Atlantic States Marine Fisheries Commission

South Atlantic State/Federal Fisheries Management Board

October 19, 2017
12:30 – 3:00 p.m.
Norfolk, Virginia

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order *(J. Estes)* — 12:30 p.m.

2. Board Consent — 12:30 p.m.
   - Approval of Agenda
   - Approval of Proceedings from August 2017

3. Public Comment — 12:35 p.m.

4. Cobia Fishery Management Plan (FMP) for Final Approval (*L. Daniel*) — 12:45 p.m.
   Final Action
   - Review Options and Public Comment Summary
   - Review Committee Reports
   - Consider Final Approval of Cobia FMP

5. Review Maryland Proposal for Black Drum Commercial Harvest (*L. Fegley*) **Action** — 1:30 p.m.
   - Black Drum Technical Committee Memo on Maryland Proposal (*M. Schmidtke*)

6. Progress Report on Potential Adjustments to Atlantic Croaker and Spot Traffic Light Analyses (*J. Kipp*) — 2:10 p.m.

7. Consider 2017 FMP Reviews and State Compliance Reports for Red Drum, Black Drum, and Spotted Seatrout (*M. Schmidtke*) **Action** — 2:20 p.m.

8. Discuss Removal of Spotted Seatrout from Commission Management (*M. Duval*) **Possible Action** — 2:40 p.m.

9. Other Business/Adjourn — 3:00 p.m.

The meeting will be held at the Waterside Marriott Hotel, 235 East Main Street, Norfolk, Virginia 23510; 757.627.4200.

MEETING OVERVIEW

South Atlantic State/Federal Fisheries Management Board Meeting
Thursday, October 19, 2017
12:30 – 3:00 p.m.
Norfolk, Virginia

Chair: Jim Estes (FL) Assumed Chairmanship: 02/16	Technical Committee (TC) Chairs: Red Drum: Ryan Jiorle (VA) Atlantic Croaker: Chris McDonough (SC) Black Drum: Harry Rickabaugh (MD)	Law Enforcement Committee Representative: Capt. Bob Lynn (GA)
Vice Chair: Pat Geer	Advisory Panel Chair: Tom Powers (VA)	Previous Board Meeting: August 1, 2017
Voting Members: NJ, DE, MD, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS, SAFMC (12 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 1, 2017

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Cobia Fishery Management Plan (FMP) for Final Approval (12:45 – 1:30 p.m.) Final Action

Background

- In August, 2017, the Board approved a Draft Fishery Management Plan (FMP), developed as a complement to the federal FMP, for Public Comment. (**Briefing Materials**)
- Written Public Comment was accepted through October 10, 2017.
- Public hearings were held in Virginia, North Carolina, and South Carolina, and a public hearing webinar was held for Georgia. (**Supplemental Materials**)

Presentations

- Public Comment Summary by L. Daniel

Board actions for consideration at this meeting

- Consider final approval of the Cobia FMP.

5. Review Maryland Proposal for Black Drum Commercial Harvest (1:30 – 2:10 p.m.) Action

Background

- In September, 2017, Maryland submitted a proposal that would allow their commercial fishery for black drum to be re-opened in the Chesapeake Bay (**Briefing Materials**)

- The Black Drum TC met via conference call in September, 2017, to review this proposal and provide a recommendation for the Board.

Presentations

- Maryland Proposal for Black Drum Commercial Harvest by L. Fegley

Board actions for consideration at this meeting

- Consider initiation of an addendum to the Black Drum FMP that would re-open Maryland's commercial fishery for black drum in the Chesapeake Bay.

6. Progress Report on Potential Adjustments to Atlantic Croaker and Spot Traffic Light Analyses (TLA) (2:10 – 2:20 p.m.)

Background

- In May, 2017, the Board directed the Technical Committee (TC) to conduct exploratory analyses to potentially incorporate additional indices and adjustments into the TLAs; the TC has begun working on this task and has preliminary results for both TLAs.
- The TC met via conference call in October, 2017. The TC will further discuss results to provide a formal recommendation for Board consideration at a future meeting. (**Supplemental Materials**)

Presentations

- Progress Report by J. Kipp

7. 2017 FMP Reviews for Black Drum, Red Drum, and Spotted Seatrout (2:20 – 2:40 p.m.) Action

Background

- Black Drum State Compliance Reports are due on August 1. The Plan Review Team reviewed each state report and compiled the annual FMP Review. (**Briefing Materials**)
- Red Drum State Compliance Reports are due on July 1. The Plan Review Team reviewed each state report and compiled the annual FMP Review. New Jersey and Delaware have applied for *de minimis*. (**Supplemental Materials**)
- Spotted Seatrout State Compliance Reports are due on September 1. The Plan Review Team reviewed each state report and compiled the annual FMP Review. New Jersey and Delaware have applied for *de minimis*. (**Supplemental Materials**)

Presentations

- Overview of the Black Drum, Red Drum, and Spotted Seatrout FMP Reviews by M. Schmidtke

Board actions for consideration at this meeting

- Accept 2017 FMP Reviews and State Compliance Reports
- Approve *de minimis* requests for NJ and DE for red drum and spotted seatrout.

8. Discuss Removal of Spotted Seatrout from Commission Management (2:40 – 3:00 p.m.) Possible Action

Background

- In November, 2015, the Board passed a motion recommending that the ISFMP Policy Board withdraw the Spotted Seatrout FMP.
- In February, 2016, this motion was postponed indefinitely, due to the dependence of some states' abilities to manage spotted seatrout on the interstate FMP.

• One of the states that was previously unable to manage spotted seatrout outside of the interstate FMP, North Carolina, has established policies that would allow management in the absence of an interstate FMP.
Board actions for consideration at this meeting • Consider renewed action on the indefinitely postponed motion to recommend that the ISFMP Policy Board withdraw the Spotted Seatrout FMP.

9. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

SOUTH ATLANTIC STATE/FEDERAL FISHERIES MANAGEMENT BOARD

The Westin Alexandria
Alexandria, Virginia
August 1, 2017

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ATTENDANCE

BOARD MEMBERS

Roy Miller, DE (GA)
Rachel Dean, MD (GA)
Ed O'Brien, MD, proxy for D. Stein (LA)
Tom Fote, NJ (GA)
Lynn Fegley, MD, proxy for D. Blazer (AA)
Kyle Schick, VA, proxy for J. Bull (AA)
David Bush, NC, proxy for Rep. Steinburg (LA)
Doug Brady, NC (GA)
Michelle Duval, NC, proxy for B. Davis (AA)
Robert Boyles, SC (AA)
Malcolm Rhodes, SC (GA)
Sen. Ronnie Cromer, SC (LA)
Patrick Geer, GA, proxy for Rep. Nimmer (LA)
Spud Woodward, GA (AA)
Rep. Thad Altman, FL (LA)
Jim Estes, FL, proxy for J. McCawley (AA)
Martin Gary, PRFC
John Carmichael, SAFMC

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Chris McDonough, Technical Committee Chair
(Atlantic Croaker)

Staff

Toni Kerns
Robert Beal
Pat Campfield
Kristen Anstead
Mike Schmidtke
Louis Daniel
Max Appelman

Guests

Joe Cimino, VMRC
Richard Cody, NOAA
Heather Corbett, NJ DFW
Roy Crabtree, NMFS
Jeff Deem VMRC
Joseph Gordon, PEW
Zack Greenberg, PEW
Jack Travelstead, CCA

The South Atlantic State/Federal Fisheries Management Board of the Atlantic States Marine Fisheries Commission convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, August 1, 2017, and was called to order at 10:45 o'clock a.m. by Chairman Jim Estes.

CALL TO ORDER

CHAIRMAN JIM ESTES: The South Atlantic State/Federal Fisheries Management Board is now meeting. My name is Jim Estes; I am the administrative proxy from Florida. I am going to try to speed us up through this meeting today, because we are a little bit behind.

APPROVAL OF AGENDA

CHAIRMAN ESTES: The first thing is approval of the agenda.

Are there any suggestions to be made to change the agenda? I have one myself; are there any other ones? What we're going to do is we are going to consider management response to the benchmark stock assessment; after we hear the traffic-light analysis for spot and croaker. If that's okay and there are no other suggestions, the agenda is approved by consent.

APPROVAL OF PROCEEDINGS

CHAIRMAN ESTES: Proceedings from our last meeting in May, are there any suggestions for changes to the proceedings? Seeing none; the proceedings are approved by consent. We have no one signed up from the public to speak on items not on the agenda. Is there anyone in that large crowd over there that would like to speak on an item not on the agenda?

REVIEW AND CONSIDER COBIA DRAFT FISHERY MANAGEMENT PLAN FOR PUBLIC COMMENT

CHAIRMAN ESTES: Seeing none; we will go on and Dr. Daniel will quickly go through our Cobia Draft Fishery Management Plan.

What I would like to do with this is he is going to go through each item. We can have questions; and then we can make some suggestions, some changes if there are any. I would like to do this without going through the formality of motions. I would like to see consent for everybody to agree on doing this. If we can't find consent, then we will go through the motions.

DR. LOUIS B. DANIEL: Good morning everybody; it is good to be here. Just since your last meeting we've had several PDT calls. We also had an Advisory Panel conference call. We had three members of your advisory panel attend the call; and had very little substantive comments on the management options that we'll be providing; I'll be putting forward to you here in just a minute.

Quickly I would like to go through the primary objectives as set forth by the Board to complement the South Atlantic's coastal migratory pelagics FMP; to constrain harvest to the ACL established by the South Atlantic Council, and to provide the states with maximum flexibility to manage their specific cobia fisheries. Those were your principal objectives in developing the plan.

Real quickly a background, the significant overages of the recreational ACL in '15 and '16 resulted in closures to the EEZ. Those overages raised concerns for upcoming stock assessment and the stock status of cobia. The disproportionate impacts on closures within the management area, and recognition that the majority of fisheries occur in state waters, prompted your action in development of the FMP. Management unit has been a sticky topic. The Atlantic migratory group has been set at their range from Georgia through New York. Microsatellite DNA analysis and tag recapture data support these current boundaries as they were accepted by the Council's SSC.

But to be clear there is a lot of effort by the states to collecting additional data, and analysis that will continue and hopefully better

delineate the stock, and better define mixing areas, if what we have in place is not adequate. That will be a component of the upcoming stock assessment. The stock status, SEDAR 28 is the most recent stock assessment for cobia; that is with data through 2011.

At that time the stock was deemed to be not overfished, and overfishing not occurring. But there were concerns with the declining SSB over the last decade or so; culminating in a fairly low terminal estimate in 2011. The recent overages by as much as 100 percent over the allowable catch limits or annual catch limits raise even further concerns for the 2018 assessment.

Briefly, and all of this is in the draft fishery management plan, so I just wanted to make sure that folks had an opportunity to know what we're dealing with here. Cobia life history, very difficult to get a handle on cobia life history, many of the states try to get information as they can. But the fact that these fish are only available in our various waters for short periods of time, make it very difficult to get good annual estimates of things like DSIs and the like.

There is a lot of information that we would like to continue to collect on cobia life history; due to their episodic appearance in coastal waters. The recreational fisheries real quickly, is a very valuable recreational fishery particularly from Georgia through Virginia, with landings north of Virginia being episodic.

We've heard a lot from the for-hire and tackle manufacturing as playing a large role in the value of this fishery; and the directed fisheries earlier in the season tend to give way to more bycatch fisheries as the season progresses in some locations, not all. The current ACL for cobia is 620,000 pounds.

Landings in '15 and '16 exceeded a million pounds; and the federal closure of the EEZ as a result of the overages had a disproportionate impact on the states from Georgia through Virginia. Clearly those states that have primarily a fishery in the EEZ, like Georgia and South Carolina were more disadvantaged than those states that have more fishery in state waters.

Just to give you an idea as we begin to talk about seasonality. This is the best information that we have at this time from the last several years; showing that the fishery primarily operates from generally around April through October, with fisheries occurring a little earlier probably in the further south areas, and a little later in the season. But the vast majority of the catches occur in that May-June, June-July period.

Based on numerous iterations of the landings information, this just gives you a general idea if you just look across the bottom, and look at the averages for each state. These are their average landings over the last five years; just to give you a sense of where the landings have been, with a total in 2015 at 1.5 million pounds, with an ACL of 620. Our average is quite a bit at 793, is quite a bit above the 620,000 pound recreational ACL. In the commercial fishery the ACL is 50,000 pounds, average landings during the five-year time series is around 56,000 pounds. It is historically a bycatch fishery. More directed activity appears to be developing in some jurisdictions. How that will impact the current catch rates is yet to be determined.

North Carolina accounts for about 67 percent of the current commercial landings. A large percentage of that actually comes from bycatch in the large mesh gillnet fishery. But typically that is limited to one or two fish. Again, similar to the recreational fishery this is the average landings by state.

The Georgia/South Carolina data are combined due to confidentiality. You can see that the commercial landings and value don't quite compare with the magnitude of the fishery in the recreational fishery. Socioeconomic data are sparse in this fishery; certainly a very important and valuable bycatch to commercial fisheries.

These fish are typically high value and they are available for a short period of time, so demand is typically high. When a commercial fisherman does have a cobia, it typically is a high dollar fish. The larger recreational fishery is far more difficult to characterize; and again because of its episodic occurrence there has not been a lot of information directly attributable to the cobia fishery.

What data we do have is in Framework 4 with the South Atlantic; but further study is needed to adequately characterize all the cobia dependent fisheries. Habitat issues again, because of their episodic nature, and also because they are fairly rare, for whatever reason. There are few, if any, studies that directly characterize habitat preferences and needs for cobia.

Information on early life history is limited; and data are primarily based on incidental captures of limited numbers of fish in various fishery independent programs. I'm personally not aware of any program that lands any kind of quantity of juvenile or small cobia; and most of them are again bycatch in either directed fisheries, recreational and commercial, or in various trawl surveys or gillnet surveys or other types, haul seine surveys and the like.

Juvenile cobias are taken incidental to both commercial and recreational activities; as well as fishery dependent collections. These collections tend to occur in estuaries in the nearshore coastal ocean. Adults tend to migrate north and south, as well as inshore and offshore; tending to be closer to shore during spawning activities.

The ongoing tagging efforts should provide more information on their migratory habits. A lot of questions right now about their actual migratory routes, and that is an ongoing issue. Research and data needs, virtually anything that we could add to our existing understanding would be helpful. Any biological information, reproductive, ecology, movements, habitat, needs and preferences are mostly lacking or incomplete; and the socioeconomic needs I've mentioned.

Protected species in North Carolina commercial gillnets take a high percentage of North Carolina's commercial cobia catch, as bycatch in primarily the southern flounder fishery. But this fishery is held to very strict observer program requirements; and any information on cobia and the bycatch of cobia in that fishery would be available, as well as any concerns related to endangered species interactions in that fishery as bycatch. But really no specific threats to protected species from cobia fisheries have been identified yet. At least in the state of North Carolina there was some observer coverage information on the recreational fishery; and I don't believe they actually had an observed turtle interaction, although anecdotal data says that there are some turtle interactions in some of our nearshore bottom fish fisheries, cobia being one of those.

Into the management program, management options for cobia were developed based on the efforts to complement these actions. Those actions proposed by the South Atlantic Framework 4, and options developed by the Board working group and the Plan Development Team. All approved management options would need to be implemented by April 1 of 2018; to affect the 2018 season.

I'll run through these real quickly. Obviously if there are any questions, I am happy to answer those as we move forward. Recreational size limit, Option 1 is status quo, not having a coastwide size limit. Option 2 is the minimum size limit of 36 inches fork length, which is currently the proposed size in the South Atlantic Framework 4.

What we noticed is that basically from Virginia north they tend to use total length. It was requested that we include a total length equivalent could be considered by the Technical Committee and the management board, if a state wanted to elect to use total length as opposed to fork length. Yes sir.

CHAIRMAN ESTES: Okay, are there any questions to Dr. Daniel's preamble or the recreational size limit options; any questions? Robert.

MR. ROBERT H. BOYLES, JR.: Not a question as much as a statement; to Dr. Daniel's point about measures need to be implemented by April 1. Of course you all know in South Carolina, we have to go through our legislative process. The likelihood of getting that probably is relatively low. But I just want to make sure the Board is aware that whatever we're required to do, we'll do as quickly as we can with our legislature. But the probability of having something done in place by April 1 is probably low.

CHAIRMAN ESTES: Okay thank you. Michelle.

DR. MICHELLE DUVAL: Just a quick addition to the protected species information that Louis provided. We did actually have two interactions with sea turtles from private anglers during the observer program study that we had; and that was in 2013. There weren't any in 2015, but we did have a couple in 2013; so just to note that for the draft.

CHAIRMAN ESTES: What is the comfort level of the Board with the two options that Dr. Daniel described? Are there any changes that are suggested, seeing none; if we would go through the next section?

DR. DANIEL: The next is a recreational bag limit option, again status quo, no coastwide bag limit option; and Option 2 would be to complement the Framework 4 option of one fish per person.

CHAIRMAN ESTES: Are there any questions about that or discussion about those options, suggestions for additions or deletions? Seeing none; you're making my job really easy.

DR. DANIEL: There will be some additional information for de minimis states coming up in the presentation. I saw some of the northern states start to ask questions; and I'll try to let you know that is coming. The next issue is recreational vessel limit options. This one has been confusing; Option 1, status quo, no coastwide vessel limit. Option 2 was a state specific daily vessel limits of no more than 6 fish per vessel.

I think it would be helpful here to explain that when the states begin developing their plans. If you would like to move forward with some type of a seasonal option, then you would be able to look at various vessel limits, in order to either lengthen your season or shorten your season, and allow more fish to the vessel. This is consistent with the South Atlantic Council's Framework 4; that would allow up to but no more than six fish per vessel.

CHAIRMAN ESTES: Okay questions; Dr. Rhodes.

DR. MALCOLM RHODES: Well, some current regulations in certain states are three fish. Can we throw a third option in with three; or would that just muddy the waters even more? I'm sure you've discussed it already.

DR. DANIEL: Yes, thank you, Dr. Rhodes. The situation as we have it now is states have implemented some measures to try to reduce harvest; and I think those numbers range from one fish to four fish to the vessel. I think what we would see if the plan is approved, and compliance plans are developed that in order to extend the season those numbers would probably be reduced, in order to extend the season.

That is what we've heard from the Working Group that's what we've heard from the Board and from the public that they want the longest season possible. I think by having up to six fish, it covers all the various options that I think the states would want to try to consider when developing their plan.

CHAIRMAN ESTES: Are you good with that? You could have a three-fish vessel limit for your implementation plan; and that would suffice. Are you good with that?

DR. RHODES: Yes that's fine. I was just at this point wondering if we need to put out all the different options. I understand having a maximum; states being allowed to limit their in-water to smaller amounts to increase the season. But I'm fine with that; just that it's another point of discussion.

CHAIRMAN ESTES: Are there any other comments or further discussion on this issue? Roy.

MR. ROY W. MILLER: Just a follow up on Dr. Rhodes point. Some of the states don't have the flexibility of offering a more restrictive regulation than what the plan calls for. I kind of go along with Dr. Rhodes. I would sort of like to see something less than six in there as well.

DR. DANIEL: If you all will keep that idea in mind, and once we get through the options I think it will become a little clearer of what the options are and how they work together. But if not, I'll address this issue in just a couple of minutes; if that's okay. Next are the recreational season and allocation options; and I'm sure there will be a lot of comments or questions on this. I will do my best to get through these three options as clearly as I possibly can; and take questions if that's okay. We had a lot of difficulty trying to come up with exactly how to do this, and so here is what we've got.

Option 1 is a state defined season and harvest control measures; each state would receive a hard recreational quota share of the federal ACL. Now there is some concern that has been raised that we can't allocate the recreational ACL. But we can call it something else if that would help. That is based on some sub-options that I'll show you here in just a minute.

The shares would be divided among the non de minimis states only; and the overharvest would be paid back in the following year, and underharvest would not carry over. Looking at Option 1, and looking at the various alternatives. This is the reference period sub-options for Option 1. These are based on the 3, 5, 10, and the 5 and 10 year average landings for the states; based on numbers of fish, which we've all agreed that's the way we want to look at this "allocation."

You can see across the options how the various percentages of the allocation to the various states changes, based on the years that you're looking at. More recent time period tends to disadvantage certain states. The longer time series tends to disadvantage certain states. Interestingly, the five and ten year average that was a recommendation from the Working Group does tend to smooth it out a little bit, and tend to have less of an impact in terms of disproportion.

But those are the various options that we were able to come up with through the Working Group and the Plan Development Team. If we look at the historical landings reference period sub-options; for Option 1, considering an ACL of 620,000 pounds, based on the various scenarios these would be the specific allocations or the specific targets that you would want to try to reach when you set your season annual vessel limit.

That is what you're going to have, essentially – and this kind of gets back to the questions from Dr. Rhodes and Roy – is your options are really limited in terms of how you reach this target; be it a soft quota or a hard quota, in that you can either lengthen your season, get a longer season with a lower vessel limit, or you can have a larger vessel limit and a shorter season.

Those are really the only option that we have available; if we go with a state-by-state target for recreational catches. The hard quota, the hard payback, immediate payback was not very attractive to a lot of folks; and so we looked at a different alternative, and that's how we developed Option 2.

It is very similar, but instead of the hard quota it is more of a soft quota share. The average annual landings would be evaluated against the

state targets or allocated quotas over multiple years. You wouldn't be depending on that one year; which we've seen through the landing time series that can have some wild swings in the landings data for cobia, based on the MRIP data.

In this option you would be selecting from an average landings monitoring timeframe of two, three or more years. That way you wouldn't have to act every year if you have an overage; but it would be done over a time series of years. With this option the overharvest would be paid back over multiple year periods; and relaxed measures would be considered if underharvest. If a state was chronically under harvesting, and they wanted to increase their limit a little bit, or increase their season, they would be able to submit that plan to the Technical Committee and receive Board approval for that. The same numbers, in terms of the options and allocation or the targets across the states as Option 1, and essentially the same targets in terms of the numbers of amount of fish that would be allocated, based on the 620,000 pound recreational ACL.

