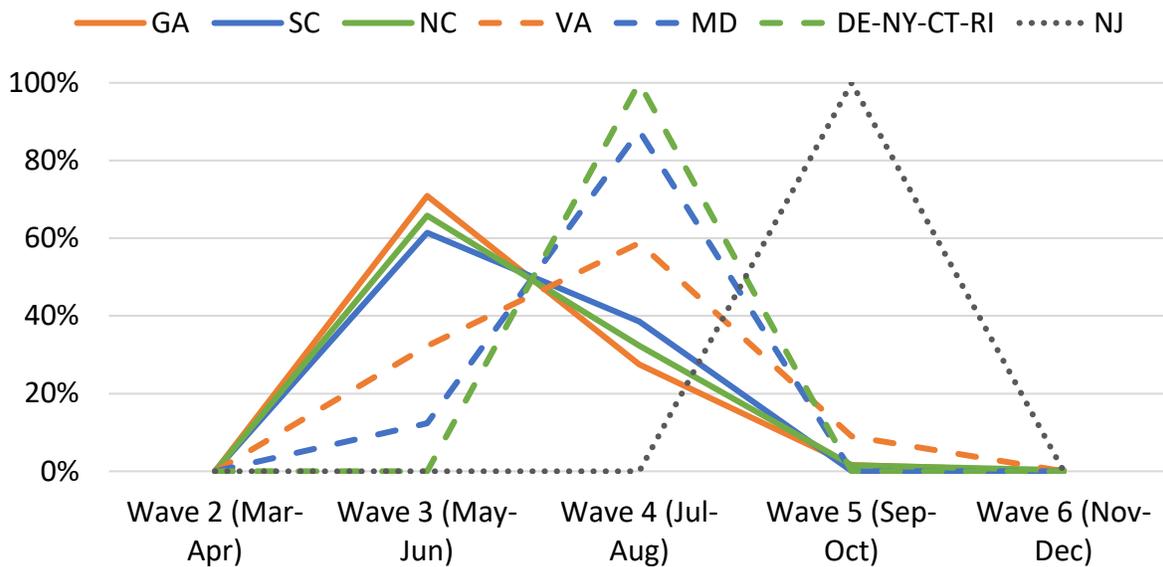
Year	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA
2018		100.4			98.1	66.7	35.8	33.2	42.2	53.9
2019							22.6	38.6	70.6	56.9
2020		102.7				69.5	25.0	37.9	39.1	92.4
2021				92.4		43.8	22.9	39.1	41.9	41.4
2022			82.3	102.2			25.1	47	55.9	72.4
2023	71.9						34.2	53.1	61.9	56.0



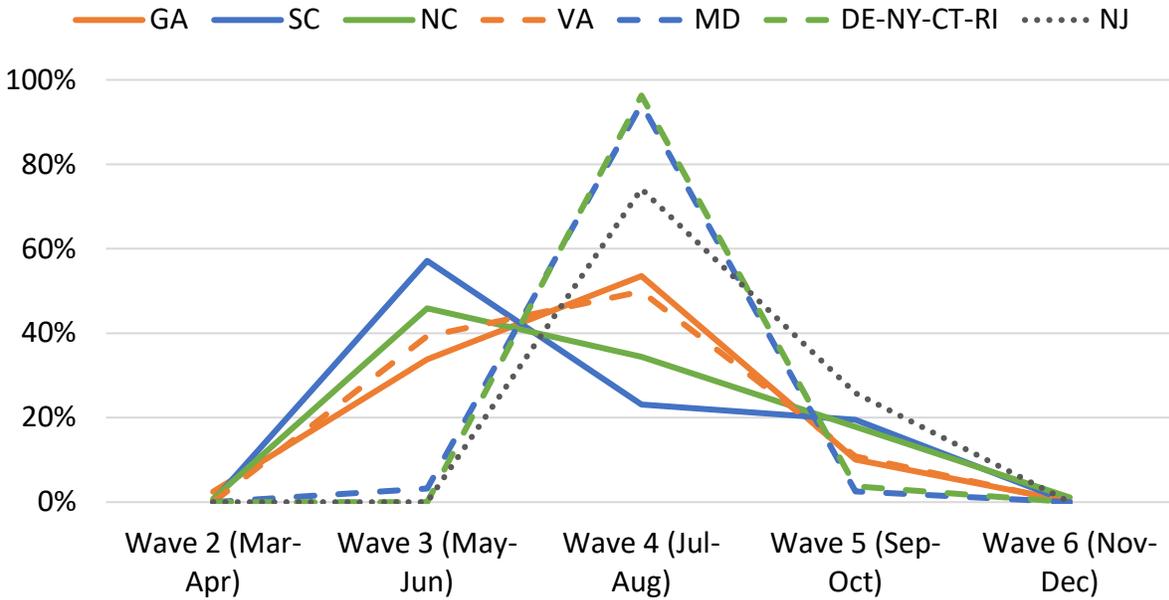
**Figure 4.** Cobia recreational harvest by state in number of fish. *De minimis* states are states north of Virginia. Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).

The availability of cobia, and therefore harvest timing, differs along the coast. From 2018-2023 (excluding 2020), the percent of recreational harvest peaked in wave 3 for Georgia, South Carolina, and North Carolina at approximately 70% of their total recreational harvest (Figure 5). Total recreational harvest peaked in wave 4 for Virginia (~60% of its recreational harvest). For states north of Virginia, all of which are *de minimis* states, harvest has not been observed every year. When harvest has been observed during this time period, most of Maryland’s recreational harvest and all recreational harvest in Delaware, New York, Connecticut, and Rhode Island occurred during Wave 4, while all recreational harvest has occurred during wave 5 for New Jersey during the same time period.