The final option that we were able to come up with, Option 3, is essentially Framework 4; which would limit one fish per person bag limit, and a 36 inch fork length. But the coastwide overages would have to be paid back with reductions in the recreational ACL in the following year. If you look at the Option 3, these are directly out of Framework 4.

This is a coastwide season; it is not a state-specific season. It provides those seasons that were estimated with a January 1 start date, now they could be different for a May 1 start date. But based on a one fish, two fish, all the way up to a six-fish vessel limit. You can see how the seasons narrow considerably after you get past one or two fish.

But that again removes the flexibility that the Board indicated that they wanted to see, but this is one other option that is currently contained in Framework 4. Those are the seasonal allocation options; Options 1, 2, and 3, and I would be happy to try to address any questions the Board may have on those options.

CHAIRMAN ESTES: Let's make sure that we have the options that you're comfortable with. This is not like menhaden, but it certainly is more complicated than Louis's bluegills. Let's start out with some questions, if we could; Spud.

MR. A. G. "SPUD" WOODWARD: Let me give you a hypothetical. If the state of Georgia would like to have a season that extended, let's say from a March 1 start date into the fall, so that we could capture some fall fishing opportunities. This draft would allow us to put together bag limits, the size limits, and demonstrate that we would stay at or hopefully under what our allocation is.

DR. DANIEL: It would not allow you to modify your size limit. I mean right now the options for size limit is 36 inches for the recreational fishery, and a one-fish bag limit. What the state of Georgia would need to do is look at their catch rates; and probably end up, if you wanted to have a season that long then you would have a one-fish vessel limit, and then determine how long your season could be.

Then if you really wanted to extend it, you may have to have some mid-season closures in order to get into the fall. But in order to achieve what you're asking for would require an analysis by your state, submitting a plan to the Technical Committee. But as long as you stay within your target, your recreational catch target, and then you would be able to set up whatever seasonality you would like. Does that answer your question?

MR. WOODWARD: Yes, could we increase our minimum size limit and then run an analysis of the benefits of the increased minimum size limit in the context of the season?

DR. DANIEL: The discussions that occurred through the working group and the PDT were

not to reduce the size limit any lower than 36 inches; because of concerns over the numbers of fish. Any increase in size limit, because it's based on numbers, could result in increasing harvest and increasing pounds of harvest. It also could result in increasing discard mortality and difficulties of handling the fish boat side. At the present time the document would not allow you, or the current document would not provide for you to be able to increase your size limit from a 36 inch size limit in order to extend your season longer.

CHAIRMAN ESTES: Robert.

MR. BOYLES: To follow up on Spud's comment. Could they not make a petition on conservation equivalency under just general conservation equivalency provisions?

DR. DANIEL: There is no conservation equivalency for the size limit, no. I mean in this plan the options that you had in the present time, based on the discussions that we've had over the last while, have been through seasonal lengths and vessel limits. You have the flexibility to use vessel limits and season length to stay within your catch limit. That's it at this particular moment in time. The only other option I can think of is a size limit; but increasing the size limit is not a present option.

CHAIRMAN ESTES: Other questions before we look at the options. Yes, sir.

MR. JOE CIMINO: I think Dr. Daniel did a good job at describing some of the issues with an increased size limit; but if I'm not mistaken the Southeast Regional Office, as well as what Virginia did. Their analysis also suggested that increasing size limits would also be targeting the larger, productive females; that we're really at that point where we're shifting to all female catch if we start moving up. I think that was another issue that had come up at the Council.

DR. DANIEL: I would just add the additional discard mortality of those smaller fish. We are seeing at least the anecdotal information of the coastwide fishery at this point is that the fishery is targeting on smaller fish at the present time; and so there is probably a lot of releases and discards that we're not capturing.

CHAIRMAN ESTES: Okay, are there suggestions, I guess specifically to Spud about some addition options then? Do we need to go back a little bit?

MR. WOODWARD: I think I'm getting the gist of this. It's just a little different than what we typically deal with; because we're using a pound, you know a pound is target in a predominantly recreational fishery. It sounded like if I wanted a plan that would allow some harvest of cobia during the fall migration run back past Georgia.

Then I would have to have basically two seasons. I would have a spring season, and then I would have to close it during the summer, and then open it up at some other period in the fall; and then demonstrate that the catches within those two periods would keep Georgia within its soft cap, or whatever. Is that correct?

DR. DANIEL: Yes, sir. I think that's correct, and I think also there was a lot of discussion about numbers, and it is different than what we've done in the past. But one of the primary reasons was because there was such a big difference between the MRIP estimates of harvest, pounds, and the Southeast Fisheries Science Center pounds. After a lot of back and forth and discussion at the Working Group level and the PDT, we made the recommendation to go with the numbers; to avoid and eliminate that discrepancy between the two methods to estimate harvest. But you're correct in that if you wanted to try to come up with something that was going to extend your season for longer than you can get. You are going to have to come up with a closed season period in there, in order to allow the fishery in the fall.

CHAIRMAN ESTES: Yes, sir.

MR. WOODWARD: Within the framework of this draft plan, so I if I came up with that scenario, it was approved by the Board. It would basically be in place for some period of time, three years, four years or so. Then to keep us from falling victim to the volatility of these, because all it would take was one fish in October, and next thing I know we're completely out of whack. That would be the intent of this is to establish it, leave it in there and then reevaluate it after some period. We could sort of normalize what was happening. Is that correct?

DR. DANIEL: Spud, from my perspective that is the beauty of Option 2. That is what Option 2 allows, and it would yes. If the state of Georgia has a 60,000 pound target and in the first year they catch 100, the next year they catch 20, the next year they catch 45. They averaged out to be under 60, you're good.

CHAIRMAN ESTES: Are there any questions about allocation schemes specifically. Seeing none; yes, Michelle.

DR. DUVAL: Maybe not so much a question, I just had a few comments and suggestions; just with regard to, and I spoke to Louis about this earlier. I think some of the language in those options; I just want to make sure that it's very clear that it's a soft target.

I've provided our PDT member with some suggestions for making sure that the language is appropriate, so that everybody understands that it is a soft state target. I'm just a little bit concerned that with some of the words that are in there right now; that stakeholders are going to focus more on the words, as opposed to the concept that we're trying to get across.

CHAIRMAN ESTES: Let's make sure that the Board is all on the same page about what this means. Are there any questions about what our intent is here? Yes, John.

MR. JOHN CARMICHAEL: I guess the way I read it I wasn't reading Option 2 as requiring payback; which is what it says in this last bullet, so that's the question. Is there actual payback as opposed to adjustment to stay on target?

DR. DANIEL: Yes, thank you John, and that is correct. Based on some discussions I had with some of the Board members, yes it is exactly as you described. It's not a payback as much as it is if the situation I described in Georgia, if they were found to be going chronically over their quota, and they may have to narrow their season a little bit or reduce their vessel limits a little bit, in order to accommodate and get back down to their average landings. But no payback, I will make sure that is clear in the document.

CHAIRMAN ESTES: Dr. Duval we will make sure that language is incorporated, thank you.

DR. DANIEL: Yes, and if your PDT from North Carolina can provide that language that would be very helpful. Thank you all very much. That was far less painless than I anticipated. The next issue is the commercial size limit options; and again we have Option1 is status quo, no coastwide size limit option.

Option 2 is a coastwide size limit, the current minimum size limit of 33 inches fork length; and then I included the total length equivalent in here as well for the commercial fishery that could be considered by the Technical Committee and the Board. That is the current Framework 4 option that is currently in headquarters. Those are the two options for commercial size limits.

CHAIRMAN ESTES: Yes, Robert.

MR. BOYLES: Just for the record, I want the Board to recognize that cobia are game fish in South Carolina, so there is no commercial harvest sale; they may not be bought, sold, bartered, traded or otherwise enter commerce under current law in South Carolina.

CHAIRMAN ESTES: Any other comments or discussion about these options; seeing none?

DR. DANIEL: All right next is commercial possession limit options. I'm sure there will be some discussion on this one. The status quo would be no coastwide possession limit option, and Option 2 would be the state-specific possession limit of no more than two fish per license holder; not to exceed six fish per vessel.

CHAIRMAN ESTES: Yes, Joe.

MR. CIMINO: As promised. Virginia has set something up for what isn't a bycatch fishery. Our commercial fishery is mostly commercial hook and line. We have a cap number of hook and line fishermen that are allowed to fish; and we have seen some movement into that fishery. A few years back, before cobia was an issue, we had a request from some of those commercial hook and liners to say I don't necessarily want to have to go out and find other licensed commercial fishermen to have six per vessel.

Would it be okay to just say six per vessel, no matter how many people on board? At a time when there was no cobia issue, we allowed that and we still currently do. As this moves forward, Virginia wouldn't be in compliance with that two-fish per vessel. However, I think the accounting for the commercial fishery may be a little bit off. I think what's happening right now is just using federal dealer reports. My belief is that in the last two years the commercial fishery has exceeded its harvest limits.

I believe moving forward, Virginia will have to do something; and perhaps the easiest first accountability measure is to get us back in compliance with this, so this may not be a large issue for us. I know we have to do something for our commercial fishery; even though it is small relative to the recreational catch. I just wanted to point out that right now as it stands, we have that six per vessel it is just not two per person.

CHAIRMAN ESTES: To be clear, you're not suggesting any additional options here, correct?

MR. CIMINO: Yes that is correct. I think at a minimum, as this moves forward, we in Virginia may be moving back to requiring two per license holder.

CHAIRMAN ESTES: Yes, sir.

MR. DAVID BUSH: Just a quick question. We do have some options on the recreational side for state-specific type management measures. Would it not be prudent to allow for such an option on the commercial side as well? Depending on how things move it may be a tool that might be vital to keep some tensions down within the state. I just don't know what the thought is. If there might be other discussion on allowing for some sort of a state-specific management of the commercial sector.

DR. DANIEL: That was discussed at the Working Group and the PDT level, the landings not nearly as concerning in the commercial side than the essentially over doubling of the ACL in the recreational fishery. There was a sense that the shares would be so small for the various states that the general consensus was to maintain the current ACL at the 50,000 pounds for the coastwide commercial fishery.

Based on what Joe just indicated from Virginia, and I think possibly in North Carolina. There are concerns about increasing harvest and increasing effort in the commercial fishery. Whether that happens or not, I guess we'll have to wait and see. But the general position of the Working Group was not to allocate that.

It also was the concern, well their point that we were able to manage the commercial cap or commercial quota with a census type of trip reporting that is real time, gave the states I believe, at that time at least, more comfort in maintaining a coastwide limit. If there is an interest by the Board to go with specific commercial allocations, then that would certainly be an option that we would have to develop and put together for your consideration. It is certainly possible.

MR. BUSH: Just a brief follow up. What you're looking at is a coastwide allocation for the commercial sector versus the commercial sector falling under the state quota that is being allotted to them. Is that what I understand? What you're suggesting is that we would have to provide for that separately if we took this route.

DR. DANIEL: Yes.

CHAIRMAN ESTES: I think Robert was next I believe, and then Lynn and then Dr. Duval. Lynn.

MS. LYNN FEGLEY: I just want to clarify a little bit in my own mind. If you're a de minimis state, the 50,000 pound commercial coastwide allocation. If an option was chosen to go for a coastwide size limit and possession limit, would a de minimis state follow that and then be de minimis for their recreational? I'm just trying to understand how the commercial and the recreational de minimis interface, and maybe we'll get to that later.

DR. DANIEL: Well this is probably as good a time as any to discuss that now, from my perspective. The coastwide ACL is 670,000 pounds. The commercial allocation is 50,000 pounds. The Board would need to decide as we discuss here in a second on de minimis, if they want to set aside any quota or target or share to the de minimis states; and if they do would it include commercial? In which case the commercial de minimis states would have a specific commercial allocation; which would be inconsistent with the way the commercial fisheries are being managed in the southern states.

The alternative is to set aside just recreational de minimis quota to the de minimis states; which would be 6,200 pounds if you decided to do 1 percent, and have the commercial fishery 50,000 pounds based on the coastwide ACL, clear as 40-weight, I'm sure.

CHAIRMAN ESTES: Dr. Duval.

DR. DUVAL: Just to make sure everybody understands. Right now under the federal FMP, the coastwide commercial fishery, which runs from Georgia through New York, is managed under this 50,000 pound commercial annual catch limit. Right now the regulations are still two fish per person. There is no qualification for it being a license holder or anything; because there is no federal permit for cobia commercially.

It's just a two fish per person, 33 inch minimum size limit and that's it. When we were discussing Framework Amendment 4 at the council level, commercial representatives themselves, who were concerned about the fact that this bycatch fishery was starting to push up against its own annual catch limit, brought forward the suggestion to implement a two fish per person, no more than six per vessel limit for the commercial fishery coastwide.

I think trying to go down the road of state-by-state quotas for the commercial fishery under this ACL would be over complicating things. I think that the two fish per person has worked. I do think that cap of having no more than six per vessel is probably necessary; given how harvests have increased, both in Virginia and in North Carolina over the past couple of years.

Certainly the commercial fishery is I guess maybe subject to the availability of these fish as it waxes and wanes; just as the recreational sector is as well. I just want to make sure everybody was clear what the regulations are right now versus what the Framework 4 regulations are; which is what is being suggested in this draft document for the commercial fishery.

CHAIRMAN ESTES: Okay before I go to Roy, Lynn, are you comfortable with that explanation that it has kind of been taken care of and considered at the Council level? Okay, Roy.

MR. MILLER: I have two questions. The first one is regarding the size limit. I'm frequently asked; what is the rationale for a differential

between a recreational size limit for a given species, and a commercial size limit? My question is, how shall I answer? What is the rationale for the 33 inches as opposed to the 36 inches? That is the first question.

DR. DANIEL: Well, I'm not sure I can answer that in that the 33 inch size limit was maintained as status quo in the commercial fishery. I can only assume why the Council did that was to maintain the current harvest levels, but also there was no need for reduction in the commercial fishery at 33 inches. If you go to 36 that means they're getting a reduction, which they didn't need. It would probably result in more discard mortality if they went to 36 inches in the commercial fishery; particularly owing to the fact that a lot of those fish are taken in the large mesh gillnet fishery, where mortality rates may be a little higher than they are in commercial hook and line. That is the best I can do. I would hope that maybe perhaps one of the Council members would be able to explain why that decision was made in Framework 4, because where we were complementing that action, and I can't do any better explanation that that.

DR. DUVAL: Roy, Louis I think has captured the rationale quite well. You know we were focused on the recreational fishery. We were looking for additional means to provide harvest savings, so an increase in the size limit was one way to do that. There is a tipping point there beyond which, you know you increase that size limit and you're actually not really saving much of anything, as well as the concerns that Joe Cimino raised earlier that were discussed at the Council level about impacting female harvest.

On the commercial side, there was more concern about simply making sure that there was a cap to keep harvest within the 50,000 pound limit; and that establishing a vessel limit was sufficient to do so. Again, as Dr. Daniel indicated, you know the majority of these fish are taken in a gillnet fishery, so the discard mortality is likely higher.

CHAIRMAN ESTES: Yes sir, Roy.

MR. MILLER: If I could follow up. I'm just envisioning a commercial hook and line fisherman being allowed to keep a 33 inch fish. Everyone acknowledges the episodic occurrence in the areas that I'm familiar with. As opposed to a recreational fisherman has to throw anything back under 36 inches, the reasons don't sound compelling to me. That's just my opinion for having a differential size limit. That's my two cents on that.

CHAIRMAN ESTES: Would you suggest that we add an option for a 36 inch minimum size limit for the commercial fishery?

MR. MILLER: That would be my suggestion.

CHAIRMAN ESTES: What does the Board think about that? Yes, sir. Kyle, go ahead.

MR. KYLE SCHICK: I think we have a precedent. In other fish we have this disparity also, because of various reasons; black sea bass, flounder, and what not. I think that I'm a person that says if something's not broken let's not try to fix it and make it more complicated. I don't see that there is really a need to do that if the commercial fishery is under control.

CHAIRMAN ESTES: Tom.

MR. THOMAS P. FOTE: I was a little confused, because if there is no permit required for fishing commercially in federal waters, then a recreational person can say I'm out here fishing commercially and then would be allowed to keep a 33 inch fish? I'm just wondering how that would work.

CHAIRMAN ESTES: Well, Michelle and then I think Lynn.

DR. DUVAL: Yes Tom, so that's a conversation that the Council has walked down a couple times; in terms of whether or not to require a federal permit of any sort. We've recently discussed it, having had some concerns that there might be folks trying to exploit a loophole,

so to speak, because there are a lot of recreational fishermen who do have a commercial fishing license. I know this has been a concern. In South Carolina it's been a bit of a concern in North Carolina that someone could just go and buy a commercial fishing license, in our case on the internet, off Craigslist, and they would be really fishing for pleasure.

But they would be a commercial fisherman; because they had that commercial license, but not necessarily selling those fish once they returned to shore. What we have been told from NOAA GC is that it would technically be illegal for them to fail to sell those fish once they returned to shore; since federal waters are currently closed to recreational harvest. Policing that I think is a different matter.

In North Carolina we do not require commercial fishermen to actually, they don't have to sell all the catch that they bring in. They are allowed to keep some for personal consumption. It is an issue. We have discussed it, and I think that is probably one of the reasons why the options that you see in this draft fishery management plan include two fish per license holder.

CHAIRMAN ESTES: Lynn, I think you were next.

MS. FEGLEY: I just wanted to clarify to Roy's point that a state could be more conservative, correct? If there was some sort of user conflict in the state where you had a recreational and a commercial hook and liner fishing side by side catching different sizes, the state could opt to increase that size limit to 36. I just want to clarify it, since we had that conversation about the 36 inch lock down on the recreational side. How would that play?

DR. DANIEL: I think, I'll look over here to my right too, but any time the states want to be more conservative that is perfectly legit. I mean if the state of Delaware decided that they wanted to go to 36 across the board for their cobia fishery, commercial and recreational, I can't imagine the Board would object to that. There are some options coming up, and for de minimis states it would address that Roy.

CHAIRMAN ESTES: I would point out though that raising the minimum size limit if we were already going up against our ACL that raising the minimum size limit could actually exacerbate that. That is something to think about. Tom.

MR. FOTE: I'm just uncomfortable with a loophole like that being left into the document, when you could easily solve it by just going to the same size limit; and not look for people to wiggle room into doing it commercially when it's not commercial.

CHAIRMAN ESTES: Dr. Duval.

DR. DUVAL: Tom, I just want to be clear that the issue that the Council has been discussing really has nothing to do with size limit. It's all about whether or not there is a federal permit required for sale.

CHAIRMAN ESTES: Right now I think I have a suggestion from Roy that we add an option for a 36 inch minimum size limit. I want to see kind of where we're at. Kyle you expressed that you didn't think that we need to have that; but would there be a problem as having that as an option, because we certainly are going to vote these things up and down? Then David first, I guess.

MR. BUSH: At this point obviously it's been said if it's not broke, don't fix it. We've got enough stuff that we throw out at the public, weeding through it is a nightmare half the time. It's obviously not necessary, and if there are states that wish to go forward with something a little more conservative that's already available to them. I think this is sufficient as it is, maybe even more sufficient than it needs to be.

DR. DANIEL: To that point to some degree, I would just also point out that Framework 4, which is currently in Headquarters, currently has it, so you would have a disconnect between

federal waters would be at 33 and if states elected to go to 36, it's not to say don't do it. But you could make a motion to add if that was accepted by the Chair, to add a 36 inch size limit. But again, where that has been an issue, where it could be an issue in the de minimis states is addressed in the next option.

CHAIRMAN ESTES: Roy, tell me where you're thinking about. Would you be comfortable not adding it as an option, but allow the states to become more restrictive or not?

MR. MILLER: I still favor including it as an option. But I've heard the arguments to the contrary, and I'm willing to do what the majority feel is most important in this regard.

CHAIRMAN ESTES: I don't think that we have a consensus on this issue, and so perhaps we need to have a motion so we can figure out what we're going to go do. Yes sir.

MR. MILLER: Well, then I move that we add an option for a 36 inch size limit for the commercial fishery.

CHAIRMAN ESTES: Okay, do I have a second? Tom Fote seconds. Discussion, Roy, do you want to discuss it any more or any others? Okay, if it's all right with you let's leave this motion on the table for right now and look at the de minimis options and see if this takes care of it.

DR. DANIEL: De minimis options, Option 1 is not to have a de minimis program at all. Option 2 would be to include the de minimis program. At present the states average total, commercial plus recreational landings from the previous two years must be less than 1 percent of the average total coastwide landings for the same period.

The regulations would be one fish per vessel limit, with a minimum size limit. The Option 2 regulations would be the minimum size limits for de minimis would be the 33 inches for commercial and 36 inches for recreational, or 36 inches for both. Those are the two options that would go out to public comment under *de minimis.*

Going back, if you look at the landings data in the draft document over the last ten years, I believe I'm correct in saying, and I'm sure I'll be corrected if I were to say it wrong. In the last ten years, I think Maryland has had two years of landings, New Jersey's had two years of landings, and Delaware has had one year of landings. Delaware had 400 pounds in one year. Maryland averaged about 1,200 pounds in one year, and New Jersey had that strange situation where one fish equaled 66,000 pounds. That was based on the Southeast Fisheries Science Center data; not the MRFSS data. The landings in the de minimis states are extremely episodic. There are many years that go by when they don't land any fish. But there have been anecdotal reports that there is at least in Maryland, some additional catches going on. From some of our advisors, both from the South Atlantic and from the ASMFC, they indicate that it is just anecdotal information that there are more fish being taken in Maryland.

They're not showing up in the MRFSS data, and they're not showing up in the Southeast Fisheries Science Center data. Right now I think it's important, and this is from a holistic standpoint, to recognize that we've got two pretty substantive issues going on with cobia right now outside of this FMP; one being the decision by the Council at their June meeting to move forward with options to transfer authority to the Commission, or in some way, shape or form, plus the upcoming stock assessment.

There are two big issues that are going to be arising for us in about the next two years. It is really likely that this plan is really more short term; as these issues at the council level and at the SEDAR process work their way through the process. I want to make sure as we're thinking about these things we're not, at least from my perspective, we're not looking at a long term

fishery management plan that's going to be in place for 10 years and everybody's stuck.
One of the very important components of this from the Plan Development Team, and from talking to some of the Board members, was making sure that these allocations were not etched in stone. What's going to happen over the next couple of years with de minimis is anybody's guess.

If these fish start moving north, and we start having to adjust de minimis, then that little bit of quota that is currently being allocated to the primary states is going to be reduced somewhat to account for those. That is a long winded way to say that the de minimis thing is a very difficult thing to try to develop under the current plan.

The way it's set up right now is that all four states, Maryland, Delaware, New Jersey and New York would be considered a de minimis state; for lack of a better term. It would not be 6,200 pounds per state; it would basically be 6,200 pounds for the region, if you looked at 1 percent of the coastwide landings. That's the way we're looking at it right now.

CHAIRMAN ESTES: Okay, I think I have Roy, Robert, and Lynn.

MR. MILLER: I mentioned that I wanted to address one more topic, and this is it. Specifically with regard to de minimis, for those states like Maryland northward, wouldn't this de minimis classification as it presently reads serve as sort of a disincentive for declaring de minimis?

If we didn't declare de minimis, I presume that we could fish recreationally at one fish, 36 inches with a boat and a vessel limit of six, whereas if we're de minimis it would be one fish per vessel. Why would we want to declare de minimis under just those circumstances? Do you see where I'm going?

DR. DANIEL: If you are a non de minimis state then you would be subjected to a target. The state of Delaware's target would be 40 pounds, so then you would be expected to develop a season and a lesser limit to maintain your catch at 40 pounds, if you're not a de minimis state. The benefits of being de minimis, at least from my perspective is that the de minimis states are allowed one fish per vessel year round. They don't have to worry about a seasonal; which is going to be an issue for those states that have to reduce their harvest down to the current ACL. The difficult problem we have is that the current Framework 4, the current management in the states north of Virginia, basically complements the federal actions in state waters. It looks like; yes it looks like you've got six fish.

But it's going to depend on how NMFS implements the Framework 4 option. One of the possibilities is that the federal restrictions would mirror the specific state restrictions in state waters. I don't anticipate an opportunity where the states would be able to operate on a six fish limit, and have us be able to maintain the current ACL.

CHAIRMAN ESTES: Robert.

MR. BOYLES: Not necessarily on de minimis, but just following up on Dr. Daniel's comments about the efficacy, and how long this plan may last. I noted, I believe it was last week, Senate, Commerce, Justice, State Appropriations Committee report that specifically mentioned and requested NOAA spend a lot of time quickly updating the cobia stock assessment.

CHAIRMAN ESTES: Dr. Crabtree, or Dr. Carmichael, can you give us any ideas about how that might be going?

MR. CARMICHAEL: The stock assessment, yes. Well, it is planned and the intention is to evaluate stock ID, beginning the early part of next year; and then to be in position to begin the assessment proper with the data workshop in the latter half of next year.

CHAIRMAN ESTES: Lynn.

MS. FEGLEY: I have comments and concerns about a list. I'm not sure how you want to handle that. But I guess I'll start with the criteria for de minimis. Assuming that we have a 620,000 pound coastwide ACL, and that's assuming that we're taking 50,000 pounds out for the commercial. If we go to 620,000 pounds, and the de minimis states are working on, so 1 percent of that would be 6,200 pounds.

If any one of our states on a two-year average harvests 15,000 pounds in one year, we could go over that 1 percent very quickly. Then we wouldn't be de minimis anymore, and then we would be taking quota out from under the non de minimis states. I wonder if the de minimis criteria, because of the high variability in these data.

I wonder if the de minimis criteria should be somewhat consistent with the soft cap idea for the non de minimis states. In other words, if you go over 1 percent in one year, the following year you are under observation; and the Board will decide after that second year. I worry about the variability. I worry about these really large spikes that arrive. I guess I would be suggesting adding an option on the criteria that somehow deals with that. I'm not sure I have the wording off the top of my head, so that's my first issue. I have two more; however you want to handle it.

CHAIRMAN ESTES: Let's do that one first. Toni has a comment.

MS. TONI KERNS: Lynn, what if we averaged for a longer period of time. Do you think that that would help us out? Especially if these landings are somewhat sporadic, and can jump, do you think that that would cover it?

MS. FEGLEY: It might. Not having thought really hard about the math. I guess what I would suggest is if maybe, could the Plan Development Team think about a strategy that would buffer a little bit from this variability, and add such an option? It might, Toni. I'm not sure. I just don't want to compromise the non de minimis states, and suddenly have to be allocating quota away from them; because of some anomalous or not, some spike in MRIP landings data.

CHAIRAMN ESTES: Go ahead, Toni.

MS. KERNS: The other thing is that the Board does have some ability to look at a state's landings and say to that state, just as you said right now under all the plans. We recognize you went over, but we're still going to give you the de minimis status.

I think we've done that before in the lobster plan for a state. The Board does have some flexibility there to give the states a grace period from year to year, even if they do go over a little bit. But I think you could add an option in here averaging two years, averaging three years, or you could take one out. It's up to the Board.

CHAIRMAN ESTES: Okay before we get to that I have Joe and John on this subject here. Joe.

MR. CIMINO: I guess I have to start with a confession. I'm not sure what de minimis means in the commercial fishery; but I would think that it might be prudent to decouple the two, since we shouldn't assume that there is going to be that same variability. I've looked at these numbers for far too long.

I have no question that Maryland, Delaware, or New Jersey is going to be bouncing around in and out of de minimis status for the recreational fishery. If one intercept could equal 66,000 pounds of fish, we're going to be seeing that a lot. It may provide some benefit to the commercial fishery; if they're able to be on their own, and apply for de minimis status just based on their harvest estimates.

CHAIRMAN ESTES: Dr. Carmichael.

MR. CARMICHAEL: Yes, I was looking at the New Jersey; you know they had 69,000 pounds in 2012. It seems you stretch that out to ten

years they're still going to be over that 1 percent. Then you would put them into that fold with the other four states for ten years, based on a one-year event.

It shows Jersey having landings in 2006 and 2012. I think that gets at one of the issues that the Council dealt with a lot when setting accountability measures for spiky recreational data. There is a big difference between spiky data like this, and just having generally uncertain data; which varies around some central tendency.

This is just sort of all or nothing. The trouble with averages of all or nothing, is when you get that all, instead of having an issue for one year, well suddenly you have an issue potentially for however many years you've decided to average. If you took that one thing of Jersey, you know they would be in for two years or three years or five years or ten years. It really wouldn't matter, because the magnitude of their landings was so great. It's overwhelming that period, and like Joe said, it comes down to what the inflation is for the intercept that had a fish and the amount of effort in that cell, and how it works out in MRIP.

I think the idea of not having this hard limit, and having some way of seeing if you have a persistent problem versus a one-year data situation. MRIP is a survey, it's not going to be the same as a census or something type situation. It's a survey. The PSEs are high on a state level; and we're looking at a state level when we look at these, you know, 60, 70 percent is not unheard of on the PSEs on a state level.

I think anything that's tied to the MRIP data in an absolute percentage is going to be trouble, and if we can have it written up so there is no question that you would be monitoring it for persistence to see if there really is a situation developing with fish shifting or effort shifting or something going on that is compelling people to catch more fish than they have, and what they've been expected to catch. It would probably serve us a lot better, and we wouldn't have to be justifying why we're not considering this state being over a problem.

CHAIRMAN ESTES: What if we instead of doing the averaging, what if we said – this is just a suggestion – what if we said that if they went over the 1 percent for two or three consecutive years, then we would consider them non de minimis. Would that take care of the concern if we had those two options in there?

MR. CARMICHAEL: Yes, I think that would help, two or three years, or two consecutive, or two out of three, some things like that would really help.

CHARIMRAN ESTES: Can we do that?

DR. DANIEL: Yes sir, we can do anything you want us to do. I think one of the beauties of the Commission too, is being able to do as John indicated. I mean we come in here, and if you look at the allocation for Georgia is around 60,000 pounds and one fish at 3.3 pounds in New Jersey resulted in 66,000 pounds. Obviously that's an issue that the Board can look at and say, wow!

That one fish happened to be caught had a high effort level, and it's really meaningless; and it may not even be a cobia, and move on. I don't think people are going to be shut down because of that. I think with the trends as we move forward, if we start to see more than five or six fish being intercepted then we may have an issue.

But until then, this would be a way to avoid what John indicated in terms of paying back for one year for ten years. We can certainly add that option to the document to accommodate the multiple years; to make sure that folks aren't flipping, flopping back and forth between de minimis and not de minimis, if that is the pleasure of the Board.

CHAIRMAN ESTES: Does anybody have a problem with that; any objection? No, so I was

hoping, Roy that these de minimis options would satisfy your interest in the size limit; but I don't know that it does.

MR. MILLER: Well, we haven't discussed the size limit in this most recent conversation, but I think the suggestion is a good one to allow some flexibility in terms of the timeframe; so that the rare event of an intercept detecting a cobia in the catch doesn't become problematic for the state. Because it is a rare event, and it's just a matter of chance as to whether that particular person happens to get interviewed. I don't think a state should be penalized for that rare event.

CHAIRMAN ESTES: Okay with that I think we need to go back to our motion. We're done with the options right now; excuse me, Lynn.

MS. FEGLEY: I'm still working on this list. Really the two subjects that I had on these were the commercial, the delineation between the commercial and the recreational, and also on the size limit. For the commercial de minimis, it seems like the option under commercial, the de minimis option where you would have 36 inches for both commercial and recreational; that assumes that you're going to have some sort of commercial set aside for the de minimis states. It's at odd with the 50,000 pound coastwide commercial ACL, correct?

Because if you go 50,000 pounds coastwide, the option there was 33 inches, two fish per vessel. Two fish per license, no more than six per vessel. But in the de minimis, if I'm a de minimis state, I either get 36 inches or 33 inches, one fish. What's my set aside? I would suggest that the public understands that they have a choice there. You choose to go with the coastwide 50,000 pound ACL; you decouple the two, like Joe Cimino was saying, or your working on some sort of de minimis set aside.

DR. DANIEL: Just bear with me for just a second. I think that setting aside commercial quota to de minimis states creates a problem. If you decouple, as Mr. Cimino indicated that would separate out. You would be dealing with the recreational fishery; which seems to be the more concerning.

One option would be to manage the de minimis commercial fishery the same way you manage the coastwide commercial fishery. I mean there is no difference between a commercial fisherman in Georgia, and a commercial fisherman in New Jersey; in terms of the Framework 4. What Framework 4 does is it sets up the commercial allocation, and a Georgia to New York commercial limit.

Now whether or not that's going to create the you-know-what storm. If the commercial folks are allowed two fish per license holder up to six per vessel at 33 inches, which is the current Framework 4 option, and the current non de minimis option, and the recreational are limited to one fish at 36.

I don't know how that's going to play out. I can imagine how it's going to play out, but that is one option. At the present the intent and purpose behind de minimis here is to allow that rare event to be retained in the de minimis states. Whether or not you have any evidence from landings data that anybody catches more than one fish, I don't know. I haven't seen it. That was the intent and purpose.

CHAIRMAN ESTES: Okay, Lynn.

MS. FEGLEY: I'll just go to my last one, since I'm muddying the waters right and left. The final one, the concern with de minimis is the size limit options. Just to make the point that in the Maryland portion of the Chesapeake Bay, we're not going to see a lot of 36 inch fish. We do have some charterboats that are encountering these fish.

We talk a lot in Maryland about our charterboats loosing ability to diversify their fisheries. I have concerns about seeing our recreational fisheries locked out with a 36 inch size limit. I wanted to propose that two things, potentially two options. One is that in

exchange for the ability to collect some information on smaller cobia that the de minimis states could do a 28 inch fork length, one fish per vessel. That would be one option.

The other would be to provide an option for de minimis states to match, in terms of their recreational regulations, a non de minimis state. What I mean by that is for example, if the state of Virginia hypothetically had a two-fish vessel limit at 36 inches, and a three-month season. The state of Maryland could implement like regulations as a de minimis state.

DR. DANIEL: Let me recap, and make sure I understand what you're saying. A second option would be a 28 inch size limit for recreational de minimis; one fish, 28 inches fork length, to try to account for the smaller fish that tend to be encountered north of Virginia.

The other would be that a de minimis state could select from the four existing state's implementation plans that would include one fish, 36 inches; but have a vessel limit and a season, and that those de minimis states could mirror a selected states management plan and implement that as their own. Does that capture what you?

MS. FEGLEY: You recapped that brilliantly, yes thank you.

DR. DANIEL: Those are not in the current draft FMP. One or both of those options would need to be offered by the Board.

CHAIRMAN ESTES: Michelle.

DR. DUVAL: Lynn, I just want to make sure I understand your second option. It's not like you would be able to pick from any one of the other four state's implementation plans. I thought I heard you say that the other option would be for you to complement the regulations of an adjacent jurisdiction. That's what I thought I heard you say.

In other words, Virginia is adjacent to Maryland, so you could look at it complementing in implementing the same regulations as Virginia. In other words, I wouldn't expect you to implement the same regulations as North Carolina, because things are a little bit different. I just want to make sure I understand.

MS. FEGLEY: Well, the intent was to ensure that we have the flexibility to match Virginia; so that's correct. It really is to make sure that we don't find ourselves at odds with a border state; because we're so close and we have boats running back and forth. Obviously maximum flexibility would be Louis's recap. But functionally I don't see us just playing multiple-choice from states implementation plans.

CHAIRMAN ESTES: David.

MR. BUSH: Just a quick question. What are the current landings that we've been quoted for these de minimis states? What are their regulations based on it, and is that based on the charts of what the regulations were previously, or are there no regulations at all; so whether they had 40 pounds or 200 pounds it's just whatever they caught.

MS. FEGLEY: We have no regulations in Maryland. We actually don't have authority to write them until this plan goes through.

DR. RHODES: Well, just one question from like a law enforcement perspective. I guess this would Virginia. If your fishermen had a 30 inch fish in possession, said yes but we were fishing in Maryland, you know Maryland borders and we caught it there. Would that present a problem to law enforcement, or if the fish is in Virginia waters no matter where it was caught?

MR. CIMINO: Yes the latter. The possession limit, or excuse me, it's written as possession, so if you're in possession of that fish then that is what you have to comply with.

CHAIRMAN ESTES: Lynn suggested two additional options for de minimis states. Is

there anybody that has some concerns about that? Okay seeing none; we'll add those options to the document. Hang on, Toni has a correction here.

MS. KERNS: Just to clarify, because I'm not clear what the two options are now. Lynn, are you saying one of them is to allow for the states to adopt the regulations of a neighboring state? Then what's the second option?

MS. FEGLEY: The second option was to lower the minimum size for the de minimis states; so it would be one fish per vessel per day. But rather than 36 inches fork length, it would be 28 inches fork length. The reason for that is because the intent there is to make that size limit somewhat equivalent with a 50 percent maturity.

I don't know that I have that right, but that was the idea there. The further idea is to get some information from our fishermen about these fish; since as I understand the movements of these smaller fish, there is very little information about these littler fish out there. That might be helpful.

DR. DANIEL: I'm not trying to get into the discussion here. But I will point out that one of the issues that came up in this discussion was these fish are moving towards the northern extreme. If they're up there in late September, October, do they ever get back south? I mean is there an opportunity for those fish to join the spawning stock and actually contribute to the fishery?

That's a point that I bring up, just for your consideration to think about. I can't tell you one way or the other. But if you've got fish in New Jersey in October, the chances of them getting back to the South Atlantic and joining the spawning stock is probably pretty remote. Is it a population, is it something that is outside the range that normally wouldn't survive or not? I don't know.

CHAIRMAN ESTES: Speaking of New Jersey, Tom, I think that you had your hand up a long time ago.

MR. FOTE: I just was wondering if we were going to withdraw Roy's motion and my second, or just still wait to handle that later.

MR. ESTES: Nope, I think we are about time to go back to that motion; if we can bring it up on the screen. Okay the motion is; move to add an option for a 36 inch fork length or total length equivalent minimum size limit for the commercial fishery; motion by Mr. Miller, seconded by Mr. Fote. Is there need for further discussion on this motion? David.

MR. BUSH: Just one brief comment. Based on what I've heard here this morning, correct me if I'm wrong, there is no biological necessity for this motion. Is that correct?

CHAIRMAN ESTES: I think it was a philosophical issue, I think if I'm not mistaken, Roy. Is that correct?

MR. MILLER: That's correct.

CHAIRMAN ESTES: Joe.

MR. CIMINO: Just quickly, because Tom did mention he was concerned about a loophole. I do want to say that most of the commercial fishery, I believe, and Michelle could correct me if I'm wrong, is occurring in state waters. For our fishery, there is no loophole there. You would be a commercial fisherman if you are commercial fishing those. I did just want to point that out.

CHAIRMAN ESTES: Okay, any further discussion? **Seeing none; all in favor raise your right hand, please, all opposed like sign, abstentions, null votes. The motion fails; 3 to 6 to 1.** Okay Louis, if you'll continue please.

DR. DANIEL: All right that takes us through the management options for the draft fishery management plan for cobia. What I was going

to do real quickly, since we have Dr. Crabtree and Mr. Carmichael here, just review real quickly the Framework 4 recreational actions that are in Headquarters now; that would be implemented once approved. It's a 620,000 pound ACL, one fish per person, 36 inch fork length size limit, and a vessel limit up to six per vessel.

Commercial is 50,000 pound ACL, two fish per person, 33 inch fork length size limit, with a limit up to six per vessel. Then just because this is an issue that has come up on multiple occasions, once approved measures would be implemented to control harvest to the ACL. The methods or the accountability measures to address overharvest, would be reduce vessel limits, shorten the season, or close the fishery or EEZ.

From discussions it appears that the first line of defense in trying to maintain the catches within the ACL is to reduce the vessel limits for the current up to six fish. But that will be determined; and I think once our implementation plans are reviewed by the Technical Committee and approved by the Board in February. I think that gives the NMFS administrator ample time to determine how best to implement the measures from Framework 4 for the 2018 season. Are there any questions on the Framework 4 implementation; while we have the deciders here at the table? All right, finally we have a proposed public hearing and compliance schedule. Just to go through, our intent and hope is we've got a short window of opportunity between now and the annual meeting is mid-October. We would like to try to get these public hearings conducted as quickly as possible. We would like to get those done in the first half of September.

It may be possible, I know from talking to North Carolina, would like to have the meeting held outside of the Council meeting week. Virginia would be a possibility as well, prior to the meeting week, which is September 11 through 15. Then there is a possibility of having a hearing with the Council at their meeting in Charleston on Tuesday night in Charleston; if that's satisfactory to the South Carolina delegation and the Council.

Then potentially having the Georgia meeting the following day down either in Savannah or Brunswick, or wherever Georgia would like to have it. That would knock it out pretty quickly. I think that does stretch us towards the end of that line, so if folks would like to have them earlier than that that is fine.

But we will need to set up hearing dates very quickly in the next day or two, in order to get these scheduled and set up to receive public comment. In October at the annual meeting you will review the public comment; from both the public comments, the public e-mails, and the advisors will review and deliberate on the draft, as well as the Enforcement Committee, and consider final approval of the plan.

I put down January 1, 2018. I figured that gives states about two months to submit an implementation plan to the Technical Committee/Plan Development Team for review; and Board approval at the February meeting, with an April 1, 2018 implementation date. In discussions with your PDT members, those of you that have them, they felt like July 1 of each year would be appropriate for state compliance reports to be due. That concludes my report.

CHAIRMAN ESTES: Thank you, Louis. I appreciate all the hard work that you and your team did. Toni wanted to request a clarification.

MS. KERNS: I just checked with Lynn, and I just want to clarify for the record that we'll look to see what size limit the 50 percent maturity is; and we will use that size limit to add for the option, just so everyone is clear; if it's a different size limit that is why.

MR. MILLER: Louis, could I request that you review what we decided with regard to de minimis states and commercial?

DR. DANIEL: For the de minimis Option 2, it would be one fish per vessel commercial, and it would be either a 33 inch size limit or a 36 inch size limit. Those would be the options for public comment.

MR. MILLER: That's interesting that going to public hearing we have either 33 or 36 for commercial; but we don't, okay. In spite of our vote to the contrary to reject the option for a 36 inch commercial. You're saying its back in there for de minimis states.

DR. DANIEL: That was an option that was requested by the Working Group and the PDT was to include a potential for a 36 across the board in the de minimis, and that's what was in the FMP. Now it can be taken out. But that is what we were requested to include. We did not include what we talked about earlier, having all the states comply with the Federal Framework 4 commercial options. That was not brought forward by the Board and included as an option. At the present time that is not an option that would be going out to public comment. It seemed like that was something that the Board should have at least had nodding interest in. But nobody moved on that so that would not be included at this time.

MS. FEGLEY: I think that might have been what I was trying to say, which I did a really bad job of saying. That it should be an option for all the states. When we say coastwide 50,000 pound ACL for commercial. That is everybody coastwide.

DR. DUVAL: Yes, I agree with that and I think that that is less complicated from a commercial perspective than trying to have a commercial de minimis. I think Louis was trying to clarify that as well. Again, I'll just emphasize that all the states from Georgia through New York, or in federal waters off the states of Georgia through New York.

You know that 33 inch minimum size limit, two fish per person, existing commercial regulations applies to all those states. Obviously it applies in federal waters, it's not state waters. But any harvest coming in from federal waters, and any harvest from state waters all counts against that federal ACL. I just want to make sure people understand that; again on the commercial side.

DR. DANIEL: What I'm hearing I guess, or seeing, is a general consensus to include that option as an option for all the states. That would be a no de minimis commercial option; to make it as clear as I possibly can. If everybody is comfortable with that we can add that to the list of options in de minimis. Mr. Chairman, I don't see anybody looking like they want to oppose that.

CHAIRMAN ESTES: Right, I think that's what they were trying to get at. We will add that as an option. Is there any more discussion on the document? Michelle.

DR. DUVAL: Let me stand between you and lunch. Just maybe to make sure that Lynn's concern is completely addressed, maybe just a little bit more clarification under the commercial fisheries management options that coastwide means it would apply to everybody; Georgia through New York. That way I think that would assuage some of people's concerns.