The distribution of total catch throughout the year is slightly different than the distribution of harvest for some states. For Georgia, South Carolina, and North Carolina, total catch in 2018-2023 (excluding 2020) was more spread out among Waves 3, 4, and 5, as compared to consistent peaks in Wave 3 for harvest (Figure 6). Virginia’s total catch is more evenly spread between Waves 3 and 4, as compared to a sharper harvest peak in Wave 4. For states north of Virginia, most catch has been observed during Wave 4, with New Jersey seeing catch only in Wave 5 in the most recent years.



**Figure 5.** Percent of harvest of Atlantic cobia in numbers per wave from 2018-2023 (excluding 2020). Note: MRIP sampling does not occur in any state during Wave 1 (Jan-Feb) except for North Carolina. North Carolina’s estimated cobia harvest during Wave 1 for this time period was 0 fish. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).



**Figure 6.** Percent of catch of Atlantic cobia in numbers per wave from 2018-2023 (excluding 2020). Note: MRIP sampling does not occur in any state during Wave 1 (Jan-Feb) except for North Carolina. North Carolina’s estimated cobia harvest during Wave 1 for this time period was 0 fish. Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).

### 2.2.3.1 MRIP Study of Fishing Effort Survey Bias

In August 2023, NOAA Fisheries released findings of a pilot study it conducted to evaluate potential sources of bias in the recreational Fishing Effort Survey (FES) questionnaire design. This study found switching the sequence of questions in the survey resulted in fewer reporting errors and fishing effort estimates that were generally 30 to 40% lower for shore and private boat modes compared to estimates produced from the current design. However, results varied by state and fishing mode, and impacts on a pulse fishery such as cobia are unknown. These results are based on a pilot study that had a limited time frame (six months) and geographic scope (only four states included). Additional extensive work needs to be done to determine the true impacts of the survey design. NOAA Fisheries is conducting a larger-scale follow-up study over the course of the next few years. At this time, the potential impacts to recreational catch estimates and stock assessments are unknown.

Recent landings information suggests that Atlantic cobia are extending their range northward. Specifically, *de minimis* states have exceeded the 1% *de minimis* set-aside every year between 2020 and 2022, and landings in Mid-Atlantic states have increased over the timeseries. Given these trends in landings, unknown impacts of the FES follow-up study, and lack of updated cobia stock assessment projections, this Draft Addendum is being considered *prior to* potential updates to MRIP catch estimates. A new benchmark stock assessment for Atlantic cobia will be completed by 2026 and could explore how a possible overestimation of recreational catch may

impact cobia biomass. Additionally, this Draft Addendum presents an option that would allow allocations to be quickly updated under certain circumstances, such as potential updated MRIP catch estimates from this study.

### 2.2.3.2 Summary of Non-De Minimis State Fisheries

**Virginia:** Virginia’s recreational cobia fishery has grown substantially since 2016. Two of the main fishing methods are sight-casting and pier fishing. Sight-casting from custom towers on the top of boats has become more popular than the traditional method of bottom fishing. This shift could be tied to an increase in effectiveness of targeting cobia via sight-casting because of their feeding habits and tendency to swim in schools on the surface of the water. There is also a shore-specific fishery for cobia from the four large piers found within coastal Virginia. While cobia are available, effort will increase on piers as the fish are moving through different parts of the Chesapeake Bay and oceanfront. Anglers will target cobia when they are accessible from the piers, but effort will decrease to almost zero once the fish have migrated to other areas.

While other states may experience pulses of abundance in cobia as they migrate up and down the Atlantic coast, cobia can be found in Virginia waters from mid-May through mid-October. This continuous season in Virginia attracts anglers traveling from out of state to target cobia, contributing to the already large yearly catches from residents. Even with the continuous season, catch peaks from May-June when the fish enter the Bay, and again in August-September as they leave the Bay.

From 2016-2022, Virginia operated the Recreational Cobia Mandatory Reporting Program (RCMRP), a monitoring program to survey recreational cobia anglers. The RCMRP required a free cobia permit for all captains or operators of vessels, as well as those who fished without a vessel (i.e. from a shore, pier, etc.). All permittees were responsible for reporting their cobia activity during the recreational season. Recreational reporting for cobia harvest and releases was mandatory, but revocation of permits was not enforced during the beginning stages of development. Due to low reporting rates, in 2019, reporting became mandatory with revocation to increase reporting rate. That is, permittees who did not report their participation in the recreational cobia fishery within 21 days after the close of the season were ineligible for the following year’s recreational cobia permit. At the peak of the program in 2020, there were 8,256 permit holders submitting 12,307 trips total, with a catch of 24,020 cobia (includes kept and released fish). Ultimately the RCMRP was ended in 2022 due to unnecessary burden on recreational anglers. Since the data were not statistically sound enough for any stock assessment use, the program changed to voluntary reporting to try to fill the gap for recreational release data.

**North Carolina:** In North Carolina, the recreational cobia fishery is seasonal, with cobia primarily available in state waters from late spring through early fall. 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 October. 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). In the early 2000s, fishermen 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.

Despite increased fishing pressure due to a growing number of charter and recreational boats, North Carolina recreational cobia landings have been lower the last couple years relative to previous years. Weather conditions, including persistent winds, have hindered fishing efforts by reducing the number of fishable days. The North Carolina cobia fishery is a pulse fishery, with the primary wave of fish historically arriving in early June and being available for about 6 weeks. In recent years, anecdotal observations suggest the cobia are migrating to Chesapeake Bay much earlier, in April and May, and are residing in North Carolina for a shorter period of time, possibly influenced by temperatures and/or currents.

**South Carolina:** South Carolina's recreational cobia 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. Legislative action was taken in 2016 to help protect the inshore fishery by putting a no take of cobia during the month of May, their peak spawning period inshore, within state waters south of Edisto Island. This has also helped shift fishing effort offshore. Due to the size increase from 33 inches FL to 36 inches FL in 2018, most of the captured cobia are under the size limit and are released. 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. Additionally, anglers have seen an increase in shark predation over the past few years.