CHAIRMAN ESTES: Okay, done**. Is there any more discussion? If there is not, I would entertain a motion to accept the document for public comment. Michelle.**

DR. DUVAL: So moved, Mr. Chairman.

CHAIRMAN ESTES: Do I have a second? Lynn Fegley. I hate to ask this. Is there any more discussion? Seeing none; let me read the motion. **Move to approve the Cobia Fishery Management Plan for public comment as amended; motion by Dr. Duval, second by Ms. Fegley. Is there any objection to the motion? Seeing none; the motion passes.**

I never thought I would see evolution occurring. Although I'm old enough I should have seen it.

But I think I saw cobia evolving towards menhaden status. What we're going to do now is we're going to break for lunch, and we'll come back and have some more fun.

(Whereupon a recess was taken.)

CHAIRMAN ESTES: Okay, we are ready to resume. At the end of our agenda today we had the Atlantic Croaker FMP Review. I think what we're going to do with it is we're going to do it via e-mail, and so we're going to delete that item off our agenda for now.

2017 SPOT BENCHMARK STOCK ASSESSMENT

CHAIRMAN ESTES: Right now we're going to hear about the Spot Stock Assessment.

Then we'll hear about the Peer Review. Then we're going to go directly into Traffic-Light Analysis. We'll have questions in the middle of that; but before we talk about accepting the stock assessment for management purposes, we'll do the traffic-light review. If we can start, Chris, if you're ready go ahead.

MR. CHRIS McDONOUGH: Just a quick note starting out. Some of the stuff in the datasets and the methods we used for the spot stock assessment is very similar, it is the same stuff we did for the croaker stock assessment. This is going to be a little more abbreviated than what we went over for the croaker assessment.

For the outline, just what we're going to cover. The assessment was using commercial and recreational data. We're looking at the shrimp trawl fishery discards another fishery dependent source and three fishery independent surveys. The NMFS fall ground fish survey, SEAMAP, and the North Carolina DMF Program 195. Then we're going to cover the modeling approaches and results, and then finally the reference points and the stock status.

Then one note, we'll talk a little bit more about this as we get into it. But the fishery independent datasets were split between, we used split indices and they were split by age group between Age 0 or pre-recruits, and Age 1 plus, which were the fully recruited fish; primarily in the catch survey analysis model.

Okay, start out with the commercial landings. Commercial landings from 1950 to present have fluctuated from about 638 to 6,500 metric tons; the majority of spot that are landed coming from Virginia and North Carolina. The long term trend has been a fairly steady decline; and there has been a lot more inter-annual variability in the last ten years or so. Landings have been negligible from states north of New Jersey; however landings in these states have been increasing in recent years.

The lowest year for commercial landings for the entire dataset occurred in 2012; which was within the assessment time period. The shrimp trawl discards, discards were relatively high prior to 1996, when bycatch reduction devices were not required; but did begin decreasing in the early 1990s. There were particularly high discards in '91, which was due to high effort and catch-per-unit effort. Then discards became relatively stable through the 2000s.

Despite slightly declining or stable trends in effort during the 2010s, they actually have kind of turned up a little bit in recent years; and that increase was due to increasing catch-per-unit effort. Generally the trends in the discard estimates follow the same trends that you see in the shrimp landings by the trawlers; which are pretty much what you would expect.

For the recreational catch along the Atlantic coast, this is from during the MRIP time period '91 through 2014. Angler recreational harvest, spot has ranged from a low of about just under 4.5 million fish to a high of just under 25 million fish, and the harvest has generally declined over the time series; although not as much as the commercial catch has. The proportion between the harvest and the fish that were released alive has stayed relatively consistent over that entire time period. For our fishery independent datasets, starting off with the North Carolina

data and this is where we split them between the Age 0 and the Age 1 abundance indices. Both Age 0 and Age 1 abundance indices for spot varied throughout the time series.

They were both somewhat lower in the 1990s, with larger peaks through the mid-2000s. The highest Age 0 abundance occurred in 2008, and the highest Age 1 plus abundance occurred in 2006. For the NMFS Trawl Survey, abundance was high in the beginning of the time series; particularly in 1989 as you can see in the figure, and then dropped and remained relatively low in comparison throughout the 1990s and the early 2000s for both stages.

Abundance for Age 0 and Age 1 plus increased in the mid-2000s to the high point in the time series that occurred in 2012; after which it declined fairly quickly in 2013 and '14. This was in numbers. For relative biomass, it was at its highest in 1989, which was followed by a low relative biomass; same similar trend as with numbers through the early '90s.

Then a little bit more variability through the 2000s, again reaching the 20 year high point in 2012, followed by that decline in 2013 and '14. One thing to point out with the NMFS Trawl data was that the CVs for the index of abundance were relatively small. They ranged from like 0.03 to 0.31, and averaged right about 0.09.

The low CV values actually give this index a lot of weight in the model; compared to some of the other indices that were used. That was something that we actually examined in the sensitivity analysis. For SEAMAP, the index of relative biomass indicated that abundance was low in '89, and then began to increase a little bit in the early '90s.

From the mid '90s to the early 2000s, it remained relatively low. Then there was a large increase in 2005, followed by a decade of ups and downs in abundance; so you saw a great deal more of variability in the SEAMAP index. For our modeling approaches, we looked at the spot with two different models. The first was a surplus production model; the aggregated indices that tracked the exploitable relative biomass, and then the time series of fishery removals in biomass.

Then the other model we used was a modified catch survey analysis. Now the catch survey analysis is a forward projecting two-stage population model, this is where we were using the Age 0s and Age 1 plus. You can use data or literature information that informs on the life history characteristics of the species; which is helpful for spot, because they are relatively short lived.

The indices tracking the relative abundance of the stock can then be split into stages with similar life history, or fishery characteristics. In this case we were using it in terms of selectivity of pre-recruits and recruits of the fishery. Then the modified CSA used the time series of fishery removals in numbers.

Then one thing about spot, particularly compared to croaker was that we really lacked a reliable time series of catch-at-age data with spot compared to croaker. We just didn't have as much age data, so it wasn't as easy to run through the different models and how we were looking at it. The time series for both of the models ran from 1989 through 2014. The modified catch-survey analysis was chosen as the preferred model. Now, to start off, our surplus production model basically showed that biomass has been increasing steadily since late the late '90s; '99 was the lowest point in the time series. Then fishing mortality was at its highest in '91, and then kind of was variable through the '90s, but then it has essentially been declining since about the mid '90s to where it has been in a steady state for about the last ten years or so.

For the modified-catch-survey analysis, both recruitment and post-recruit abundance were relatively high at the beginning of the time series in 1989. Recruitment remained high through '91, and then post-recruit abundance

begins to steadily decline. Total abundance is highly variable throughout the mid-1990s, and recruitment did fluctuate quite a bit.

Recruitment and total abundance hit the time series low in 1997. Then recruitment in post-recruit abundance then kind of fluctuates around it, but overall has an increasing trend through 2013; although there was a time period from 2006 to 2009 where there were some poor recruitment years in there.

The 2014 recruitment was relatively poor, which resulted in the decline of total abundance; despite the post-recruit abundance was increasing at that time. Then post-recruit abundance at the end of the time series has actually increased; close to the levels at the beginning of the time series, while recruitment in recent years excluding that terminal year has increased to about half the magnitude of the peak recruitments at the beginning of the time period.

For spawning stock biomass, it followed a similar trajectory as total abundance, generally increasing since 1996, with the exception of 2001 where you have that dip. There was a slight downturn of spawning stock biomass at the terminal year in 2014; however, that estimate was still the second highest in the time series.

Even if it had dropped off a little bit, it was still higher than where it started out. Post recruit abundance is a larger component of the total abundance in recent years; and that resulted in higher spawning stock biomass than during the periods with high abundances early in the time series. Fishing mortality, initial fishing mortality in the data series started out at 1.06.

It fluctuated over the next couple of years, increasing. Full fishing mortality then generally fluctuates around a declining trend throughout the time series from the mid ’90s or so, and there were some exceptionally large peaks in the fishing mortality due to upticks and removals; in ’91, 1995, and 2001, which you can see right on the figure.

Then the static-spawning-potential ratio, if I get my terms correct, is an inverse function of fishing mortality. SSPR has fluctuated about an increasing trend, opposite of what we see with fishing mortality throughout the time series. Very low SSPR occur in the beginning of the time series. This was the timeframe when shrimp trawl discards were at their highest, and also when those peaks in fishing mortality occurred for the most part.

SSPR has fluctuated around a mean over the last five years of about 0.48, which was about seven times greater than the mean SPR during years when the bycatch reduction devices were not required; at which point it averaged about 0.07 from 1989 through 1995. Comparing the two models, the general trends in the population estimates from the surplus-production model and the modified catch-survey analysis overall were similar, and verified kind of the general dynamics of the stock over the model time series. The surplus production model tended to underestimate F and overestimate biomass; compared to the modified CSA model. The fishing mortality estimates, in terms of the different units, biomass for the surplus production model, and numbers for the modified CSA still had very similar exploitation patterns.

The modified CSA model appears to better capture the inter-annual variability in abundance and fishing mortality that was observed from the stock; and indicated by the input data. Those different patterns may be due; at least in the surplus-production model was a bit more rigid and restrictive, possibly as a function of the constant intrinsic-growth-rate parameter.

The terminal year of the spawning-stock-biomass estimate from the modified-catch-survey analysis, is more reflective of the decline in relative abundance observed in some of the indices. Given those points, the Stock

Assessment Committee recommended that the modified CSA that is why we picked that as the preferred modeling approach; to inform on stock status.

Now we did compare this to the traffic light, which the traffic-light analysis, which we're going to talk about more after this, was compared to the assessment results to determine the utility and reliability of using the traffic light to inform on stock status. The traffic light is currently used to inform on stock status annually.

We use it in our management-trigger exercises, and then the modified-catch-survey analysis is proposed to inform stock status moving forward on an intermittent basis; according to future stock assessment needs as they occur, and however that schedule happens. However, the traffic light still has the potential to inform on stock status in the future, between stock assessments, so it's important to understand how the two approaches compare and contrast.

The pattern in the estimates for the spawning stock biomass from the modified-catch-survey analysis were generally in agreement with the abundance metric, which was the fishery independent surveys for the traffic light. There is no recruitment reference point estimated for the modified CSA; but qualitatively the annual recruitment estimates did match up in many of the years with the young-of-the-year metric used in the traffic light, but not in all years.

That one was a little fuzzier. That wouldn't be unexpected in that some of the differences, particularly for juvenile indexes, shouldn't be surprising because between the two approach, because you get a lot more inter-annual variability in juvenile indices due to recruitment variances as opposed to changes in population.

Now the harvest biomass did not match up quite as well. The harvest metrics from the traffic light were not in as close an agreement, in this case the matching up with SSPR, and then the established harvest metric from the traffic light does not include the discard information that was used within the modified CSA model, so it doesn't account for those removals.

The discrepancy there may not be surprising; just because of the high proportion of fishery removals that the shrimp trawl fishery accounts for that was used in the modified CSA. One consideration in improving the traffic light in the future would be to incorporate the fishery removals as an added metric. The way these are treated, if you look at the treat the spawning stock biomass that is above the target, or not overfished level the same as the traffic-light proportion have red less than 30 percent, where everything is good and we're not concerned. Then the spawning stock biomass between the target thresholds, I'm not overfished but the spawning stock biomass is still below the target as that 30 to 60 percent range of moderate concern. Then any spawning stock biomass below threshold, or actually overfished the same as that traffic-light proportion of greater than 60 percent.

If you look at it within that context, those two approaches agreed about 65 percent of the time between the model results and the traffic light. Even though there were some differences, the status from the two approaches, you know they weren't opposite trends. There were some similarities.

The traffic-light analysis was a little more conservative in the final two years; suggesting moderate concern particularly with the harvest, whereas the modified CSA was a little bit more optimistic, less concern. For our F reference points, the static-spawning-potential ratios were used due to the uncertainty in the stock recruitment relationship.

We were using a 30 percent SPR threshold, and a 40 percent SSBR target. The fishing reference points were based on fishing mortality necessary to achieve that SSPR. The biomass reference points would also be estimated from that F percentage reference points, so that our

mortality threshold at F 30 percent was 0.5, and then our target threshold was a fishing mortality of 0.36.

Then finally we got down to stock status. The stock status or the model showed that the stock was not overfished at the beginning of 2014, with a spawning-stock biomass of just over 19,000 metric tons, which is well above the target of 7,800 metric tons and overfishing did not occur in 2014. The 2014 fishing mortality was 0.249, which is below the target of 0.36 and the SSPR was estimated at 0.507. With that I will take some questions. I went through that awful quick.

PEER REVIEW PANEL REPORT

CHAIRMAN ESTES: Thank you. Before we go to questions, could we hear Pat talk about the Peer Review Panel report first, and then we can have questions about all of that if that is okay.

MR. McDONOUGH: Oh okay that's good.

MR. PATRICK A. CAMPFIELD: The stock assessment review for spot occurred back in April. We had a panel of three reviewers with expertise in spot biology and population dynamics; as well as statistics and general stock assessment modeling. If we could jump a slide or two, those are the panel members.

The panelists were tasked with providing scientific review based on the data inputs, model results, and sensitivity; and providing their opinion on the overall assessment quality. The panel concluded that the stock assessment provides the best available science on spot. They think the Assessment Team did a really great job of turning over every stone and looking for spot data, and attempting a variety of different analyses, and as Chris described, a couple of different modeling approaches.

However, they thought that the stock status determinations were uncertain; due essentially to conflicts in that the biomass was increasing in all the model runs. But the various assessment data components showed conflicting population trends; specifically the contrast between decreasing landings and increasing indices. In some cases the model struggled to reconcile the differences between indices; for example, the NMFS Trawl showed a very rapid increase in spot in recent years, roughly six-fold, whereas the other primary index, the North Carolina Trawl showed only about a 10 percent increase. There were other surveys like ChesMMAP, which were included in sensitivity runs, which actually showed a declining trend; so the panel had concerns about these conflicts.

Therefore they do not recommend using the absolute estimates of population size; however the trends in landings and surveys suggest that current removals of spot are sustainable. I'll just quickly touch on the highlights for the review terms of reference. The first one was evaluate how the data were used in the assessment. Again the panel found that all potential data sources were considered.

A subset of data was selected correctly and weighted correctly, and the uncertainties were characterized in the appropriate manner. They did have two recommendations, one to develop fishery dependent CPUE indices that might improve our understanding of the fishery trends. Of course we had the landings, harvest information and some recreational effort information, but not commercial effort information. The second recommendation was to consider standardizing all the survey indices.

The next TOR was specific to estimating bycatch and discards. The Panel really applauded the Assessment Team and improving the methods this time around for spot as a new assessment, and for croaker; and that they used the latest and most innovative approach characterizing shrimp trawl fishery bycatch, through a combination of shrimp fishery observer data, as well as the SEAMAP Coastal Trawl Survey data, and sort of calibrating that backwards, based on when the bycatch reduction devices were implemented in the mid '90s.

The third term of reference was to evaluate the methods and models in the assessment. The Panel commended the Assessment Team in attempting multiple models, as Chris described the CSA and surplus-production models; and agreed that the catch-survey analysis is preferred, because it incorporates more of the available data.

However, the Panel was concerned about different trends in total mortality, when comparing between the catch-survey analysis and catch-curve analyses that the Assessment Team brought forward. As I mentioned, the model also struggled to reconcile differences between trends in indices, and recommended considering an age-length-combined-structured model; for example scale models to allow fuller use of all available data.

They also had an important recommendation about exploring time-varying catchability, specifically for the indices that are used in the assessment; that that may help hash out some of the distinctions and disagreement between the survey indices. Term of reference 4 was to evaluate how the assessment characterized the sensitivity or did sensitivity runs and characterized retrospective bias in the assessment.

The Panel found that that was all done correctly, and there was relatively minimal retrospective pattern. They concluded the model was sensitive to index selection, and that some of the sensitivity runs using year-by-year total mortality or Z estimates, resulted in a different stock status than using an average total mortality. This was one of their major concerns about drawing absolute conclusions about stock status and numbers from the assessment. The next term of reference was to characterize uncertainty in the stock assessment. The Panel felt that the Assessment Team did everything correctly there. Moving on to estimates of stock biomass, abundance and exploitation, again although the Panel does not recommend using the absolute estimates, they did have several take homes that they were confident in from the stock assessment; first that the abundance indices generally are stable or increasing across the stocks range.

Secondly, that catch appears to be stable or declining over time and that in combination, the catch and indices patterns indicate declining fishing mortality rates relative to the status of the stock in recent years. The relative status of the stock in recent years is better than the late ’80s and early ’90s.

The shrimp fishery effort and spot bycatch magnitude appears to be declining, and the Panel recommended reviewing the shrimp bycatch estimates annually, and folding that into the traffic-light analysis that Chris presented and we’ll hear a little bit more on. That final take home seems to be most important, because the shrimp bycatch can comprise 70, 80, and 90 percent of the total mortality for spot.

The next term was to evaluate the choice of reference points, and the methods used to estimate them. The Panel did agree with the SPR target of 40 percent and a threshold of 30 percent. Those are similar levels for other sciaenids and species are related to spot, so they were comfortable with that. However, again the stock status cannot be determined reliably, because models with alternative assumptions resulted in different stock status.

Finally, the Panel commented on the research recommendations. The first was to request an increase shrimp trawl fishery observer coverage, again that’s critical to spot and croaker assessments, and is relatively poorly sampled. We did the best we could in this assessment, and also to increase the collection of lengths and ages in those bycatch fish. The second, to expand the collection of lengths and ages, especially for fishery dependent data, and third to organize an otolith exchange to develop a standard aging protocol for spot.

The last term was to have the Panel comment on timing of future assessments. They agreed with the Assessment Team to do the next

benchmark in five years, but given some conflicting trends with spot, especially in years after the assessment, to continue the traffic-light analysis and to try to fold in the shrimp bycatch estimates in to the TLA.

CHAIRMAN ESTES: Okay are there questions, or what are the questions? Yes sir, Mr. Bush.

MR. BUSH: I guess I just felt like somebody should ask something after this. It seems like things are at least not going bad in this fishery. I think North Carolina is one place that very proud of the work that these guys have done down there. They haven't implemented measures based on their current research.

But the work that they've done in North Carolina over the past few years, and this being the third year of their bycatch reduction efforts, should make a continual improvement in this fishery. But if I understand right, correct me if I'm wrong, the general idea is that the spot fishery is showing at least a stable if not positive trend; given that bycatch composes a significant part of its mortality, is that correct?

MR. McDONOUGH: That is correct. The shrimp fishery component of, in terms of removals, whether you're talking biomass or numbers is an order of magnitude above everything else combined. It's very significant, even though the numbers have come off in the last 10; 15 years are much lower than what they were in the early '90s. But they're still there.

This was the first assessment where we really included them in the model. We've looked at the previous two assessments; it was considered, but we didn't really have a good way to incorporate it in the model, so this is the first time we've actually been able to incorporate it into the model. But as I'm going to go over it with the traffic light stuff after this, there are some concerns with recreational and commercial numbers that have been declining fairly steadily. There are definitely still some issues.

CHAIRMAN ESTES: Mr. Miller.

MR. MILLER: Chris, in light of what you just said. The effect of shrimp trawl bycatch has been decreasing in recent years; and yet apparently we're not seeing a concomitant increase in commercial and recreational landings. I was wondering if you have any speculative cause and effect comments in that regard, or is there no relationship between those two?

MR. McDONOUGH: I'm not going to say there is no relationship. But they do seem to be decoupled. I mean you're getting those kinds of different trends, and one thing at least in the shrimp fishery. You know if you go back to that time period in the late '80s, early '90s. The overall effort in the shrimp fishery has been declining for years.

I mean you've seen a reduction in the fleet. The guys maybe have become more efficient, but you see far fewer boats. I would tend towards the reduction in the overall effort that we've seen in the decline in the shrimp fishery over the last 20 odd years, more so then or it seems from the datasets then something biological necessarily.

That is part of why we've been spending so much time on the traffic light stuff, is to try and tease out some of the differences in why we're seeing such differing trends. Croaker, they seem to match up a lot better between different datasets, and spot just don't track as well across commercial data, recreational data in the fishery independent indices. Does that answer your question?

MR. MILLER: Yes, of course I'm calling for speculation, but it sort of begs the question is there an environmental component that is driving this stock that we're not accounting for; you know with landings and that kind of thing? Maybe that environmental component has been depressing the expected increase we would hope to see as a result of bringing the shrimp bycatch under management.

MR. McDONOUGH: Actually that is something that we did discuss at the review workshop. Ken Able brought that up numerous times. Some of the explanations from that perspective could have been, especially given the timeframe when the fishery independent surveys that we were using, a lot of that occurs in the fall shifts that kind of go back to temperature shifts, and when fish are moving in and out of the estuary offshore environments, where they're being necessarily subject to the bigger offshore surveys.

There definitely could be and likely are some environmental components. We did tease around with some of the data, trying to figure out if we could incorporate environmental data; and we didn't really come up with an effective way to look at it. But it has been discussed certainly, and we've talked about it.

CHAIRMAN ESTES: Mr. Bush.

MR. BUSH: Just to address one point there, Mr. Chairman. One of the things that might be looked at as well is reductions in effort in that fishery. We've got areas where we had exemptions that fishermen would fish on the shoreline, and those are no longer exempted. That is due to interactions with marine mammals.

But there are other fisheries where we have other species that they can only fish for a certain amount of time before those interactions pile up. That particular fishery is shut down as well. I'm sure that has got to have quite a bit to do with the landings numbers, probably not all of it, but I'm sure it's substantial.

CHAIRMAN ESTES: Chris.

MR. CHRIS BATSAVAGE: Similar to Roy's question about environmental factors. I guess Joe and I were kind of side barring during the presentation of the similarities of weakfish that we've seen in previous assessments, where there seemed to be maybe a bottleneck somewhere in the life span of weakfish, where we're seeing with this species the indices for the Age 0 and at least some Age 1 plus fish that may or not be at the point that recruit to the commercial and recreational fisheries.

They aren't really showing any troubling trends yet. The landings have really fallen off, especially even in the last couple years since this assessment. Has the Stock Assessment Group discussed maybe exploring maybe changes in natural mortality over the time period, similar to what we've seen with weakfish?

MR. McDONOUGH: No, we really didn't look at that in terms of changing natural mortality over the timeframe of the data. I was going to say Jeff ran the CSA model, and I don't think of anything else that we necessarily covered in the workshops. I just can't think of anything else. It's a good point. We did consider looking at different selectivity periods of the fishery and some other things that were run in the sensitivity analysis. We didn't really cover as much here; but not that now.

CHAIRMAN ESTES: Are there any other questions before we get into the traffic light analysis? Seeing none; Chris if you're ready to go we can do that.

CONSIDER 2017 TRAFFIC LIGHT ANALYSIS FOR ATLANTIC CROAKER AND SPOT

MR. McDONOUGH: Just a quick review for a traffic light. The traffic light management framework was established in 2014 under Addendum II to Amendment 1 for Croaker, and Addendum I to the Omnibus Amendment for Spot, to evaluate fisheries trends and develop state specified management actions.

The traffic light is a statistically robust way to incorporate multiple data sources; whether they be fishery dependent or independent, into a single, easily understood metric for management advice. The name simply comes from assigning different colors, red, yellow and green to categorize relative levels of indicators

on the condition of either the fishery or the population or whatever metric you're going to use. Then state specified management action would be initiated when the proportion of red in the index exceeds the specified thresholds, 30 percent or 60 percent for both harvest and abundance over three consecutive years for croaker, and two consecutive years for spot. That would be all the indices, not just one or two of them.

I'm going to start off and talk about croaker first, and then I'll cover spot. The croaker traffic light uses a 1996 to 2008 reference period, which is based on the timeframe from the 2010 stock assessment data. The indices in the traffic light included both commercial and recreational harvest, as well as four fishery independent surveys; the NMFS Fall Groundfish Survey, the VIMS Trawl Survey, North Carolina DMF Program 195 Survey, and then the SEAMAP Survey in the southeast.

For the harvest here, the traffic light, and I'm going to look at them individually and then show you the composite. The traffic light for the commercial landings has been above 30 percent every year since 2011; and this was actually the fourth year in a row where landings were, that red proportion was above 30 percent, and has been above 30 percent since 2011, and would have tripped at those three consecutive years from 2013 through 2016.

The bottom one, the recreational harvest level in 2015 was among one of the lowest annual harvest levels in the entire time series, and 2016 was actually the lowest recreational harvest the entire data series. That is going from 1981. The red proportion in the recreational index was 54 percent in 2015, and just under 6 1 percent in 2016; and would have been the second consecutive year where that index had tripped.

Again, this has to have that level for three consecutive years. Now the composite index for the two combined, the red proportions have been above 30 percent since 2011, with the index tripping from 2013 through 2016. The harvest composite index would indicate, or certainly doesn't necessarily indicate directly by itself that a management response is necessary; but it certainly is cause for concern.

The important trend to point out is a decline in both commercial and recreational landings that have been occurring for Atlantic croaker. All right for the fishery independent surveys, the NMFS Survey, which is the top one, actually saw an increase in 2015. Actually I'm covering both 2015 and '16 with the croaker here, because we didn't run a traffic light assessment last year, because we were in the midst of the stock assessment.

But it showed an increase in 2015, and it declined a little bit in 2016. But there was still no red in the index, so we were staying above the long term mean, which it's been above since 2011. Then the SEAMAP Index also increased in 2015, and then declined a little bit in 2016. The index values remained above the long-term mean for both years, which is why you've got that yellow-green proportion color range, and there was no red in the traffic light for SEAMAP.

SEAMAP you have to go all the way back to the mid to late '90s before you are getting those low levels. The composite index showed high proportions of green in 2015 and 2016, mainly because of the increases in both NMFS as well as SEAMAP Index. However, they did stay above the long-term mean and that target threshold for the last couple of years.

We're seeing an example of what we've been talking about, what is kind of decoupling what we're seeing in the fishery dependent metrics versus what we're seeing in the fishery independent surveys. The juvenile fish, this is the two surveys that we're using for that were the North Carolina Index, as well as the VIMS Index.

North Carolina Index declined in 2015, increased slightly in 2016, but also did not drop below the long-term mean for the data series,

which is why we've still got yellow and proportions of green in the index. The traffic light does indicate declining index values, because you're seeing progressive decreasing in a proportion of green in the index, which is heading back towards long-term mean or below it.

However, it's still above, and that's going from its peak value in 2012. The VIMS Index increased significantly in 2015, going from 2014 it went up like 1,600 percent. But 2014 was one of the lowest years in that particular index. Then it declined a little bit again in 2016. But the index value was still above the long-term mean for both 2015 and 16, and hasn't had three consecutive years above 30 percent since 2008.

With these juvenile indices you are going to get a much more high degree of variability going from year to year; compared to the adult surveys typically. Then for the composite index, the juvenile composite traffic light didn't have any red for either 2015 or '16, and so it did not trip. It didn't trip in either year.

Then as I said that high-angle variability in the different color proportions is generally a characteristic more of changes in recruitment levels versus changes in population trends. To sum up the croaker stuff, the harvest composite traffic light did trip in both 2015 and '16; however the abundance traffic light composite showed the opposite trend, with increasing abundance any of those being above that red percentage threshold.

With only the harvest traffic light tripping, and not either of the fishery independent composites, management action is not required under Amendment 2. However, those discrepancies between what is happening in the harvest index, and not seeing similar trends in the abundance indices, does warrant further study; which is what we've been looking into. Likely explanations for that include differing size and age structure in the sample populations, regional differences, or temporal shifts in movement patterns between inshore and offshore, and that timing that's involved; and indirectly that could be some type of environmental variable. The croaker TC has begun some preliminary investigation into using some age-partitioned traffic light analysis, which we're going to cover a little bit after this, to see if we could get better clarification and synchrony between the indices to maybe help us see what's going on better.

That is it for the croaker traffic light, and we can just continue on. I'll go to the next slide, now we're going to talk about spot. Spot uses a 1989 to 2012 reference period, which was based on available datasets; and again it triggers if two consecutive years of our red proportions are greater than 30 percent.

One note, with the recent completion of the spot stock assessment, in addition to looking at the age proportion or age-partition traffic light, one of the things we may end up looking at is re-examining the reference time period; depending on what datasets are being used and if we incorporate any more. But just like with the croaker, the indexes used are both commercial and recreational harvest, as well as three fishery independent monitoring surveys. The NMFS Fall Groundfish Survey, the SEAMAP Survey, and then the Maryland Department of Natural Resources Juvenile Fish Survey, which was used strictly to look at Age-0 spot.

Okay for the harvest indices, commercial landings for spot in the Atlantic coast declined 70 percent, going from 2016 to 2015. The total annual landings have declined 90.7 percent since 2004, 2004 to 2016. The commercial landings in 2016 represent the lowest annual landings for spot commercially in the entire time series. That goes back to 1950.

It's only about 10.9 percent of the long-term-mean landings in the data series. For the recreational harvest, spot declined just under 67 percent in 2016. The annual harvest in the recreational fishery has been below the long-term mean since 2009, and was still below that

threshold in 2016; with a red proportion increasing to 62.6 percent.

Although it wasn't the second year in a row above 30, so you just get that big jump from 2016. The recreational index actually would not have tripped, whereas the commercial one did. For the composite index, the composite characteristics showed a general decline in landings; which is primarily in recent years it has been since 2008, with increasing proportions of red annually. The composite characteristic did trip in 2016 at the 30 percent level, its second consecutive year at 30 percent or greater.

The increase in the recreational proportion is driven more by the decline in the commercial landings relative to the recreational landings. However, in 2016 they were both fairly high, and the continued declining trend in the spot fishery landings seems to be driven more by declines in the Mid-Atlantic region, which accounts for most of the commercial and recreational harvest versus the southeast coast for the whole coastwide landings.

For the adult abundance indices, the NMFS Index had a slight increase in 2016 from 2015. It was only 1.3 percent. It was still below the long-term mean, so you're still getting a little bit of red in that index; but this index wouldn't have triggered since 2003 was the last time you had two consecutive years over that 30 percent threshold.

Then the SEAMAP Index declined just about 7 percent in 2016, and remained above that long-term mean. The SEAMAP Index did not trigger either, and that one wouldn't have triggered since 2007. Both of these, while showing some slight declines in recent years from the peaks that occurred in 2011, '12, '13, have been trending upward.

For the composite index the traffic light for adults showed very little change from 2015 to 2016. That slight increase in catch levels in the NMFS Index was offset by the slight decrease in SEAMAP, so you're basically seeing them stay about the same. That composite would not have triggered in 2016.

Then for the juvenile fish with the Maryland Survey, you see those large fluctuations in catch-per-unit effort that alternating red and green, again typical of young-of-the-year fish, with variable recruitment in year class strength versus what is going on with the population. However, the index did trip at the 30 percent level; it's actually tripped at the 30 percent level in 2013-14, and at the 60 percent level in 2015 and '16. This continues that where we're seeing more of the declining trend that's occurring in the Chesapeake and in the Mid-Atlantic, versus what we've seen in some of the South Atlantic indices. In the age-partitioned traffic light, which I'll be showing after we get through this, it shows some examples from the ChesMMAP Survey, which also shows similar decline. To summarize for spot, the traffic light composite indices tripped for the juvenile spot index, but not for the adult composite characteristic.

The harvest composite characteristic also triggered in 2016; mostly due to the decline of what we've seen in commercial landings. Then with declines in the harvest metric as well as juvenile abundance metric that appears to be going on. There is some concern, because even though it didn't necessarily trigger under what's required under the Omnibus Amendment.

We're still seeing declining trend in multiple indices. Now that we've finished the stock assessment that is why we've continued to try and refine the traffic light for spot; in considering additional metrics, and surveys, and some abundance indices. Since we're going into that next, I think I'll leave it at that and let's go with questions for the traffic light, and then we can talk about the modification that we've been doing.

CHAIRMAN ESTES: Okay, do you want to dispense with the croaker questions, traffic light analysis? Is that all right?

MR. McDONOUGH: Yes.

CHAIRMAN ESTES: Are there questions? Yes, Pat.

MR. PAT GEER: It appears that your harvest indices are relatively, they're going down. But your abundance indices are generally going up, generally. But is there any thought about trying to examine harvest using effort? Because we've already said that effort is going down. The shrimp effort in my state alone is down about 70 percent in the last 20 years.

If you tried to apply some kind of effort to that harvest, you may see a totally different picture. Whether it be pounds per trip or pounds per license even, or pounds per vessel. But certainly we should be able to get pounds per trip, and examine it as a catch-per-unit effort; so that we're bringing that declining effort into that evaluation.

MR. McDONOUGH: That is just a very good point, because we had discussed that and we had difficulty in the assessment process trying to get some reliable effort estimates. It was basically at the trip level for a lot of it, and that's what we were using in some cases with the shrimp trawl estimates.

But depending on the gear types and everything else, you know effort and even at trip levels. A trip could be a day, a trip could be a week; and so it was too much uncertainty. But it certainly would be something we should continue to look at. But yes that is a really good point.

CHAIRAMN ESTES: Any more questions; yes, Roy?

MR. MILLER: Chris, again in the speculative realm, if I may head in that direction a little bit. With regard to croaker, croaker are an extremely important species in the northern part of the normal range of the croaker; particularly Maryland, Delaware, and New Jersey. They make up a very large component of the summer recreational fishery. In recent years my perception is that fishing has been poor for croaker. The few croaker that have been available have been very small, generally less than the minimum size. That sort of flies in the face of the popular perception of climate change, assuming you ascribe to the philosophy that climate change is real and not fake news.

I would have expected croaker to be expanding the range to the northern part of the range, due to climate change. But I'm wondering if perhaps the croaker are instead, the larger croaker are moving offshore, hence they're being vulnerable to the NMFS Trawl Surveys, which of course samples the deeper water component than the recreational fishing sector is accustomed to fishing on. I just wondered if instead the croaker are heading offshore, and not heading north.

MR. McDONOUGH: We've actually discussed that and tried teasing that out in the NMFS Trawl Survey data. Since NEMAP has taken over king of the inner strata that the NMFS Trawl Survey used to do, up to 2009. When they switched to the Bigelow and they couldn't go in as shallow, the earlier time series you would see, actually higher abundances in the shallower water; when they were still using the Albatross.

But the deeper strata further out, which is what we use for the NMFS Index; so we can get the full use of that time series. It goes back to 1972. You do see some changes; but there was more variability deeper out, and you don't see consistent changes with like temperature. There has been some work done by John Hare and Ken Able, looking at actually attributed low overwintering temperatures for Atlantic croaker specifically; causing higher mortality or lowering general recruitment in the spring in Mid-Atlantic estuaries.

That has been the only; I think there might be one other one. I think Ken had another study also looking at that. But there just hasn't been much work done on whether or not they're moving out. Then even the NMFS survey only

samples, let's see they do sample deeper than the 60 meters, which is that outer strait it goes to.

They do sample deeper than that. But the intercept for croaker at those deeper stations is pretty low; which is why we don't use them. We have gone back and looked, I think two years ago, pulled some of that deeper water data again; to see if there were any changes in croaker coming in. We really didn't see. Your positive intercepts were say 5 to 10 percent or less for the deeper water. They might move out, and there are certainly years where there are more of them out there. But it's probably something that needs more looking at.

CHAIRMAN ESTES: Yes sir, Chris.

MR. BATSAVAGE: Back in the early 2000s, I think it was 2003, 2004 in the Chesapeake Bay, and there may have been a few other places. There was a die-off of large croaker in the summertime. There were reports of the outgoing tide, dead croaker going out through the Chesapeake Bay, the lower bay.

I actually saw it myself up there fishing during that time period. I'm trying to think back. I believe we saw a truncation in some of the ages, and definitely in the sizes of croaker. I was thinking about the commercial fishery in North Carolina, they haven't seen that larger croaker since then. Has the TC talked about that event and how that has kind of impacted some of the trends we've seen? Because just looking at the traffic light analysis for the commercial landings, things look the best in the late '90s to about the early mid-2000s, and then you start to see red creeping in around 2006. I didn't know if the TC talked about that possibly playing a role in some of the things that we've seen in the traffic light analysis.

MR. McDONOUGH: We did discuss things like the low dissolved oxygen die-offs and things, particularly in the Chesapeake. In the last stock assessment, the 2010 stock assessment, the data we were using in that timeframe, we actually started seeing an expansion of both the age and the size frequency distributions for croaker.

Then for this assessment going up to 2014, it seemed like it started to decrease; and then we started looking at when we incorporated, adding in 2015 and 2016, which of course wasn't part of the stock assessment. We've actually seen a further contraction of the size and age range going back down again; which would certainly support some of that.

But we tried to see if there were any incidents with like the VIMS Index and the other Chesapeake Juvenile Indices in low DO events and that type of thing. There wasn't really a way, at least in the traffic light, we certainly discussed it, but we haven't figured out a way to incorporate it.

CHAIRMAN ESTES: Anything else on croaker? Because both of the triggers, the composite indices, they did not trip, no management action is required. I would suggest, unless there is any objection that the TC does look into incorporating ages and possibly looking at different indices to try to improve the traffic light. Unless there is a big appetite to make changes in light of this, we'll go on to spot. I don't see anybody with a big – we just had lunch. Are there questions about the spot traffic light analysis? Yes, Joe.

MR. CIMINO: I'll start by thanking everyone. I know a lot of work and very thorough. Thanks, Chris, I appreciate this whole presentation. It is eerily, at least for spot eerily like weakfish, and I was in your position when the management board was told something very similar; just look at trends, ignore the assessment for now. I know Jim Gilmore remembers that well too; since we were sitting up there together. I think this is going to be a tough situation for us.

I've got I guess three things, one, I hope that we will continue to see as much information as possible, including ChesMMAP and NEMAP; even if they're not necessarily incorporated in

the TOAs. Two and you guys may need a crystal ball for this, I'm wondering about the TOR of including shrimp trawl into a TOA and what that would look like, what you think it might look like.

Three, since this is a short-lived species and we are seeing this troubling trend in the juvenile index, is it worth updating sooner than five years? I mean would it be something that we should be considering in two to three years; just to see what's going on? That would be the modified assessment.

MR. McDONOUGH: Well, actually your first two points are both directly addressed in the next; I'm talking about the age-partitioning stuff, as far as incorporating. Right now we're looking at incorporating ChesMMAP right now, not necessarily NEMAP. Then the Shrimp Fishery Index, well we're going to get into it, but basically we're not necessarily recommending that be one of the traffic light triggers in and of itself, but that it be used each year as an advisory index to see, because it's going to gauge a relative impact of removals. In the case of the way the index is calculated with the shrimp fishery.

Typically the abundance and the harvest, higher numbers are considered good, low numbers are considered bad. In the Shrimp Fishery Index it is actually reversed, high numbers of bycatch is really the red proportion and low numbers of bycatch is the green proportion. I'm sorry, what was the third point; the assessment schedule?

MR. CIMINO: Right.

MR. McDONOUGH: I would say at this point that going through the management trigger exercise, if things continue to decline and it's perceived next year, the year after or whatever, and things continue to get worse. Then the Board can certainly initiate an assessment sooner than the five-year timeframe. They always have that at their disposal. I would say we have to see how some of this other stuff goes, but yes we could always do it sooner.

CHAIRMAN ESTES: Any other questions? I would suggest, unless there are objections that we do incorporate those extra information to the traffic light analysis, if the Board is okay directing the TC to investigate that. Okay, I don't see any objections. Now we're at the point where we need to talk about Acceptance of the Spot Stock Assessment and Peer Review. I would be quite happy to listen to a motion. Toni.

MS. KERNS: Jim, since the Peer Review did not recommend using the advice coming out of the assessment for management use, we generally don't actually accept it then; unless the Board has a different opinion, and then you can consider that.

CHAIRMAN ESTES: Okay. It's up to the Board. Then we could just leave it silent, is that what we would do? Is everyone all right with that? I assume because of that there is probably not an appetite here for a management action either; beings how we didn't trip the triggers. Seeing nothing; I guess we're done with that. Is there any other business to go before the Board? Oh, I'm sorry. Chris is still up. Sorry about that Chris.

MR. McDONOUGH: This is the last one, and you all don't have to listen to me talk anymore. Okay just to cover real quick the age partitioned, kind of looking at this traffic light in a different way. Again, the main issue being the decline in the commercial recreational landings versus what we're seeing in the abundance indices.

Most likely reason being differing size in age classes of fish captured in the different surveys, as well as what is seen in the fishery. We did this looking at using annual-age-length keys applied to the total-length-frequency-distribution data from each dataset, to get expanded numbers at age annually.

Now I'm doing this example I'm showing you is just for croaker. We're doing the same thing for spot, but with the reduced ages. We have age

availability; we have a spot we're still kind of teasing that one out. But for croaker the ages were split between the pre-recruits, which is the Ages 0-1, and the recruits, which would be fully recruited to the fishery, which would be Ages 2 plus. Part of the reason for doing this was because it was an overlap, particularly in the fall surveys where you would be catching Age-0s and they would be similar in size range to the Age-1s, and they would kind of confound each other. By combining the 0s and the 1s, it provides for a little better separation in the indices.

We're using the same four fishery independent datasets; NMFS, SEAMAP, as well as North Carolina and VIMS in the commercial and recreational harvest, and then we were also examining the two other datasets, the ChesMMAP Survey as well as running the traffic light with the Shrimp Trawl Fishery Bycatch Estimates.

However, we didn't have size data for the shrimp fishery discards, so that was just run with total landings; since we had no way to separate that out within the age. This is the first time that the shrimp fishery stuff has been run through the traffic light. For our harvest composite with the traffic light, the top one there which is the Age 0-1, showed an increase in recruitment levels observed in the early 1990s and kind of steadily increasing proportions of red, which is that declining harvest of fish in that age range; likely due to a declining recruitment.

Then the bottom figure, the composite traffic light for the Age 2 plus that very closely resembles the general trends seen in the overall landings. That appears that Age 2 plus is really what is driving the harvest component for the traffic light. High landings seen from '96 through 2006, where you get that green in the Age 0-1 pre-recruits, which shows up from 1990-'99.

The persistence of those throughout the fishery could be accounting for those proportions of your green you're seeing in the Age 2 plus from the mid '90s to the early 2000s, as they kind of work their way through the fishery over about eight or ten years. For the fishery independent surveys, and these are mostly broken up, you'll have the non-partitioned one showing you and then the partitioned ones on top with the partitioned ones below it.

That non-partitioned traffic light shows a general increase in the recent years. The Age 0-1 was similar to that non-partitioned traffic light, indicating the overall trend in the catch effort was driven more by Ages 0-1 in that particular index. Then for Ages 2 plus it shows a little bit more of a decline in that older age group that was apparent in recent years; even though you do get a couple of years in the green in 2014 and '15.

The decline that you're seeing, you're seeing a declining trend a little bit in that Age 2 plus, which is kind of what we're seeing in the commercial and recreational. For the SEAMAP Survey, you still see the non-partitioned traffic light matched the higher degree of annual variability seen in the Age 0-1 traffic light; as well as the increase in the trend when you look just at the Ages 0-1 in the traffic light, that center one.

You see much higher proportions of green than you do in the non-partitioned one. Then the magnitude of change in the Ages 2 plus was less than the Age 0-1 traffic light, but it still shows some of those increases in recent years. One difference that is notable in the SEAMAP data compared to the other datasets was it had a younger maximum age of 8 versus 15, 16 in some of the Mid-Atlantic surveys.

It tended to have a narrower annual size range that was consistent across the whole time period; whereas you saw increasing size range in the mid-2000s, and then it declined again in later years in the Mid-Atlantic. SEAMAP just didn't see the larger/older fish that you see in some of the other surveys. Okay ChesMMAP, one thing with ChesMMAP is you see there is

the catch-per-unit effort, which is the figure on the left, was much more pronounced for Ages 2 plus, particularly you get peak values from 2004 through 2007.

But then the overall trends in the traffic light show the decline for croaker in both Ages 0-1 as well as Age 2, and the catch levels were much higher in ChesMMAP in the first five years of the survey; whereas since 2008, the catch levels have been extremely low. The traffic light for Ages 0-1 reflected the higher recruitment levels that we're seeing in 2005 to 2007, after which that red proportion was pretty much over 50 percent.