**Georgia:** A large recreational fishery exists for cobia in Georgia. Most 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 federal waters. Georgia anglers generally begin targeting cobia in late April with peak harvest occurring in May/June. Anglers continue to catch cobia off Georgia through August, and data from MRIP shows that catch of cobia off Georgia peaks during Wave 4 (July-August). There are anecdotal reports of late season (October-December) catch that sometimes occurs on nearshore reefs depending on water temperatures. These are likely migratory fish that are moving back through waters off Georgia as they head south from areas north of Georgia. However, these fall runs are sporadic and may not be observed in MRIP data.

Some evidence suggests there may be two distinct groups of cobia that occur in waters off Georgia. One, a north/south migrating group of fish that appears in early spring as part of their

northward migration. This group of fish may account for the peak in landings that occurs in May/June in Georgia's cobia fishery. And the second, a group of east/west migrating fish that are present off Georgia through the summer months that then retreat to deeper offshore waters to overwinter along the edge of the continental shelf. This theory is supported by the persistence of fish off Georgia well into the summer months (July/August) and after the northward migrating group of cobia has moved out of Georgia waters and into regions north of Georgia.

### 3.0 PROPOSED MANAGEMENT PROGRAM

Draft Addendum II proposes options regarding:

- recreational allocation framework (Section 3.1);
- updates to allocations (Section 3.2);
- data and uncertainty in recreational landings evaluation (Section 3.3);
- overage response for recreational landings evaluation (Section 3.4); and,
- timeline for setting specifications (Section 3.5).

When the Board takes final action on the addendum, there is the opportunity to select any measure within the range of options that went out for public comment, including combining options across issues.

#### 3.1 Recreational Allocation Framework

The following options would determine how recreational quota is allocated among states (Options A-B), regions (Option C), or coastwide (Option D).

The options consider two different data timeframes as the basis for allocation. One timeframe considers only the most recent six years of harvest data, while the other timeframe considers a weighted combination of the most recent six years plus the last ten years of harvest data. Including the ten-year component gives some consideration to previous harvest distribution before the majority of harvest shifted north.

For all timeframe options, 2016, 2017, and 2020 recreational catch data were excluded from the calculations. Cobia closures in federal waters and some states' waters during 2016 and 2017 resulted in those years being excluded from allocation calculations. Similarly, 2020 was excluded due to COVID-19 impacts on MRIP sampling and use of imputed data for 2020 recreational harvest estimates.

For state-by-state allocation frameworks (Options A-B), *de minimis* states do not have an allocation based on landings, but rather have a set-aside to account for landings across all *de minimis* states. *De minimis* states are exempt from completing harvest target evaluations and have a separate set of standard recreational measures from which to choose. *De minimis* states must request *de minimis* status each year through the compliance report process. The FMP allows states to request recreational *de minimis* status if their recreational landings in two of the previous three years are less than 1% of annual coastwide recreational landings during that time period.

For a regional (Option C) or coastwide (Option D) allocation framework, states could still request *de minimis* status for the recreational fishery, however, *de minimis* states would be part of a larger region subject to regional or coastwide harvest target evaluations. *De minimis* states would be subject to the management measures determined for that region or the coast. So, the current default *de minimis* measures would become irrelevant.

For all allocation framework options, conservation equivalency (CE) is not allowed. The state-by-state allocation framework already affords each state the flexibility to decide how to adjust their management measures to meet their target. The objective of a regional or coastwide allocation framework is to achieve consistent measures within a region or coastwide if a future reduction or liberalization is needed. Seasons could vary within a region or along the coast based on cobia availability, but the size limit and vessel limit would need to be consistent among all states in a region or coastwide. Currently, size limits are mostly consistent among states, with the exception of *de minimis* states. Preliminary vessel limit analysis indicates anglers in states with higher vessel limits are not harvesting their full limit, so reducing vessel limits in those states to be consistent with others in the region or coastwide would not significantly reduce harvest.

It is important to note that upcoming changes to the MRIP Fishing Effort Survey (FES) estimates may affect the state-by-state and regional allocation percentages presented in the below options. If MRIP FES estimates for cobia are changed in the future, associated updates to the selected allocations would need to be considered.

#### **Option A. Status Quo State-By-State Harvest Allocations**

Under this option, the recreational quota for Atlantic cobia would continue to be allocated on a state-by-state basis as outlined in Amendment 1. 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. To account for harvests in *de minimis* states, 1% of the recreational quota is set aside.

The recreational landings evaluation process and resulting required changes to state measures would proceed as outlined in Amendment 1.

#### **Option B. Updated State-By-State Harvest Allocations**

Under this option, recreational quota would continue to be allocated on a state-by-state basis, including a set-aside for *de minimis* states. The allocations in this option include recent data and thereby reflect changes seen in harvest distribution, and the *de minimis* set-aside is increased to 5% to account for increased harvest in *de minimis* states in recent years. This option considers two allocation timeframes outlined in options B1 and B2.

If this option is selected, recreational management measures would remain status quo in each state until completion of the next stock assessment (SEDAR 95), or until a state needs to take a reduction based on evaluation of the state's landings against its harvest target, whichever comes first. States would not be able to liberalize measures before completion of SEDAR 95.

If a state needs to change management measures, the state would work with the Cobia Technical Committee to propose a set of management measures to meet the reduction or, after completion of SEDAR 95, the liberalization. Changes to management measures must be reviewed by the Technical Committee and approved by the Board prior to implementation. Options B1 and B2 include a 5% set-aside of the recreational quota to account for harvests in *de minimis* states.

Option B1. Five-Year Average Allocation Timeline

Recreational quota allocated state-by-state based on states’ percentages of the coastwide historical landings in numbers of fish, derived as 100% of 6-year average landings from 2018-2023 (excluding 2020).

Option B2. Weighted Ten-Year and Five-Year Average Allocation Timeline

Recreational quota allocated state-by-state based on states’ percentages of the coastwide historical landings in numbers of fish, derived as 50% of 10-year average landings from 2014-2023 (excluding 2016, 2017, 2020) and 50% of the 6-year average landings from 2018-2023 (excluding 2020).

**Table 3.** State-by-state recreational allocation options.

<b>Data Timeframe</b>	<b>Status Quo 50% 2006-2015 + 50% 2011-2015</b>	<b>6-Year Average 100% 2018-2023</b>	<b>Weighted 10-Year &amp; 6-Year Average 50% 2014-2023 + 50% 2018-2023</b>
	<b>Option A</b>	<b>Option B1</b>	<b>Option B2</b>
<b><i>De minimis</i> Set-Aside</b>	1%	5%	5%
<b>Virginia</b>	39.4%	69.2%	64.5%
<b>North Carolina</b>	38.1%	13.2%	17.4%
<b>South Carolina</b>	12.1%	6.5%	7.1%
<b>Georgia</b>	9.4%	6.1%	6.0%
<b>Total</b>	100%	100%	100%

### Option C. Regional allocations

Under this option, recreational quota would be allocated among regions. Recreational management measures in a region would eventually need to consist of the same size limit and vessel limit for all states in the region. Seasons may differ among states in a region.

Currently, vessel limits and seasons vary by state along the coast. Size limits are mostly uniform with the exception of *de minimis* states that have adopted the default *de minimis* measures specified in the FMP. If this regional allocation option is selected, recreational management measures would remain status quo in each state until completion of the next stock assessment (SEDAR 95), or until a region needs to take a reduction based on evaluation of the region's landings against the harvest target, whichever comes first. At that time, the states in the region would work with the Cobia Technical Committee to determine a set of management measures for all states in the region to meet the reduction (i.e., uniform size limit and vessel limit; seasons may differ). Regions would not be able to liberalize measures before the completion of SEDAR 95. Changes to management measures must be reviewed by the Technical Committee and approved by the Board prior to implementation.

Option C considers dividing the coast into two regions, with sub-options considering:

- which states are in each region, and
- two different allocation timeframes based on historical landings in numbers of fish:
  - 6-Year Average. 100% of 6-year average landings from 2018-2023 (excluding 2020);
  - Weighted 10-year/6-year Average. 50% of 10-year average landings from 2014-2023 (excluding 2016, 2017, 2020) and 50% of the 6-year average landings from 2018-2023 (excluding 2020);

This results in a total of four options as outlined in Table 4. Options C1-C2 consider a southern region of South Carolina and Georgia, while Options C3-C4 consider a southern region of North Carolina, South Carolina, and Georgia. The percent standard error and the regional harvest with associated confidence intervals are available in Appendix B.

#### Options C1 and C2. Two Region Allocation – Northern Region (RI through NC) and Southern Region (SC and GA)

Options C1 and C2 consider two regions where the northern region consists of the states from Rhode Island through North Carolina, and the southern region consists of South Carolina and Georgia with the above noted allocation timeframes and detailed in Table 4.

#### Option C3 and C4. Two Region Allocation – Northern Region (RI through VA) and Southern Region (NC through GA)

Options C3 and C4 consider two regions where the northern region consists of the states from Rhode Island through Virginia and the southern region consists of the states from North Carolina through Georgia with the above noted allocation timeframes and detailed in Table 4.

**Table 4.** Regional recreational allocation options.

Data Timeframe	6-Year Average 100% 2018-2023	Weighted 10-Year & 6-Year Average 50% 2014-2023 + 50% 2018-2023
	<b>Option C1</b>	<b>Option C2</b>
<b>Northern Region RI-CT-NY-NJ-DE-MD-VA-NC</b>	87.24%	86.65%
<b>Southern Region Two State SC-GA</b>	12.76%	13.35%
<b>Total</b>	100%	100%
	<b>Option C3</b>	<b>Option C4</b>
<b>Northern Region RI-CT-NY-NJ-DE-MD-VA</b>	73.77%	68.69%
<b>Southern Region Three State NC-SC-GA</b>	26.23%	31.31%
<b>Total</b>	100%	100%

**Option D. Coastwide Target**

Under this option, there would be no state-specific or regional harvest targets, but rather only the coastwide recreational harvest quota. A coastwide size limit and vessel limit would eventually be established for all states, but the season may be different for each state or group of states based on cobia availability in each state. ‘Coastwide’ for Atlantic cobia refers to states north of the Georgia-Florida border.

Currently, vessel limits and seasons vary by state along the coast. Size limits are mostly uniform with the exception of *de minimis* states that have adopted the default *de minimis* measures specified in the FMP. If this coastwide allocation option is selected, recreational management measures would remain status quo in each state until completion of the next stock assessment (SEDAR 95), or until the coast needs to take a reduction based on evaluation of the coastwide landings against the coastwide harvest quota, whichever comes first. At that time, all states would work with the Cobia Technical Committee to determine a set of management measures for all states along the coast to meet the reduction (i.e., uniform size limit and vessel limit; seasons may differ). The coast would not be able to liberalize measures before the completion of SEDAR 95. Changes to management measures must be reviewed by the Technical Committee and approved by the Board prior to implementation.

### 3.2 Updates to State/Regional Recreational Allocations

#### Option A. Status Quo.

Under this option, recreational allocations can only be changed through the ASMFC addendum process.

#### Option B. Allocation Changes via Board Action

Under this option, the Board may change recreational allocations via Board action (i.e., voting at a Board meeting; no addendum needed) in the following scenarios:

- A state loses *de minimis* status and therefore needs to be allocated a state-specific harvest target (only applicable under a state-by-state allocation framework).
- Harvest estimates for the allocation source data years are revised (i.e., if MRIP estimates are updated).

If the Board is considering changing allocation via Board action under one of the above scenarios, the Cobia Technical Committee would re-calculate allocations based on the associated scenario and bring the new allocations to the Board for consideration. In the case of a state losing *de minimis* status, the Technical Committee will calculate the new allocations to be presented to the Board at the Commission's Summer Meeting. Following the Summer Meeting when the Board considers state *de minimis* requests for that year, the Board could approve new allocations at the Commission's Annual Meeting in the fall. This faster process of Board action, as compared to the longer addendum process, would be more efficient to address the above scenarios, which could occur multiple times over the next several years.