Then the traffic light for Ages 2 plus also showed those peak years early in the survey from 2004 to 2007, and that subsequent decline beginning in 2008 and even basically red proportion levels at 70 percent or greater. That decline, particularly in ChesMMAP, matches up pretty well with what is happening with the commercial and recreational landings.

For the Juvenile Composite Index, the Age 0-1 traffic light, if you're just looking at NMFS and SEAMAP, which is that center one, because of the increases seen in that index for those younger ages, you see an even greater proportion of green for those years. Then the combination on that bottom one, using all four of them, reinforced those increases that have occurred since 2011; with higher proportions of green, particularly that SEAMAP and NEMAP kind of bringing those up in those younger fish.

The fishery independent composite characteristic really showed the varying trends, depending on the age group and which indexes were included, and which years were covered; which actually just kind of adds a bit, but we're still working on it but it does add a bit of confusion to it. If we incorporate ChesMMAP into that; now we're only using 2002 to 2016, because that is the time period for that survey.

You see that the ChesMMAP data, because of the high proportion of red, particularly in later years, is introduced into the traffic light; and so it offsets a bit of that increase we were seeing in just the larger scale surveys, NMFS, SEAMAP, as well as the local ones in North Carolina and VIMS.

For the Age 2 plus datasets, you see red proportions pretty high throughout the 1990s and early 2000s, and then that increasing trend even a little bit with the green showing up in that top one. Then with the addition of ChesMMAP, you see those higher red proportions in all years after 2008 that more closely match; again, what we're seeing in those declines in the commercial and recreational traffic light.

The addition of ChesMMAP brought those red proportions above 30 percent for most years from 2008-2016, except for two years, 2014 and '15, where they were just below 30 percent. While there was a slight declining trend in the red proportions after 2008, the higher proportions of red from the addition of ChesMMAP, again ties in better with what we're seeing in the harvest metric.

Then the shrimp fishery discards, as I said there is no length frequency data, so we ran it on the entire survey, just the discard estimates. The discards showed a high peak early in the time series, in the early '90s. The peak was 3.3 billion fish in 1991, and then values have pretty much stayed under 900 million fish per year since then. But the traffic light for using the '96-2008 reference period showed high proportions of red in the beginning of the time series when bycatch levels were fairly high. This also coincides with the timeframe when bycatch-reduction devices were not required, pre 1995-96. Then there were only two years later in the time series that had red proportions greater than 30 percent, which was 2013 and '14.

I mentioned this before answering Joe's question, while the shrimp fishery traffic light gives a good estimate of general removals, it is probably better utilized as an advisory index;

looked at every year as part of the trigger management exercise, but not necessarily used in and of itself as one of the actual indexes to decide whether or not management action is warranted, and that goes back to reliability of the estimates for the shrimp fishery estimates.

To sum everything up here, the declines in commercial recreational harvest over the last five, six years have not been necessarily mirrored in the fishery independent abundance indices. The use of the age-partitioned indexes did give us a little better clarification of the trends among the different indices; particularly with the harvest and abundance indices, where you see more declines in those older fish, which is more reflective of what's happening in the commercial and recreational fisheries.

It also helped show us what groups are necessarily maybe driving those traffic light indices as well. The Age 2 plus, what we're seeing is more of the decline in some of them, whereas the Age 0-1 traffic light is behaving more like the abundance surveys.

Further refinement of the traffic light through age partitioning of the annual index catch-per-unit-effort values, as well as the harvest estimates, could definitely provide better synchrony or agreement between the different traffic light metrics, and hopefully help account for some of the discrepancies that we're seeing between them.

Then as far as the other surveys go, the ChesMMAP Survey would be a more appropriate addition for the traffic light at this time, because it has a longer time series starting in 2002, and has a great deal of overlap already with the current reference time period; although that would be reevaluated as well.
The NEMAP Survey, while it does provide valuable data on abundance across a wide geographic range, still is a relatively short timeframe; beginning in 2007 it does not cover a complete generation time for croaker, which is 15 years. Then since the Atlantic croaker do make up such a large proportion of the shrimp trawl fishery bycatch, the use of that as an advisory index with the TOA would be useful also. That is something that we will continue to look at, because again this is really preliminary. With that any questions?

CHAIRMAN ESTES: Questions. Chris, thank you for all the work, it looks like you guys were on your computer a god bit, it looks like for the last few months.

ADJOURNMENT

Thank you very much. Is there any other business before the Board? Seeing none; we are adjourned.

(Whereupon the meeting was adjourned at 2:23 o'clock p.m. on August 1, 2017.)

Atlantic States Marine Fisheries Commission

Draft Interstate Fishery Management Plan for Atlantic Migratory Group Cobia for Public Comment

ASMFC Vision:
Sustainably Managing Atlantic Coastal Fisheries

August 2017

Draft Interstate Fishery Management Plan for Atlantic Migratory Group Cobia

Prepared by
Atlantic States Marine Fisheries Commission
Cobia Plan Development Team

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This Plan was prepared under the guidance of the Atlantic States Marine Fisheries Commission's South Atlantic State/Federal Fisheries Management Board, Chaired by Jim Estes of Florida and Advisory assistance was provided by the South Atlantic Species Advisory Panel Chaired by Tom Powers of Virginia.

This is a report of the Atlantic States Marine Fisheries Commission pursuant to U.S. Department of Commerce, National Oceanic and Atmospheric Administration Award No. NA15NMF4740069.

The Atlantic States Marine Fisheries Commission seeks your input on Draft Interstate Fishery Management Plan for Atlantic Migratory Group Cobia.

The public is encouraged to submit comments regarding this document during the public comment period. Comments must be received by **5:00 PM (EST) on October 6, 2017.** Regardless of when they were sent, comments received after that time will not be included in the official record. The South Atlantic State/Federal Fisheries Management Board will consider public comment on this document before finalizing the Interstate FMP.

You may submit public comment by attending a public hearing held in your state or jurisdiction or mailing, faxing, or emailing written comments to the address below. Comments can also be referred to your state's members on the South Atlantic State/Federal Fisheries Management Board or South Atlantic Advisory Panel; however, only comments received at a public hearing or written comments submitted to the Commission will become part of the public comment record.

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1. INTRODUCTION

1.1. BACKGROUND INFORMATION

At the August 2016 meeting of the Interstate Fishery 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 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 would be 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 state-specific 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

Similar to the situation for the recreational sector, commercial hook-and-line fishermen have come to depend more on cobia as the quality of other fisheries in Virginia has deteriorated. In fact, it has become an actively targeted species for many such commercial fishermen, even though cobia has often been considered a bycatch species in other states and for other gears.

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.

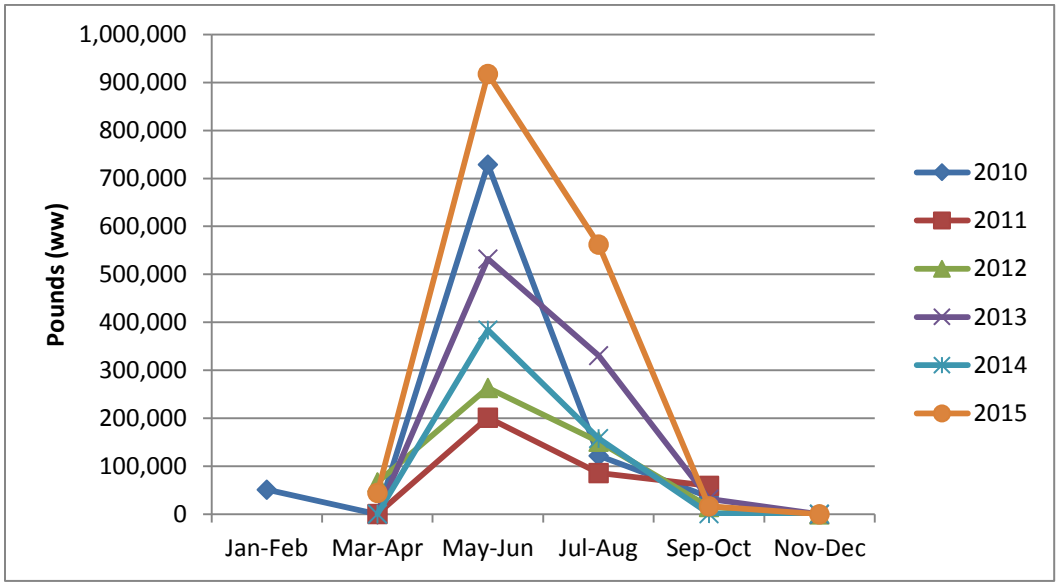
Table 5. Annual recreational landings (lbs ww) of Atlantic cobia, by fishing mode, 2010-2015 (preliminary).

	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-data-query/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 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.

In addition to a large private recreational industry, there is a small, dedicated group of for-hire participants. Many of these captains/fishing guides utilize cobia towers and prefer sight-casting, although some still chum and fish using live bait.

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 and Virginia 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 allows 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 would be 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) would 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 would prepare and submit a report of recommendations to the Management Board.

The Cobia Technical Committee (TC) would 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, would 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) would 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 would 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). Upon approval of the FMP, the Management Board would recommend 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 would encourage 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 would 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-for-hire 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 OPTIONS

intent of the management program would be to complement management actions taken by the SAFMC by maintaining harvest within the ACL (currently set at 670,000 pounds), while providing the states the flexibility to adjust management to suit their specific state needs. To accomplish this, the PDT developed management options that would allocate a coastwide harvest limit set equivalent to and monitored concurrently with the federal ACL, should such a limit exist. In the event that the federal ACL is removed, the coastwide harvest limit and state allocations will remain the same as those in place during the last year that the ACL was in place, unless specified by Board through board action. It should be noted that state-specific allocations developed in this FMP may be revisited through the ASMFC's adaptive management process as more data and updated estimates are obtained.

The current allocation of the coastwide, Atlantic Migratory Group ACL is 620,000 pounds to the recreational fishery and 50,000 pounds to the commercial fishery.

4.1. RECREATIONAL FISHERIES MANAGEMENT OPTIONS

In order to complement the current federal FMP and achieve the goals of the proposed ASMFC FMP, this document proposes that all states would establish regulations consistent with the federal regulations related to size and bag limits.

Several alternatives for state allocations were developed and discussed by the Board and the PDT. As a result of low and variable sample sizes and inconsistencies in the estimation of average weights throughout the management unit, state allocations of the proposed recreational harvest limit are based on historical landings in numbers of fish as opposed to weights. These percentages, based on numbers of fish, would be multiplied by the coastwide recreational harvest limit (equivalent to the federal recreational ACL, currently 620,000 pounds) to calculate annual state allocations in pounds. All landings would continue to be monitored against the federal ACL as weights in pounds.

4.1.1. Size Limit Options

Option 1: Status Quo: No coastwide size limit option**.**

Option 2: Coastwide size limit: All states would be required to 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

Option 1: Status Quo: No coastwide bag limit option.

Option 2: Coastwide bag limit: All states would be required to establish a 1 fish per person bag limit by April 1, 2018.

4.1.3. Vessel Limit Options

Option 1: Status Quo: No coastwide vessel limit option.

Option 2: Coastwide vessel limit: All states would be required to 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 may be accomplished by coastwide or state-specific seasons. Options for management of the recreational harvest limit, including state allocation options, are shown below (Options 1-3).

Options 1 and 2 are methods for allocating the coastwide recreational harvest limit to the states as hard quotas or soft targets, based on historical landings during one of several reference time periods between 2006 and 2015 (Tables 10 and 11; Sub-Options a-d). 2015 was chosen as the terminal year for reference period landings due to fishery closures that occurred after 2015. Landings data from states north of Virginia are excluded from calculation of coastwide harvests for state allocations due to the rare and sporadic nature of landings in these states. Using SEFSC data, historical landings in states north of Virginia are:

2005 – Delaware – 1,480 lbs.

2006 and 2012– New Jersey – 27,863 lbs., 69,655 lbs.

2010 and 2016 – Maryland – 1,287 lbs., 1,762 lbs.

Average landings in pounds and corresponding percentages by state vary based on the time series selected and the landings estimate used (SEFSC or MRIP). As a result of concerns raised over the variability in average weights throughout the management unit and the observation that total numbers of fish harvested were consistent between estimation methods, the PDT

examined the landings by number of fish to eliminate any bias or concern related to average weights (Table 10).

Option 3 is an option for coastwide management using a combination of coastwide seasons and daily vessel limits (Sub-Options a-f) to restrict harvest to the coastwide recreational harvest limit. For this option, larger changes in season dates correspond to the lower range of potential daily vessel limits because of the lack of high-catch trips in the recreational survey data. Few intercepted anglers reported catching four or more fish in a trip, thus, reductions to higher vessel limits would be projected to minimally reduce harvest. However, a daily vessel limit of one or two fish would be projected to cause a more substantial reduction in harvest.

Other allocation options may be considered in a subsequent amendment that could rely on F-based, rolling annual catch estimates, or other methods.

Option 1: State-defined seasons that adhere to hard state-by-state recreational quota shares of the coastwide recreational harvest limit, based on states' percentages of the coastwide historical landings in numbers of fish during a specified reference period (Sub-Options a-d). Percentage shares of the coastwide recreational harvest limit would only be divided among states that do not qualify for *de minimis* status. States would develop harvest control measures/seasons to limit catches to their assigned quota. Proposed state measures/seasons must be reviewed and approved by the TC and Management Board for initial implementation by April 1, 2018. Overages in one year must be accounted for in the following year's harvest control plan by reducing season length or vessel limits. Under-harvest would not carry over. Allocation of the ACL may be re-evaluated by the Management Board if a *de minimis* state exceeds the *de minimis* threshold.

Historical Landings Reference Period Sub-Options:

a) 3-year average (2013-2015)
b) 5-year average (2011-2015)
c) 10-year average (2006-2015)
d) 50% of 5-year average (2011-2015) + 50% of 10-year average (2006-2015)

Option 2: State-defined seasons that adhere to soft state-by-state recreational quota shares (harvest targets) of the coastwide recreational harvest limit, based on states' percentages of the coastwide historical landings in numbers of fish during a specified reference period (Sub-Options a-d). The coastwide recreational harvest limit would only be divided among states that do not qualify for *de minimis* status. States would 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 would remain in place for a specified amount of time, ranging from 2-3 years (Sub-Options e-f).

After each specified time period (Sub-Options e-f), if a state's average annual landings for that time period (Sub-Options e-f) are greater than their annual soft harvest target, that state will

adjust their season length or vessel limits for the following specified time period (Sub-Options e-f) as necessary to prevent exceeding their share in the future. States reporting an under-harvest over the previous specified time period (Sub-Options e-f) may present a plan to extend seasons or increase vessel limits, if desired. 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 soft targets may be re-evaluated by the Management Board if a *de minimis* state exceeds the *de minimis* threshold.

Historical Landings Reference Period Sub-Options (a-d):

a) 3-year average (2013-2015)
b) 5-year average (2011-2015)
c) 10-year average (2006-2015)
d) 50% of 5-year average (2011-2015) + 50% of 10-year average (2006-2015)

Average Landings Monitoring Timeframe Sub-Options (e-f):

e) 2 years
f) 3 years

The information used to calculate state specific harvest quotas for Options 1 and 2 are contained in Tables 10 and 11.

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.

Option 3: Coastwide season and daily vessel limit based on federal CMP Framework 4 analysis (2013-2015), with a 1 fish per person bag limit and 36 inch FL size limit. This option is essentially status quo of the current federal FMP.

Under this option, annual overages in coastwide landings would be paid back through a reduction in the following year's coastwide recreational harvest limit.

Coastwide season and vessel limit Sub-Options (a-f):

a) January 1-August 22 with 1 fish vessel limit
b) January 1-July 28 with 2 fish vessel limit
c) January 1-July 20 with 3 fish vessel limit
d) January 1-July 18 with 4 fish vessel limit
e) January 1-July 17 with 5 fish vessel limit
f) January 1-July 15 with 6 fish vessel limit

4.2. COMMERCIAL FISHERIES MANAGEMENT OPTIONS

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

4.2.1. Size Limit Options

Option 1: Status Quo: No coastwide size limit.

Option 2: Coastwide size limit: All states would be required to 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

Option 1: Status Quo: No coastwide possession limit.

Option 2: Coastwide possession limit: All states would be required to establish a maximum commercial possession limit of 2 cobia per license holder 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 non-fishing 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

Upon approval of the FMP, states would be required to obtain prior approval from the Management Board for any changes to their management program for which a compliance requirement is in effect. Changes to non-compliance measures would be required to be reported to the Management Board but may be implemented without prior Management Board approval. A state would be able to request permission to implement an alternative to any mandatory compliance measure only if that state could 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 would be required to demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans would be required to 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 would be able to submit a proposal for a change to 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 changes would be submitted to the Chair of the PRT, who would distribute the proposal to the Management Board, PRT, TC, SAS, and AP.

The PRT would 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 would decide whether to approve the state proposal for an alternative management program if it determines that it is consistent with the "target fishing mortality rate applicable" and the goals and objectives of this FMP.

4.4.2. Management Program Equivalency

The TC, under the direction of the PRT, would 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 would have the responsibility of 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 would 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.

Option 1: No *de minimis* program

Option 2: Include *de minimis* program for both commercial and recreational fisheries, collectively: To qualify for *de minimis*, a state's total (recreational and commercial) landings for 2 of the previous 3 years must be less than 1% of the coastwide total landings for the same time period. If a state qualifies for *de minimis*, the state may have the ability to choose to match the management measures implemented by an adjacent non-*de minimis* state (or the nearest non-

de minimis state if none are adjacent) or the state's recreational and commercial fisheries would be limited to 1 fish per vessel per trip (Sub-Options a-b). Minimum size of the 1 fish per vessel per trip may mirror the previously proposed minimum size limits of the commercial and recreational fisheries (33 inches and 36 inches FL, respectively; Sub-Option c) or be the more conservative limit (36 inches FL; Sub-Option d) for both the commercial and recreational sectors. One-percent (1%) of the total, federal ACL (6,700 pounds) will be set aside for de minimis state landings.

***De Minimis*-Qualifying State's Ability to Match Management Measures of Adjacent Non-*De Minimis* State Sub-Options (a-b):**

a) A *de minimis* state may not have the ability to choose to match recreational management measures of an adjacent (or the nearest) non-*de minimis* state. *De minimis* states' recreational fisheries would be subject to a 1 fish per vessel per trip limit with a minimum size limit (Sub-Options c-d).

b) A *de minimis* state may have the ability to choose to match management measures of an adjacent (or the nearest) non-*de minimis* state. Should a *de minimis* state choose to match an adjacent (or the nearest) non-*de minimis* state, the *de minimis* state would be subject to all cobia regulations, including bag, possession, size, vessel, and season restrictions, of their adjacent (or nearest) non-*de minimis* state. *De minimis* states would also have an alternative management option of a 1 fish per vessel per trip limit with a minimum size limit (Sub-Options c-d). For example, a state north of Virgina (e.g. Delaware) could choose to implement the Board approved measures of Virginia, the nearest non-*de minimis* state, or implement a 1 fish per vessel per trip limit with a minimum size limit (Sub-Options c-d) to comply with *de minimis* requirements.

Minimum Size Limits for *De Minimis*-Qualifying States Sub-Options (c-d):

c) Minimum size limits of 33 inches FL for the commercial fishery and 36 inches FL for the recreational fishery
d) Minimum size limit of 36 inches FL for both the commercial and recreational fisheries

Option 3: Include *de minimis* program for recreational fisheries only: 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 have the ability to 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's recreational fishery would be limited to 1 fish per vessel per trip (Sub-Options a-b). Minimum size of the 1 fish per vessel per trip may mirror the previously proposed coastwide minimum size limit of the recreational fishery (36 inches FL; Sub-Option c) or be less conservative (FL at 50% female maturity according to SEDAR 28; 29 inches FL) based on observations that cobia at the northern edge of their range tend to be smaller (Sub-Option

d). One-percent (1%) of the recreational, federal ACL (6,200 pounds) will be set aside for de minimis state landings.

***De Minimis*-Qualifying State's Ability to Match Management Measures of Adjacent Non-*De Minimis* State Sub-Options (a-b):**

a) A *de minimis* state may not have the ability to choose to match recreational management measures of an adjacent (or the nearest) non-*de minimis* state. *De minimis* states' recreational fisheries would be subject to a 1 fish per vessel per trip limit with a minimum size limit (Sub-Options c-d).

b) A *de minimis* state may have the ability to choose to match recreational management measures of an adjacent (or the nearest) non-*de minimis* state. Should a *de minimis* state choose to match an adjacent (or the nearest) non-*de minimis* state, the *de minimis* state would 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 would also have an alternative recreational management option of a 1 fish per vessel per trip limit with a minimum size limit (Sub-Options c-d). For example, a state north of Virgina (e.g. Delaware) could choose to implement the Board approved measures of Virginia, the nearest non-*de minimis* state, or implement a recreational 1 fish per vessel per trip limit with a minimum size limit (Sub-Options c-d) to comply with *de minimis* requirements.

Minimum Size Limits for *De Minimis*-Qualifying States Sub-Options (c-d):

c) Minimum size limit of 36 inches FL for the recreational fishery
d) Minimum size limit of 29 inches FL for the recreational fishery

4.5. ADAPTIVE MANAGEMENT

The Management Board would be able to vary the requirements specified in this FMP as a part of adaptive management in order to conserve the cobia resource. Specifically, the Management Board would be able to change target fishing mortality rates, harvest specifications, or other measures designed to prevent overfishing of the stock complex or any spawning component. Such changes would 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.

4.5.1. General Procedures

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

The PRT would prepare a draft addendum, as directed by the Management Board, and distribute to the board for approval for public comment. The document would be released for public comment for a minimum of 30 days. A public hearing would be held in any state that requests one. After the comment period, the PRT would 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 would choose a management program and approve a final document.

Upon adoption of an addendum implementing adaptive management by the Management Board, states would 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 would be 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 would be 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 ASMFC ISFMP Program Charter, Section Six (c) (11) (ASMFC 2009b).