If the Board would like to consider allocation changes outside the scenarios listed above, an addendum is needed to change state/regional recreational allocations.

### 3.3 Data and Uncertainty in Recreational Landings Evaluations

#### Option A. Status Quo.

Under this option, MRIP harvest point estimates and up to a three-year rolling average would continue to be used for comparing recreational harvest to harvest targets.

Recreational landings for each non-*de minimis* state (or each region or the coast depending on allocation framework selected in Section 3.1) will be evaluated against that state's/region's/coastwide target as an average of annual landings. The timeframe for this average will only include years with the same management measures (i.e., measures have not changed from year to year). If the same management measures have been in place for at least three years, the timeframe will include the three most recent years under these regulations (a rolling 3-year average). If the same management measures have been in place for less than three years, the timeframe will include all years under the same regulations.

If a regional or coastwide framework is selected, states in each region or coastwide will have different management measures from each other until the measures are changed to a uniform set of measures (same size and vessel limit; seasons may differ) when a reduction or liberalization occurs. This does not affect the evaluation. This does not affect the evaluation; the evaluation timeframe only depends on if measures have changed from year to year, not if they differ between states.

**Option B. Extend Rolling Average to Five Years**

Under this option, MRIP harvest point estimates would continue to be used for comparing recreational harvest to harvest targets, but the rolling average timeframe would extend to five years. This allows for inclusion of additional data years, which can be more informative given the variability in and sometimes imprecision of cobia landings from year to year.

Recreational landings for each non-*de minimis* state/region/coastwide would be evaluated against that state's/region's/coastwide target as an average of annual landings. The timeframe for this average will only include years with the same management measures (i.e., measures have not changed from year to year). If the same management measures have been in place for at least five years, the timeframe will include the five most recent years under these regulations (a rolling 5-year average). If the same management measures have been in place for less than five years, the timeframe will include all years under the same regulations.

If a regional or coastwide framework is selected, states in each region or coastwide will have different management measures from each other until the measures are changed to a uniform set of measures (same size and vessel limit; seasons may differ) when a reduction or liberalization occurs. This does not affect the evaluation; the evaluation timeframe only depends on if measures have changed from year to year, not if they differ between states.

**Provision on the Use of Confidence Intervals**

If a regional or coastwide allocation framework is selected, the Board could decide in the future (via Board vote) to switch from a rolling average approach to a confidence interval approach for harvest target evaluation. This provision gives the Board the ability to make that switch in the future via Board vote. Using confidence intervals instead of a rolling average for evaluation would more directly account for the uncertainty around the MRIP harvest point estimates.

The confidence interval approach would require PSEs and confidence interval values for the regional or coastwide sum total harvest estimates, which are currently only available via MRIP's custom data request process. The confidence interval approach cannot be used for a state-by-state allocation framework due to larger confidence intervals around some state-specific estimates.

For this approach, when regional or coastwide harvest is evaluated against the harvest target to determine if a change is needed, the Cobia Technical Committee would consider the 95% confidence intervals associated with MRIP harvest point estimates for the evaluation timeframe. If the same management measures have been in place for at least three or five

years (depending on whether the Board selects a three- or five-year approach above), the timeframe will include the most recent three or five years under these regulations. If the same management measures have been in place for less than three or five years, the timeframe will include all years under these regulations.

If the harvest estimate's lower bound confidence interval is above the harvest target for a majority of the years within the evaluation timeframe, this indicates harvest has been above the target, and the region/coast must adjust its management measures to reduce harvest to achieve the target. If the harvest target falls within the harvest estimate's confidence interval for a majority of the years within the evaluation timeframe, status quo measures may be maintained. If the harvest estimate's upper bound confidence interval is below the harvest target for a majority of the years within the evaluation timeframe, this indicates harvest has been below the target, and the region/coast may adjust its management measures to liberalize harvest such that the target level of harvest is achieved, but not exceeded. To calculate the reduction or liberalization needed, the average landings over the evaluation time period will be used relative to the target.

A majority of years within the evaluation timeframe means three out of five years or two out of three years. In the event of one out of two years or two out of four years, the Technical Committee will make a recommendation for Board consideration of a reduction or maintaining status quo measures.

To address years with particularly large confidence intervals (i.e., high uncertainty), years that have harvest estimates with a PSE greater than 50 would not be included in the evaluation. Years that have harvest estimates with PSEs between 30 and 50 would be subject to review by the Cobia Technical Committee to recommend whether they are appropriate to include in the evaluation. This aligns with MRIP's guidance to use caution for estimates with a PSE greater than 30, and not support the use of estimates with a PSE greater than 50.

### **3.4 Overage Response for Recreational Landings Evaluations with Rolling Averages**

#### **Option A. Status Quo.**

Under this option, the need for changes to recreational management measures is determined at the individual state level by comparing state harvest to that state's harvest target over the evaluation period.

If a state's (or region's or coastwide if selected in Section 3.1) averaged recreational landings exceed its annual recreational harvest target, that state/region/coast must adjust its recreational vessel limit or season to reduce harvest, such that future annual landings would be expected to achieve the state/regional/coastwide recreational harvest target.

States/regions/coast reporting a consistent (i.e., consecutive) under-harvest during an evaluation time period for a minimum of 2 years 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 by the Technical Committee and approved by the Board prior to implementation.

#### **Option B. Performance Comparisons**

Under this option, if a state/region's averaged recreational landings exceed its annual recreational harvest target, management action to reduce harvest in that state/region would not be required if the following conditions are met:

- another state/region's averaged recreational landings is under their target by at least the same amount, and that state has chosen not to liberalize their measures (if applicable); AND
- the average coastwide harvest has not exceeded the coastwide quota for the same timeframe.

Otherwise, the process remains the same as in Option A.