4.7. MANAGEMENT INSTITUTIONS

The management institution for cobia would be subject to the provisions of the ISFMP Charter (ASMFC 2009b). The following would not be 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 would 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) would 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 would 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 would 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 would 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) would 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 would 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 would 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) would 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 would 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 Magnuson-Stevens 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, would 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 would 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 would be necessary for the management program to be equitable, efficient, and effective. States would 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 would 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 would 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 would 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 would 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 would 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 would be required to implement in order to be in compliance with this FMP:

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

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

4. States would 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 would 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 would be required to be reported to the Board but may be implemented without prior Board approval. A state would be able to request permission to implement an alternative to any mandatory compliance measure only if that state could 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 would be required to demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans would 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 would be required to include law enforcement capabilities adequate for successfully implementing that state's cobia regulations. The adequacy of a state's enforcement activity would be monitored annually by reports of the ASMFC Law Enforcement Committee to the PRT. The first reporting period would 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 would 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 would 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 would 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 non-compliance 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 non-compliance 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 would request 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 would, 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 would be reviewed annually as part of the Commission's FMP Review process. The annual Cobia FMP Review would 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 sub-population 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:

- Atlantic spotted dolphin *(Stenella frontalis)*

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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

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

MBTA—USFWS Species of Management Concern

5 http://www.nmfs.noaa.gov/pr/species/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 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.

6 SEFSC, recreational ACL dataset
7 http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/landings-by-gear/index

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 (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.

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

7.5.5. Seabirds

The roseate tern, Bermuda petrel, and piping plover are the only ESA listed bird species within the mid-and south-Atlantic maritime regions. The roseate tern and Bermuda petrel are uncommon in inshore and coastal waters of the mid- and south-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 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

9 http://www.fisheries.noaa.gov/pr/species/fish/shortnose-sturgeon.html
10 http://www.fisheries.noaa.gov/pr/species/fish/smalltooth-sawfish.html

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 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):

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

- 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).

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

13 http://www.nmfs.noaa.gov/pr/pdfs/recovery/sturgeon_shortnose.pdf
14 http://www.nmfs.noaa.gov/pr/pdfs/recovery/smalltoothsawfish.pdf

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.

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 snapper-grouper, 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

15 https://www.fws.gov/migratorybirds/pdf/management/mounmfs.pdf
16 https://www.fws.gov/migratorybirds/pdf/management/focal-species/GreaterShearwater.pdf
17http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf

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 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.

18http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf
19http://sero.nmfs.noaa.gov/news_room/press_releases/2016/pdfs/noaa_fisheries_southeast_regional_office_science_needs_12052016.pdf

- 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.

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.

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

- 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.
- 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.

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

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9. APPENDICES

Appendix I

Atlantic States Marine Fisheries Commission
Draft Public Information Document for the Cobia FMP

Introduction

The Atlantic States Marine Fisheries Commission (Commission) is developing 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 (Council) 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.

Management Issues

Currently the Council and NOAA Fisheries manage Cobia under the CMP FMP through an Annual Catch Limit (ACL) combined with possession and minimum size limits. An overage of the recreational ACL occurred in 2015 and resulted in a shortened recreational season in 2016, consistent with the accountability measures (AMs) implemented by the Council. The closure had measureable impacts to member states. Concerned by these impacts and recognizing that a significant but variable proportion of reported recreational landings are harvested in state waters, the Council requested that the Commission consider complementary or joint management of the Cobia resource.

The Commission's Interstate Fisheries Management Program Policy Board reviewed a white paper at their August 2016 Business Meeting and agreed Commission management of Cobia was prudent. The Commission tasked the development of an FMP to the South Atlantic State/Federal Fishery Management Board, complementary with the Council plan for Cobia (*Rachycentron canadum*).

Council management, based on current genetic information, addresses the management of Atlantic Migratory Group (AMG) Cobia that occur from Georgia through New York (Figure 1). Cobia that occur off the east coast of Florida are part of the Gulf stock, but the SAFMC manages the portion of that stock on the Florida East Coast that occurs within its jurisdiction. Tag recapture data suggested two main stocks of fish that overlap at Brevard County Florida and corroborated the genetic findings. The genetic findings also determined that there were two distinct population segments (DPS) in Port Royal Sound SC and Chesapeake Bay VA. The main South Atlantic and Gulf stocks were separated for management purposes at the FL/GA line

because genetic data suggested that the split is north of the Brevard/Indian River County line and there was no tagging data to dispute this split. The FL/GA line was selected as the stock boundary based on recommendations from the commercial and recreational work groups (of the SEDAR 28 Stock Assessment) and comments that for ease of management the FL/GA line would be the preferable stock boundary and did not conflict with the life history information available.

Cobia that occur off the east coast of Florida are part of the Gulf cobia, but the Gulf of Mexico Fishery Management Council allocated a portion of the Gulf cobia ACL to the SAFMC and the SAFMC manages that portion of the Florida East Coast that occurs within its jurisdiction. This boundary and the revised ACLs based on the stock boundary changes were implemented through Amendment 20B to the CMP FMP (GMFMC/SAFMC014). Collection of genetic samples from northern Florida (east coast) and Georgia continues and analysis will be used in a Stock Identification workshop planned for 2017 that could result in better resolution of where the boundary is between the south Atlantic and Gulf stocks.

Recreational Cobia landings in 2015 were 1,565,186 pounds (SEFSC), well above the 2015 ACL of 630,000 pounds. This overage resulted in a June 20, 2016 closure of the fishery by NOAA Fisheries. Concern was expressed by individual states whose recreational seasons were reduced by the 2016 closure due to the overage of the 2015 quota. North Carolina and Virginia developed alternate management strategies for harvest in state waters to avoid the June 20, 2016 closure enacted by NOAA Fisheries for 2016. South Carolina has recently implemented more restrictive measures to protect an inshore spawning population in southern South Carolina that was independent of the actions taken by NOAA fisheries.

Commercial Cobia landings in 2015 were 71,790 pounds (landed weight) that exceeded the commercial ACL of 60,000 pounds (landed weight). Unusual fall landings occurred in 2015 that precluded a timely closure. The commercial Cobia ACL is not tracked in either whole or gutted weight, but “as landed.” Whether the fish were landed gutted or whole, the pounds were all added up together and not converted (most were landed gutted).

Purpose of the Public Information Document (PID)

The purpose of this document is to inform the public of the Commission’s intent to gather information concerning the Cobia fisheries, develop management measures to assist the Council in maintaining harvest levels within the prescribed ACL and provide management flexibility to the states to minimize the impact of potential closures. The PID provides an opportunity for the public to identify and/or comment on issues and alternatives relative to the management of Cobia. Input received at the start of the FMP development process can have a major influence on the final outcome of the FMP. This document is intended to draw out observations and suggestions from fishermen, the public, and other interested parties, as well as any supporting documentation and additional data sources.

To facilitate public input, this document provides an overview of issues identified for consideration in the FMP, as well as background information on the Cobia stock, fisheries, and management. The underlying question for public comment is: **"How would you like the Cobia fishery and population to look in the future?"** The Commission is looking for both general comments on Cobia management in state waters and any comments specific to the issues listed in this document.

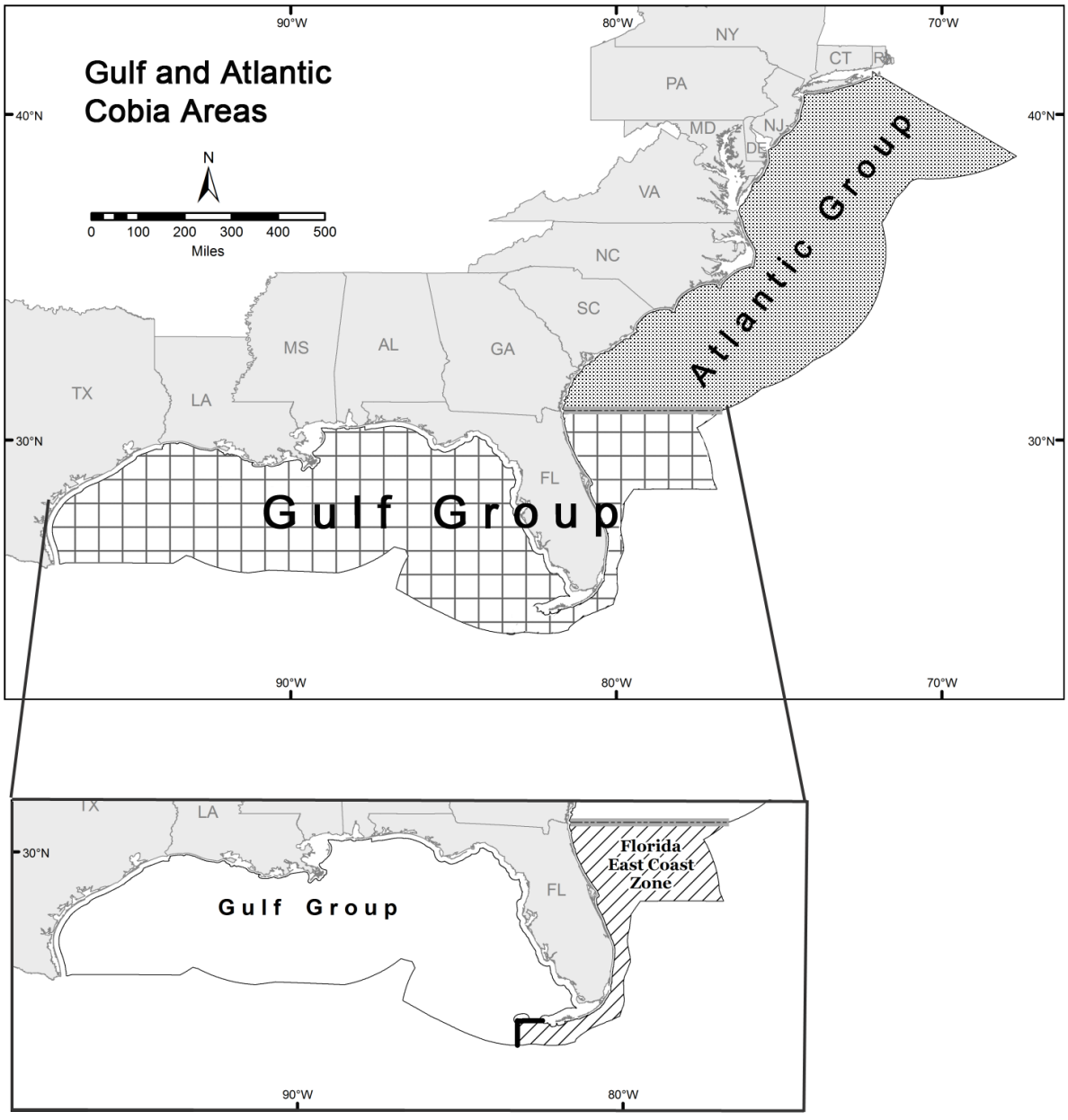

Figure 1. Current jurisdictional boundaries for Atlantic and Gulf of Mexico migratory groups of Cobia.

ASMFC's FMP Process and Timeline

The publication of this document and announcement of the Commission's intent to develop a FMP for Cobia is the formal, first step of the FMP development process. Following the initial phase of information gathering and public comment, the Commission will evaluate potential management alternatives and the impacts of those alternatives. The Commission will then develop a draft FMP, incorporating the identified management alternatives, for public review. Following the review and public comment, the Commission will specify the management measures to be included in the FMP, as well as a timeline for implementation.

This is the public's first opportunity to inform the Commission about changes observed in the fishery, management measures the public feels should not be included in the FMP, regulation, enforcement, research, development, enhancement; and any other concerns the public has about the resource or the fishery. In addition, this is the public's chance to present possible reasons for the changes and concerns for the fishery.

A tentative schedule for the completion of the FMP is included at the beginning of this document. Please note these dates are subject to change.

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 ACLs and AMs 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 Council's defined Overfishing Limit, meaning the stock is undergoing overfishing. Further quota overages would continue this overfishing and 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 state-specific 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.

Description of Management

Council management of Cobia is consistent for the Atlantic Migratory Group in federal waters with a 2 fish possession limit and 33" FL minimum size limit for commercial and recreational harvest. To reduce recreational harvest and attempt to extend seasons, some states have recently modified their restrictions (Table 1). Commercial management remains at 2 fish and 33" FL. **Florida Cobia are not part of the Council's Cobia management unit at this time. At present, Florida Cobia are part of the Gulf stock and the Council establishes the federal regulations for that portion within its jurisdiction.**

Table 1. Recreational measures in 2016 for Cobia in Virginia, North Carolina, South Carolina, Georgia**,** and Florida.

State	Bag limit (Fish/person/day)	Vessel limit (Fish/vessel/day)	Size Limit (inches)	Legal Gear
Virginia	1 *	2	40" TL, only 1 > 50" TL	No gaffing permitted
North Carolina	1 **	For-hire: 4/vessel or 1 person when less than 4 people on board Private: 2 fish on vessels with more than 1 person on board	37" FL	
South Carolina – north of Jeremy Inlet, Edisto Island	2	None	33" FL	
South Carolina- south of Jeremy Inlet, Edisto Island	1 (June 1- Apr 30) Catch and release only May 1-May 31	3, or 1 per person, whichever is lower	33" FL	
Georgia	2	None	33" FL	
Florida	1	1 per person or 6 per vessel, whichever is less	33" FL	spears, gigs, hook and line, seine, cast net

*VA State waters close 8/30/16.
**NC State waters close 9/30/16; private recreational can only retain Cobia on Mondays, Wednesdays, and Saturdays. Shore based anglers may retain 1 fish per day, 7 days per week.

In September 2016, the Council approved formal review for several changes to cobia management, including recreational harvest limits of 2 fish per person per day or 6 per vessel per day, and a minimum size limit of 36" FL for recreational harvest. Additionally, the Council

also proposes a commercial harvest limit of 2 fish per person per day or 6 per vessel, whichever is more restrictive, but no change to the commercial minimum size limit of 33" FL. The Council is also proposing modifications to the recreational accountability measures for Atlantic cobia. These changes are expected to be implemented in spring 2017.

In December 2016, the Council will review and consider formal approval of an amendment to change the recreational fishing year for Atlantic cobia (the fishing year is January 1 – December 31). Currently the preferred alternative would change the fishing year to May 1 – April 30.

The allocation of the Council's ACL between commercial and recreational sectors is based on historical landings (50% is based on the average 2000-2008 landings and 50% is based on the average 2006-2008). Beginning in 2016, the ACL is split 92% recreational and 8% commercial. The 2016 ACL for Cobia is 670,000 pounds. The recreational ACL is 620,000 pounds and the commercial ACL is 50,000 pounds. The ACL for 2015 was slightly higher at 690,000 pounds.

Description of the Cobia Resource

Life History and Status of the Stocks

Cobia is a fast growing, moderately lived (14 years old) species that supports a valuable recreational fishery throughout the south Atlantic and into the mid-Atlantic region. Known for their readiness to take a bait, tough fighting abilities, and excellent table fare, the fishery is popular in the recreational sector. The commercial fishery is primarily a by-catch 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). However, in recent years, it has become a targeted species in Virginia's commercial hook and line fishery.

Cobia grow rapidly in their first 2 years with most mature by age 2. Females grow faster and attain larger sizes than males, but become sexually mature later. Cobia migrate South to North as well as East to West and spawning occurs when water temperatures reach 20-21 C from April through September with spawning occurring earlier in Florida and later in Virginia. Cobia form aggregations and spawn multiple batches of eggs throughout a relatively short season. Year class strength can be highly variable but it appears that a very strong year class occurs once in a decade. Both tag recapture and genetic data show that cobia exhibit natal homing and are often recaptured on the same structure or in locations where they were caught years before. This natal homing and spawning aggregation behavior make them very predictable and easily located by fishermen.

The results of the SEDAR 28 stock assessment determined that the appropriate management unit would separate out Atlantic and Gulf of Mexico stocks at the Florida/Georgia border. As previously mentioned, a workshop in early 2017 will evaluate all the current cobia genetic information. While Cobia do frequent areas north of Virginia, the harvest is uncommon and sporadic. Landings have been episodically reported from Maryland, New York, New Jersey and Rhode Island and make up from 3-15% of the total mid-Atlantic landings.

The 2013 stock assessment conducted through the SEDAR process indicated overfishing was not occurring and the stock is not overfished. The current ACL is a precautionary approach to prevent the stock reaching an overfished status. The recent overage in 2015, exceeded the Council defined Overfishing Limit, meaning overfishing is occurring. The 2013 stock assessment does indicate concerns. While the terminal year of the assessment was 2011, Spawning Stock Biomass (SSB) experienced a general decline from 2002 forward (Figure 2). Further, recreational landings have increased over the latter portion of the time series that may increase potential overfishing issues in the next assessment. In June, the Council proposed Cobia be included in a 2017 Stock ID workshop and the 2019 SEDAR schedule for a research track assessment. The operational assessment that will incorporate the outcomes and recommendations from the Stock ID workshop and 2019 research track assessment is scheduled for 2020. The operational assessment will result in management recommendations.

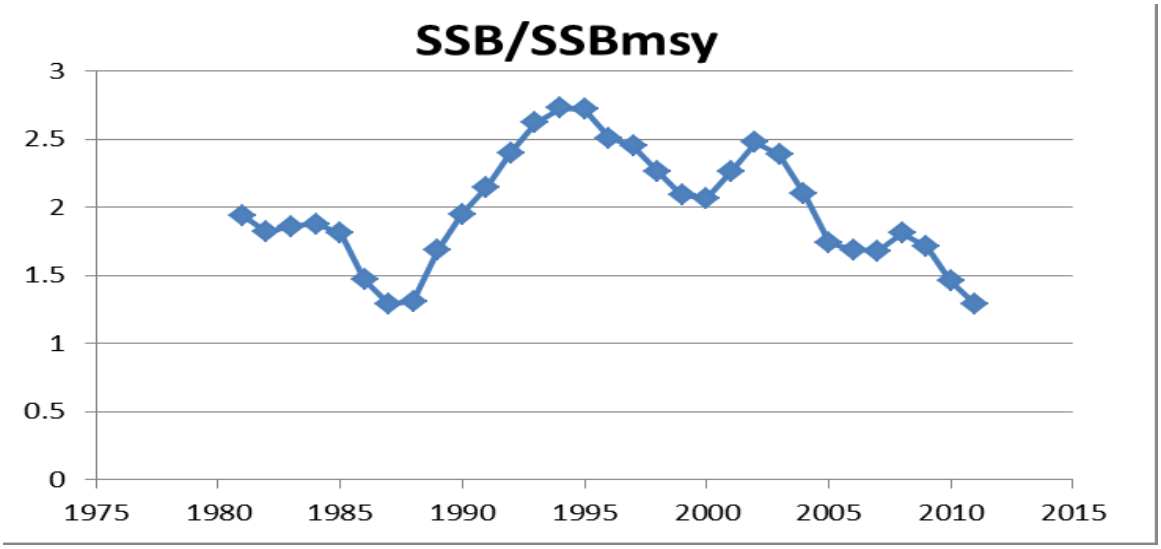

Figure 2. Cobia spawning stock biomass relative to the MSY biomass reference for 1981-2011.

Data collection programs vary by state and will be further described in the upcoming fishery management plan. However, research efforts at the state level are confounded by the observation that Cobia only occur in specific state jurisdictions in aggregations for a brief period each year and often in locations that conflict with the peak of recreational fishing. Directed sampling efforts are difficult outside of the primary recreational season that extends from April through August, because fish are migrating from spawning locations and not found in large concentrations.

Description of the Fishery

Landings data are generated for the recreational fishery through the Marine Recreational Information Program (MRIP) report landings for state and federal waters. Current information indicates a variable proportion of landings come from state waters and can range from 0 to

100% (Table 2). The 10 year average, annual percentage of cobia taken in state waters with and without east coast /Florida included are 66% and 51% respectively (Tables 3 and 4).

Recreational Cobia 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. This more active method likely confounds reported landings being in state or nearshore federal waters as vessels tend to move in and out of state and federal waters following the bait or the fish. 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 the cobia that associate with them. Spearfishing also occurs off North Carolina, along with a popular pier fishery.

Table 2. Percentage of cobia in the recreational fishery harvested in state's waters (zero implies all were harvested from federal waters). All data are final MRIP estimates, which may differ from SEFSC estimates.

	Florida	Georgia	South Carolina	North Carolina	Virginia
2006	22	0	98	30	100
2007	9	0	0	47	100
2008	14	0	0	50	100
2009	53	0	0	58	100
2010	59	39	41	75	94
2011	33	0	0	90	50
2012	21	80	0	49	42
2013	9	0	61	79	83
2014	17	0	52	82	100
2015	13	0	6	92	97

Table 3. 10-year average percentage of cobia harvested in state waters without east coast Florida included. All data are final MRIP estimates, which may differ from SEFSC estimates.

	State GA-NY	Federal GA-NY	Percent State
2006	1,005,706	149,537	87
2007	402393	374,051	52
2008	157,793	393,864	29
2009	541,594	134,935	80
2010	679,777	232,073	75
2011	184,514	143,357	56
2012	147,273	289,154	34
2013	590,633	172,290	77
2014	387,364	77,004	83
2015	1,496,442	232,854	85

Table 4. 10-year average percentage of cobia harvested in state waters including the east coast Florida. All data are final MRIP estimates, which may differ from SEFSC estimates.

	State FL-NY	Federal FL-NY	Percent State
2006	1,116,100	532,477	68
2007	456,395	900,681	34
2008	218,154	772,124	22
2009	733,424	304,225	71
2010	1,122,392	534,686	68
2011	436,805	652,506	40
2012	223,755	583,045	28
2013	615,462	421,737	59
2014	486,921	559,870	47
2015	1,559,160	652,092	71

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.

Recreational landings for Cobia have varied with little trend since 2005; landings did hit a time series high in 2015 resulting in a significant overage of the federal ACL (Figure 3).