This performance comparison approach cannot be used in conjunction with the confidence interval approach outlined in section 3.3. If the confidence interval approach is implemented in the future, this performance comparison approach can no longer be used at that time.

### **3.5 Timeline for Setting Commercial and Recreational Measures**

#### **Option A. Status Quo.**

Under this option, the coastwide total harvest quota, vessel limits, possession or bag limits, minimum size limits, and a commercial closure triggering mechanism may be specified through Board action **for up to three years**.

New specified recreational management measures may be implemented after the expiration of previously specified measures or following a completed stock assessment. In years when harvest specifications are made, they will occur no later than the Fall Board meeting, and resulting measures will be implemented in the following year. Recreational landings will be evaluated against state recreational harvest targets at the same time (i.e., at the same meeting) as the specification process.

#### **Option B. Five-Year Specifications**

Under this option, the coastwide total harvest quota, vessel limits, possession or bag limits, minimum size limits, and a commercial closure triggering mechanism may be specified through Board action **for up to five years**. The rest of the specification process would remain the same as Option A.

A longer five-year timeline would potentially reduce the frequency of management changes (management ‘whiplash’) and better aligns with when new stock assessment information is likely to be available for Atlantic cobia. The time between completion of the previous stock assessment and the current assessment will be approximately 5-6 years. Setting new specifications between assessments can be difficult due to the lack of new information on stock status. For example, the 2020-2023 specifications were informed by the SEDAR 58 stock assessment (2020). When those specifications expired, the Board considered specifications for 2024-2026. Since neither a new stock assessment nor stock projections beyond 2024 were available, the Technical Committee and Board had limited information to consider for the 2024-2026 specifications.

#### **4.0 COMPLIANCE SCHEDULE**

TBD upon approval of Addendum II.

## 5.0 REFERENCES

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**APPENDIX A. 2023 State Management Measures for Atlantic Migratory Group Cobia**

<b>State</b>	<b>Recreational Measures</b>	<b>Commercial Measures</b>
RI	<i>De minimis</i> Minimum Size: 37 in total length Vessel Limit: 1 fish per vessel Season: year-round	<u>Coastwide</u> Possession Limit: 2 fish per person Minimum Size: 33 in fork length or 37 in total length Vessel Limit: 6 fish  If commercial fishing in state waters is closed, commercial fishing in federal waters will be recommended to mirror state closures  <u>Deviations</u> -Rhode Island and New York possession limit is 2 fish per vessel -Virginia possession limit is per licensee rather than per person -North Carolina has 36 minimum fork length -No commercial harvest in South Carolina state waters -Georgia possession limit is 1 fish per person (not to exceed 6 per vessel) and minimum size is 36 in fork length
NY	<i>Declared into the fishery in 2023; could qualify for de minimis</i> Minimum Size: 37 in total length Vessel Limit: 1 fish per vessel Season: year-round	
NJ	<i>De minimis</i> Minimum Size: 37 in total length Vessel Limit: 1 fish per vessel Season: year-round	
DE	<i>De minimis</i> Minimum Size: 37 in total length Bag Limit: 1 fish per vessel Vessel Limit: 1 fish per vessel	
MD	<i>De minimis</i> Minimum Size: 40 in total length Bag Limit: 1 fish per person Vessel Limit: 2 fish per vessel Season: June 15-September 15	
PRFC	Minimum Size: 40 in total length (only 1 fish over 50" per vessel) Bag limit: 1 per person Vessel Limit: 2 fish per vessel Season: June 15-September 15	
VA	Minimum Size: 40 in total length (only 1 fish over 50" per vessel) Bag Limit: 1 fish per person Vessel Limit: 2 fish per vessel Season: June 15-September 15	

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NC	<p>Minimum Size: 36 in fork length          Bag Limit: 1 fish per person          Season: May 1-December 31  <u>Private Vessel Limit</u>          May 1- June 30: 2 fish          July 1-Dec 31: 1 fish</p> <p><u>For-Hire Vessel Limit</u>          May 1-Dec 31: 4 fish</p>	
SC	<p>Bag Limit: 1 fish per person          Minimum Size: 36 in fork length          Vessel Limit: 6 fish          Season: Open year-round</p> <p><u>Southern Cobia Management Zone:</u>          Minimum Size: 36 in FL          Season: June 1-April 30 (closed in May)          Bag Limit: 1 fish per person          Vessel Limit: 3 fish</p> <p>-If recreational fishing in federal waters is closed, recreational fishing in all SC state waters is also closed.</p>	
GA	<p>Bag Limit: 1 fish per person          Minimum Size: 36 in fork length          Vessel Limit: 6 fish          Season: March 1-October 31</p>	
<p><b>*Florida has a declared interest in the Atlantic Coastal Migratory Group, but their cobia fisheries are managed as part of the Gulf of Mexico Migratory Group due to cobia stock boundaries.</b></p>		

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**APPENDIX B. Percent Standard Error (PSE) for State and Regional Harvest Estimates**

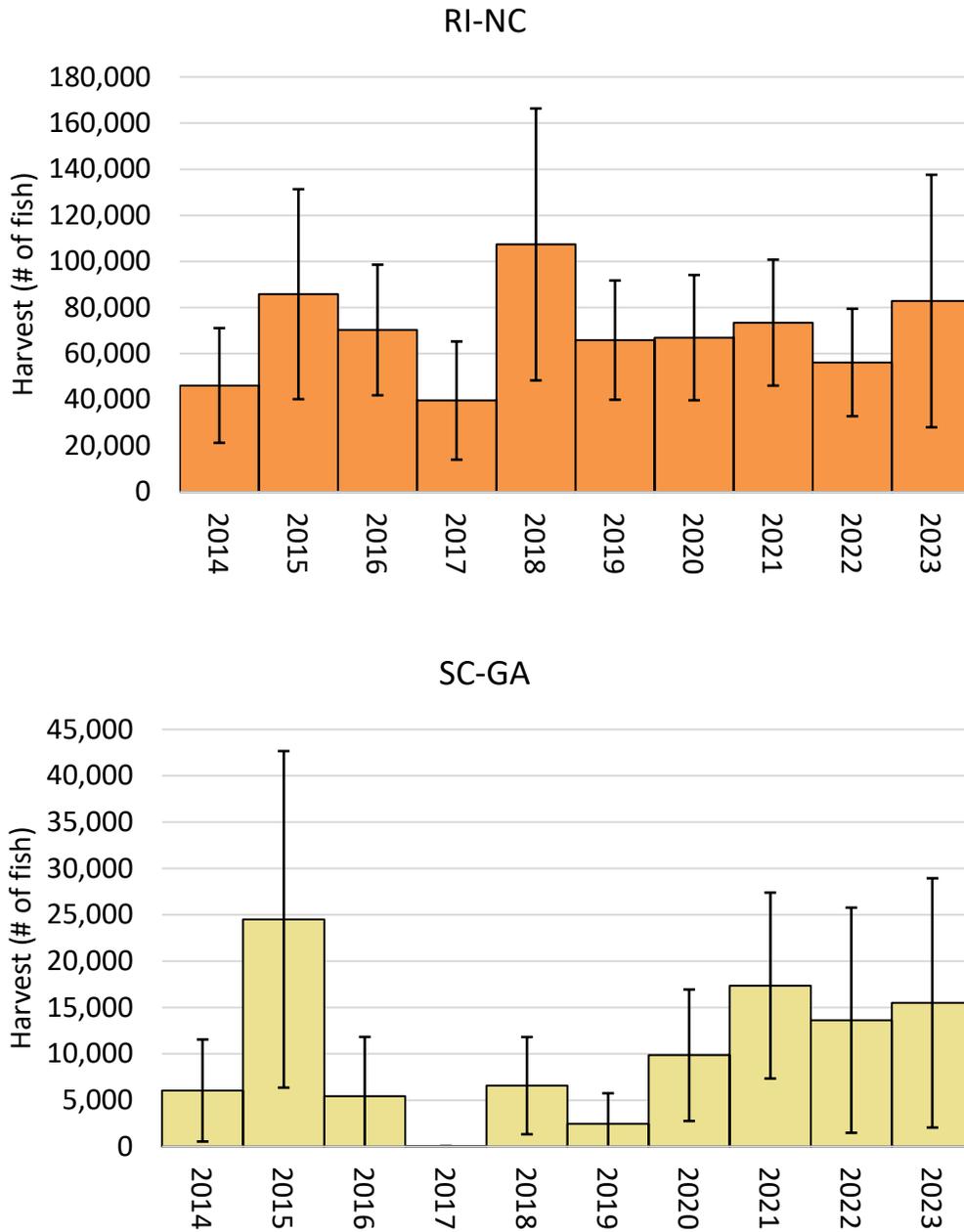
**Table B1.** Percent standard error (PSE) for each state’s recreational cobia harvest estimate in number of fish from 2014-2023. Red indicates a PSE greater than 50 (MRIP does not support use of the estimate). Yellow indicates a PSE between 30 and 50 (MRIP cautions use of the estimate in fisheries management). Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP Query April 2024).

<i>Corresponds with Section 3.1 Options A-B State-by-State Allocation</i>										
	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA
2014							42.5	35.8	60.3	71.5
2015							49.3	28.3	48.5	59.9
2016						102.6	18.9	44.9	60	
2017							42.3	46.1		111.4
2018		100.4			98.1	66.7	35.8	33.2	42.2	53.9
2019							22.6	38.6	70.6	56.9
2020		102.7				69.5	25	37.9	39.1	92.4
2021				92.4		43.8	22.9	39.1	41.9	41.4
2022			82.3	102.2			25.1	47	55.9	72.4
2023	71.9						34.2	53.1	61.9	56

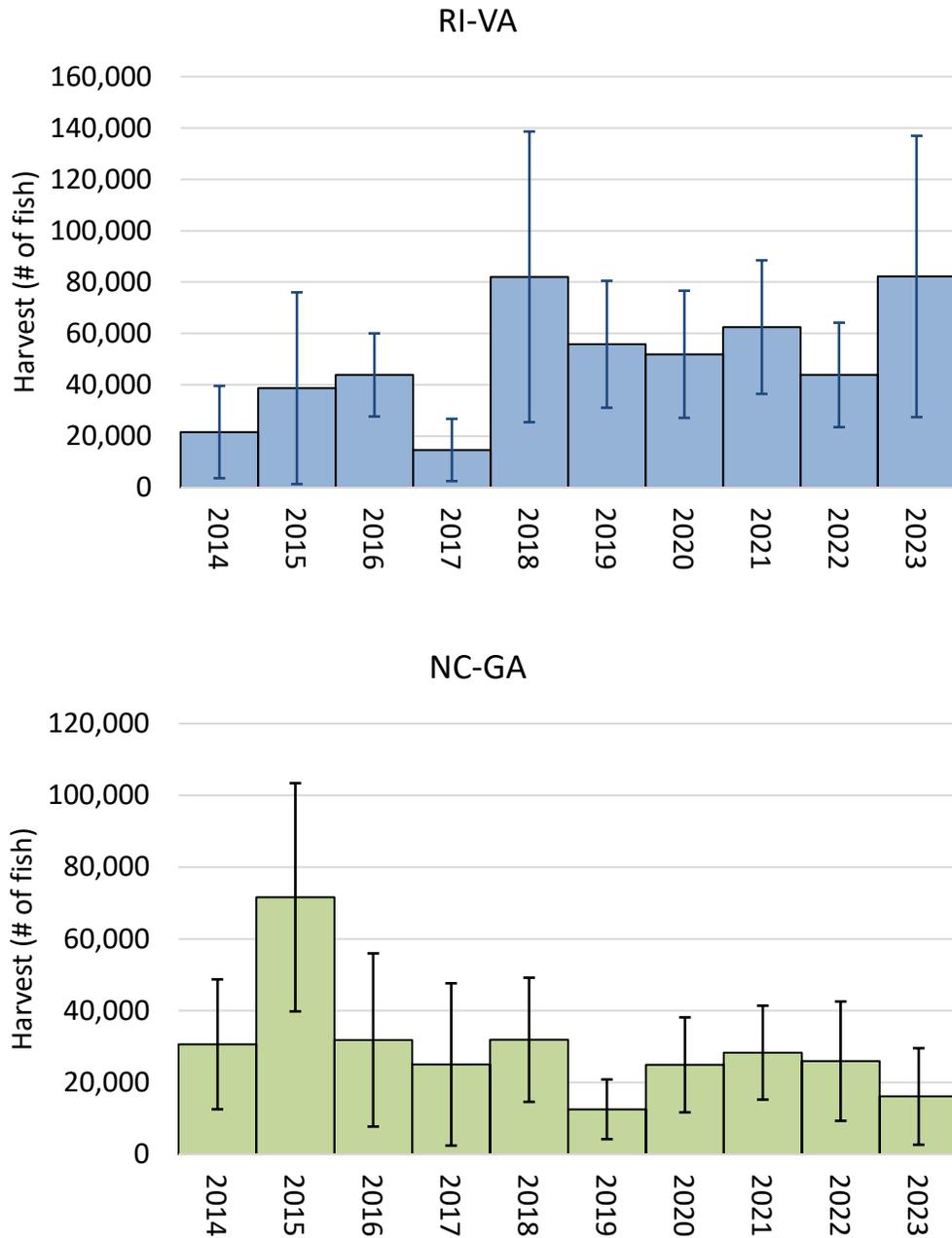
**Table B2.** Percent standard error (PSE) for each proposed region’s recreational cobia harvest estimate in number of fish from 2014-2023. Red indicates a PSE greater than 50 (MRIP does not support use of the estimate). Yellow indicates a PSE between 30 and 50 (MRIP cautions use of the estimate in fisheries management). Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP May 2024).

<i>Corresponds to Section 3.1</i>	<i>Options C1-C2 Regional Allocation</i>		<i>Options C3-C4 Regional Allocation</i>		<i>Option D Coastwide Target</i>
	RI-NC	SC-GA	RI-VA	NC-GA	RI-GA
Year					
2014	27.5	46.4	42.5	30.1	24.9
2015	27.1	37.8	49.3	22.6	22.7
2016	20.6	60.0	18.8	38.6	19.6
2017	33.0	111.4	42.3	46.1	33.0
2018	28.0	40.7	35.2	27.7	26.5
2019	20.0	68.6	22.6	33.8	19.5
2020	20.7	36.7	24.4	27.1	18.7
2021	19.0	29.5	21.2	23.6	16.4
2022	21.2	45.5	23.7	32.7	19.2
2023	33.7	44.3	34.0	42.6	29.3

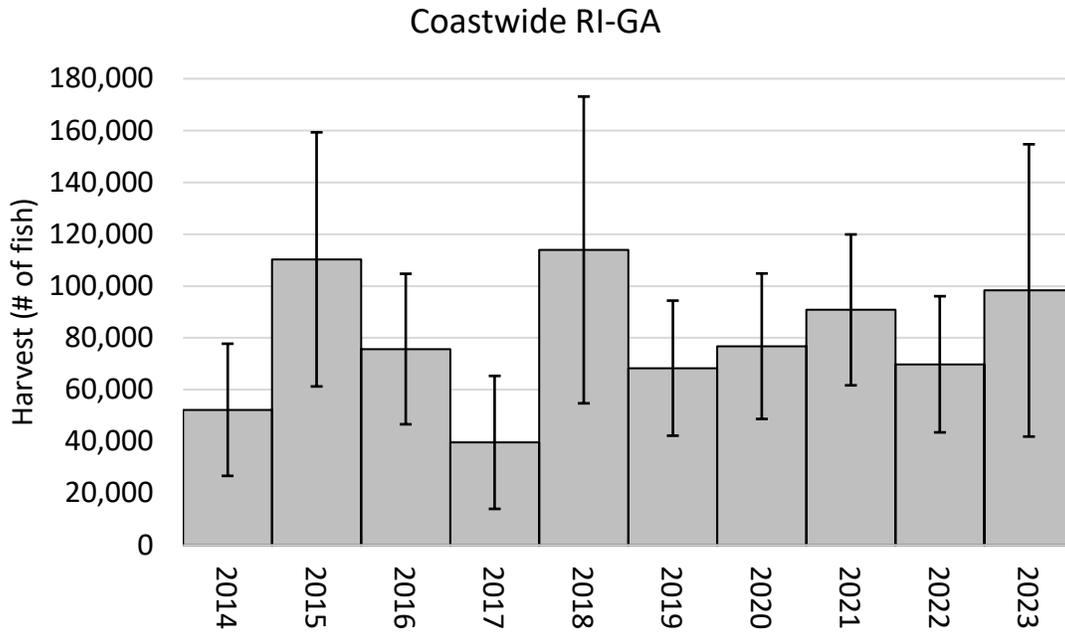
Draft Document for Public Comment



**Figure B1.** Regional recreational cobia harvest in number of fish from 2014-2023 for RI-NC and SC-GA, corresponding with Options C1-C2 for regional allocation in Section 3.1. Error bars indicate 95% confidence intervals. Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP May 2024).



**Figure B2.** Regional recreational cobia harvest in number of fish from 2014-2023 for RI-VA and NC-GA, corresponding with Options C3-C4 for regional allocation in Section 3.1. Error bars indicate 95% confidence intervals. Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP May 2024).



**Figure B3.** Regional recreational cobia harvest in number of fish from 2014-2023 for the coastwide management unit RI-GA, corresponding with Option D for a coastwide target in Section 3.1. Error bars indicate 95% confidence intervals. Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division (MRIP May 2024).