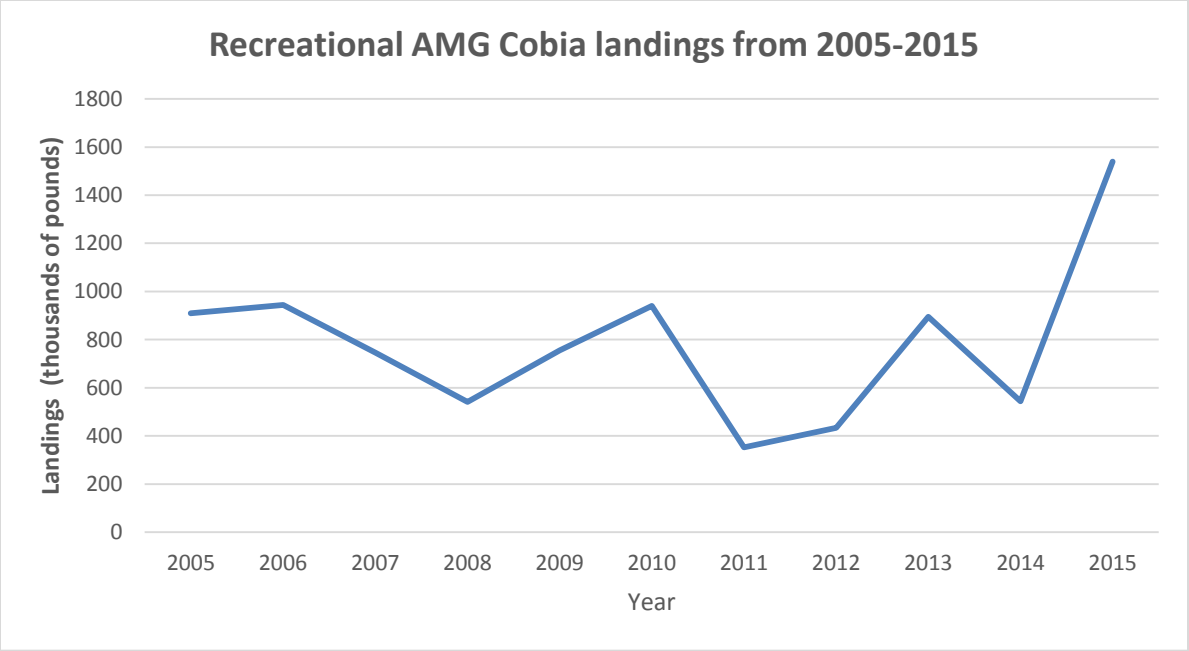

Figure 3. Recreational landings of AMG Cobia (2005-2015)

Commercial harvest of Cobia has traditionally been bycatch in the offshore snapper/grouper and trolling fisheries. 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. The commercial fishery has seen an increasing trend from North Carolina through the mid-Atlantic over the time series. The commercial Cobia fishery closed early in 2014 (December 11, 2014). The 2015 overages would have been deducted if the stock were overfished; however, given they are not overfished, the commercial quota for 2016 remains 50,000 pounds (Figure 4).

State-Specific Landings

Florida

Landings of Cobia in Florida are significant. Continued genetic analysis may result in some adjustments to the current stock boundaries management unit as more data become available. Recreational Cobia landing on the East coast of Florida averaged 488,788 pounds during the 2005-2015 time series (Table 5).

Commercial Cobia landings on the East coast of Florida ranged from 57,003 to 156,069 pounds (avg. = 88,278 pounds) during the 2007-2011 time series.

Georgia

Recreational Cobia landings in Georgia ranged from 3,358 to 257,690 pounds (avg. = 58,111 pounds) during the 2005-2015 time series (Table 5).

Commercial landings in Georgia and South Carolina were low and values for the two states were combined from 2010-2015 to avoid confidentiality issues and averaged 3,867 pounds (Table 6).

South Carolina

Recreational Cobia landings in South Carolina averaged 76,954 pounds during the 2005-2015 time series (Table 5). Cobia were designated as gamefish in South Carolina but properly permitted for-hire vessels may sell Cobia.

North Carolina

Recreational Cobia landings in North Carolina averaged 259,883 pounds from 2005-2015 (Table 5).

Commercial landings in North Carolina ranged from 19,950 to 52,315 pounds from 2010-2015, averaging 37,559 pounds over the time series. The landings of 52,684 pounds in 2015 accounted for nearly the entire AMG Cobia commercial quota and would have exceeded the 2016 quota (Table 6).

Virginia

Recreational Cobia landings in Virginia averaged 368,059 pounds during the 2005-2015 time series (Table 5).

Commercial landings for the mid-Atlantic region (Virginia, Maryland, New Jersey, New York,) and Rhode Island are combined in Table 6 to avoid confidentiality issues in several Mid-Atlantic States. The majority of the mid-Atlantic landings come for Virginia. The average landings from 2010-2015 were 14,732 pounds.

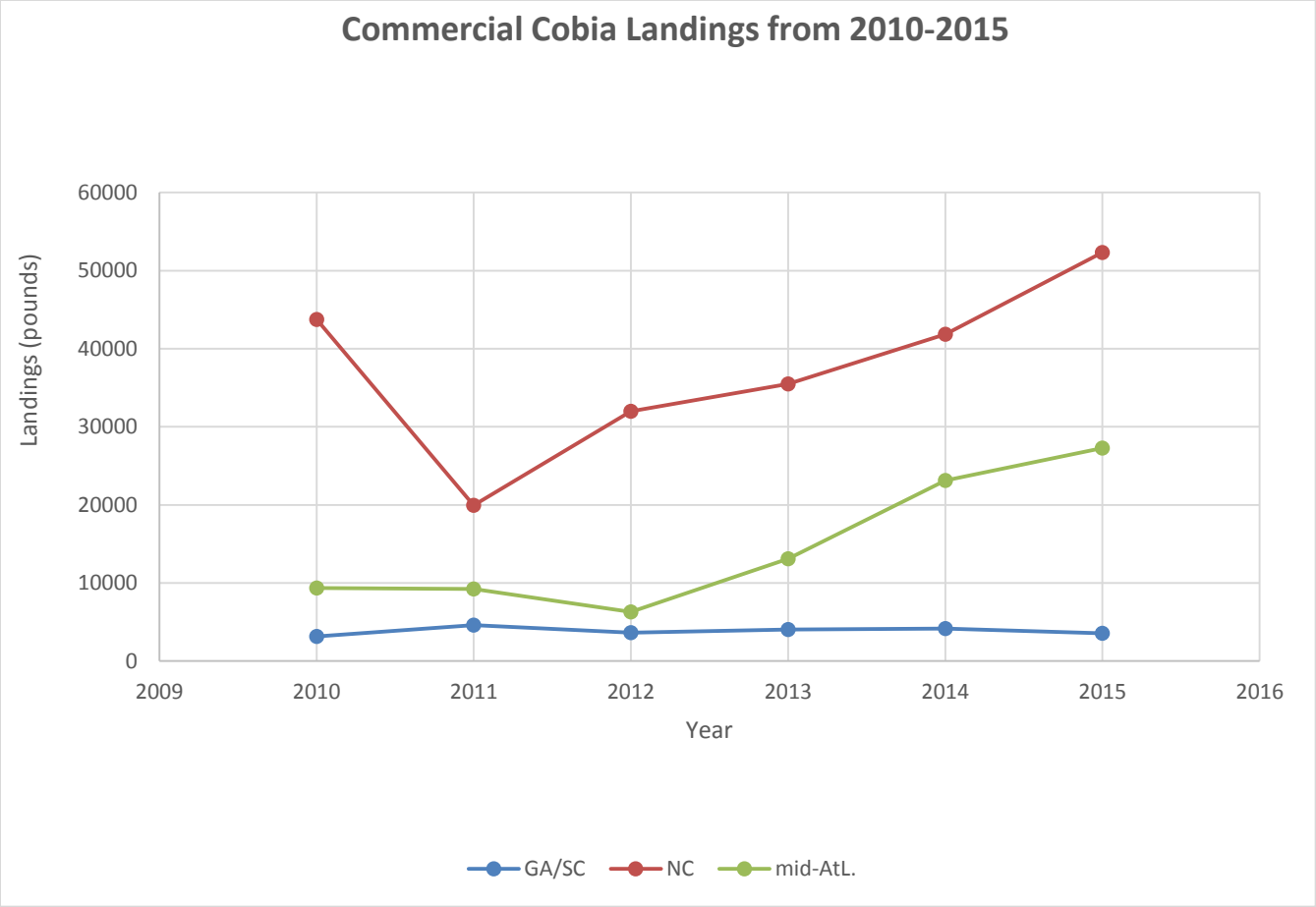

Figure 4. Commercial landings of Cobia (2010-2015)

Table 5. Recreational landings of Atlantic Cobia from 2005-2015 in pounds. Data sources: SEFSC

Year	Virginia	North Carolina	South Carolina	Georgia	Total AMG (VA-GA)	East Coast of Florida
2005	577,284	322,272	5,793	3,358	908,707	287,267
2006	733,740	104,259	101,018	4,824	943,841	493,334
2007	322,887	90,197	268,677	64,708	746,469	580,632
2008	167,949	66,258	50,108	257,690	542,006	438,621
2009	552,995	123,061	76,229	3,997	756,282	361,120
2010	232,987	561,486	65,688	79,855	940,015	745,228
2011	136,859	121,689	3,565	90,375	352,488	761,440
2012	36,409	68,657	224,365	105,193	434,623	370,373
2013	354,463	492,969	19,130	29,224	895,786	274,276
2014	214,427	277,489	31,927	20,642	544,485	582,423
2015	718,647	630,373	123,952	67,804	1,565,186	481,956

* There are no MRIP-estimated recreational landings of AMG Cobia in states north of Virginia.

Table 6. Commercial Cobia landings (pounds) and revenues (2014 dollars) by state/area, 2010-2015.

Year	GA/SC	NC	Mid-Atlantic*	Total
		Commercial Landing in Pounds		
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	71,790
Average	3,867	37,559	14,732	56,158
		Dockside Revenues (2014 dollars)		
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

Georgia and South Carolina landings are combined to avoid confidentiality issues. Source: SEFSC Commercial ACL Dataset (December 2015) for 2010-2014 data; D. Gloeckner (pers. comm., 2016) for 2015 data.

- Mid-Atlantic States include Virginia, Maryland, New York, New Jersey. Landing are also reported from Rhode Island in New England.

Issues for Public Comment

Public comment is sought on several issues being considered for inclusion in the FMP. The issues are intended to focus the public comment and provide the Board with the necessary input to develop an FMP. The public is encouraged to submit comments on the issues listed below as well as other issues that may need to be addressed in the FMP.

ISSUE 1: COMPLEMENTARY MANAGEMENT WITH THE COUNCIL:

Background: The Council currently manages Cobia through the Coastal Migratory Pelagics FMP with consistent bag, trip, and size limits in federal waters. A recent ACL has been employed to protect the resource and minimize the possibility of Cobia being subjected to overfishing or becoming overfished. Complementary management of cobia is intended to increase flexibility and management reaction time, while providing states the ability to more actively and adequately manage the fishery in their respective states. The Commission would adopt the ACLs and biological reference points established by the benchmark Cobia stock assessment developed by the Council.

States have historically mirrored the Council's size and bag limit regulations in state waters. The recreational closure in 2015 resulted in the states of Virginia and North Carolina modifying their regulations in order to reduce the impacts of the June 20, 2016 federal closure. The state of

South Carolina has developed various, additional regulations based on area specific genetic work and concern over the condition of a distinct population segment that occurs in their southern waters.

Management Questions:

- Should the Commission develop a complementary Cobia FMP to the Council's CMP FMP?
- What Council management measures should be required in the Commission plan?
- What states should be included in the management unit?
- Given the upcoming workshop in 2017 that will review the most recent genetic information for cobia, should the FMP provide the flexibility to make changes to management unit and stock units to reflect changes in the science?

ISSUE 2: WHAT ARE THE APPROPRIATE MANAGEMENT OBJECTIVES FOR THE COBIA FMP?

Background: The Commission could consider the following management objectives for the Cobia FMP and is soliciting other ideas or options that could be raised.

A. Provide a management plan that achieves the long-term sustainability of the resource and strives, to the extent practicable, to implement and maintain consistent coastwide measures, while allowing the states the flexibility to implement alternative strategies to accomplish the objectives of the FMP
B. Provide for sustainable recreational and commercial fisheries.
C. Maximize cost effectiveness of current information gathering and prioritize state obligations in order to minimize costs of monitoring and management.
D. Adopt a long-term management regime which minimizes or eliminates the need to make annual changes or modifications to management measures.

Management Questions

What should be the objectives in managing the Cobia fisheries through the Commission?

ISSUE 3: CONSISTENT, STATEWIDE MANAGEMENT OF COBIA:

Background: States currently manage their Cobia fisheries independently. The Commission is considering coordinating the management of Cobia in order to avoid states being disadvantaged based on where they occur along the migratory route, while maintaining harvest at the Council's ACL level.

Management Questions:

- Are consistent, state-specific management measures, coordinated by the Commission, needed for Cobia?
- Are there regional differences in the fishery and/or in the Cobia that need to be considered when implementing management measures?

ISSUE 4: WHAT ARE THE APPROPRIATE COMMERCIAL AND RECREATIONAL MANAGEMENT MEASURES FOR COBIA?

Background: The Commission could consider different management approaches for the commercial and recreational Cobia fishery. Commercial fisheries are managed consistently throughout state and federal jurisdictions, while recreational management measures vary (Table 1).

States have been disadvantaged by geography in the past when they occur on the northern or southern end of a migratory range, often resulting in early closures or no fishery at all. While consistent, coastwide measures may be desirable, they may result in disproportionate impacts to certain states.

Consistent, coastwide measures could potentially include: minimum size restrictions, maximum size restrictions, bag/trip/boat limits, seasons, gear restrictions.

More flexibility to individual states may be available through state-by-state quota shares of the Cobia ACLs. Quota shares can allow limits and seasons to be imposed that maximize the individual state fishery needs, and reduce the impact of events occurring outside state boundaries.

Management Options:

- Should the FMP require a coastwide closure if the Council ACL is met?
- Should the FMP require a coastwide measures (e.g., size and bag limit)?
- Should the FMP develop a suite of options for the allocation of state-specific quota shares, and allow states to adopt unique size, bag, and season measures?
- Should the FMP consider gear restrictions, e.g. circle hooks for all live and dead bait fisheries for Cobia or prohibition on gaffing Cobia?
- Are there other management options that should be considered (e.g., slot limits, spawning season closures, etc.)?
- Should the FMP consider some level of *de Minimis* or threshold landings where Cobia harvest is minimal or episodic?

ISSUE 6: OTHER ISSUES?

The public is asked to comment on any other issues for consideration in the development of the Commission's Draft Fishery Management Plan for Cobia.

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Appendix II
State Fishery and Regulatory Summaries

a. GEORGIA

Regulatory Summary

The Georgia Legislature, the Board of Natural Resources and the Department of Natural Resources, an executive agency, share regulatory responsibilities for wildlife in the state of Georgia with the Board and Department as subordinates. Title 27 (Game and Fish Code) Chapter 4 of the Georgia Statutes contain the laws directly related to the management of wildlife including marine fishes (O.C.G.A. 27-4-10). In 2012, the legislature amended the Game and Fish Code extensively and in doing so granted the Board and Department additional powers to promulgate regulations affecting marine fisheries. Previously the legislature maintained management authority over a select group of marine fishes while allowing the Board and Department authority over others. With the 2012 amendment, the legislature set parameters within which the Board and Department regulate marine fishes. Board of Natural Resources Rule 391-2-4-.04, Saltwater Finfishing, contains regulations for these fishes, including cobia.

Current Cobia Regulations in Georgia (March 2017)
Open year round, two fish per person per day, 33-inch fork length minimum size. (Board Rule 391-2-4-.04 (3)(h))

License Requirements
In Georgia, a license is required to fish recreationally (O.C.G.A. 27-2-1) or commercially (O.C.G.A. 27-4-110). Recreational fishing licenses are required of residents and non-residents fishing in state territorial waters as well as the EEZ. All persons under the age of 16, regardless of residency, and resident seniors who are 65 or older are not required to purchase recreational licenses. Other exemptions exist for active military and individuals with disabilities, check with the GADNR for details. Commercial fishing licenses are required to sell seafood landed in Georgia from Georgia waters or from the EEZ.

Penalties for Violations
Penalties for violations of Georgia laws and regulations are established in Georgia Statutes. Most violations of game and fish laws are misdemeanors though some may be elevated to misdemeanors of high and aggravated nature, Title 27, Chapter 4.

Gear Restrictions
There are few restrictions on recreation gear for the harvest of cobia; only gig and gillnet are prohibited. Commercially, cobia may be harvested using trawl nets, cast nets, seines, and pole-and line, though only pole-and-line are practical. (Board Rule 391-2-4-.12)

Commercial Landings and Data Reporting Requirements

Georgia requires commercial harvesters (O.C.G.A. 27-4-118) and seafood dealers (O.C.G.A. 27-4-136) to submit landings data. Information to be supplied for each trip includes trip date; vessel identification; trip number; species; quantity; units of measure; disposition; value; county or port landed; state landed; dealer identification; unloading date; market; grade; gear; quantity of gear; days at sea; number of crew; fishing time; and number of sets.

Commercial finfish harvest limits are equivalent to recreational limits unless otherwise noted. This means that commercial harvesters may land and sell no more than two cobia per person per day and minimum size and landing restrictions are the same as recreational. (Board Rule 391-2-4-.04)

Other Restrictions

Cobia, as with all marine species except sharks, must be landed with head and fins intact. Transfer between vessels at sea is prohibited. (Board Rule 391-2-4-.04 (7)(a) and (b)).

Management Chronology

1957: Gill nets prohibited in state waters.

1989: The Georgia Legislature established O.C.G.A. 27-4-130.1, Open seasons, creel limits, and minimum size limits for certain finfish species. For cobia a closed season of December 1 through March 15 was established ((a)(3)). Furthermore, the legislature authorized the Board to manage cobia seasons beyond this closed season as well as to set size limits between 20 and 40 inches and to establish a maximum daily creel not to exceed 10 fish ((b)(3)).

1989: The Board of Natural Resources adopted Rule 391-2-4-.04, Saltwater Finfishing. Specifically for cobia, it established a March 16 to November 30th open season ((3)(c)), a two cobia per person daily creel and possession limit ((4)(c)), and a 33-inch fork length minimum size ((5)(c)).

2012: The Georgia Legislature repealed O.C.G.A. 27-4-130.1 and moved those species therein to O.C.G.A. 27-4-10. Cobia ((a)(28)) parameters were set at 0 to 40 inches and five fish. Further, the board was authorized to set size limits, open seasons, creel and possession limits and possession and landing specifications on a state-wide, regional and local basis. Finally, the Commissioner of the Department was empowered to close waters to recreational and commercial fishing by species for a period of up to six months within a calendar year.

2012: The Board of Natural Resources implemented the necessary requirements of the Legislative repeal while keeping cobia management intact, with the exception of resorting species; cobia became letter (h).

2014: The Board of Natural Resources amended 391-2-4-.04, Saltwater Finfishing, for Cobia ((3)(h)) to allow fishing all year, but kept the two cobia per person creel and possession limit

and the 33-inch fork length minimum size limit as well as the landing restrictions of head and fins intact and prohibition on transfer at sea.

b. SOUTH CAROLINA

Description of the Fishery

1.3.1 Commercial Fishery:

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 2000-4300 lbs a year with an annual mean of 3207 lbs a year for 2005-2016 and dollar values ranging from $4,731-$17,795 annually.

1.3.2 Recreational Fishery:
The recreational fishery for cobia in South Carolina accounts for the majority of cobia landings. 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 temps. However, these Fall catches of fish 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.

1.4 Specific comments for habitat – spawning, larval, juvenile, adult
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).

2.1.1. History of Prior Management Actions

South Carolina: see Appendix A for detailed South Carolina cobia regulatory information

3. MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

ASSESSMENT OF ANNUAL RECRUITMENT: None

ASSESSMENT OF SPAWNING STOCK BIOMASS: None

ASSESSMENT OF FISHING MORTALITY TARGET AND MEASUREMENT: None

SUMMARY OF MONITORING PROGRAMS

Catch, Landings, and Effort Information – Comm & Rec (ACCSP data will be collated by ASMFC and SCDNR staff)

Biological Information:

Observer Programs: None in South Carolina

STOCKING PROGRAM: 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 has 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 yearclass 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.

BYCATCH REDUCTION PROGRAM: None in South Carolina

6. MANAGEMENT AND RESEARCH NEEDS

Biological, Social, Economic and Habitat

While the cobia that spawn in South Carolina move offshore and mix with the Atlantic offshore cobia group, their offshore range is not well understood. It has been determined through tag-recapture research that some cobia migrate from waters off of the East coast of Florida to Georgia and South Carolina but it is unclear as to whether that is a large proportion of the population. It has been hypothesized that the majority of the cobia population make an East-West migration as water temperatures increase to 20-21 C in the spring. Current research using acoustically tagged fish should help elucidate the scale of migration of fish tagged in FL, GA, SC and NC. If the Atlantic stock of cobia is a composite of smaller regional groups that are more state specific, current management paradigms could be questioned. Research using

satellite tags with a long battery life may help answer questions of East –West migrations as current telemetry arrays are only coastal in nature. Identifying these basic life history characteristics for cobia in South Carolina would aid in the management of the species both at the state and regional level. Additionally, better socio-economic estimates of the impact of cobia fishing in South Carolina would aid in understanding how regulatory changes may impact the economic benefit cobia fishing has throughout South Carolina.

Regulatory Summary

The South Carolina Legislature and the South Carolina Department of Natural Resources, an executive agency, share regulatory and enforcement responsibilities (respectively) for wildlife in the state of South Carolina. Regulatory authority for fisheries (and cobia) in South Carolina occurs in Title 50 of the South Carolina Code of laws (http://www.scstatehouse.gov/code/title50.php). The South Carolina legislature maintains regulatory authority while the Department of Natural Resources has management authority as well as limited emergency proclamation powers (South Carolina Code of Laws: Section 50-5-20 through 25).

Current Cobia Regulations in South Carolina (July 2017)
Catch limit of two fish per person per day, 33-inch fork length minimum size. (South Carolina code of Laws: Section 50-5: Article 17). State waters south of 032^{o} 31.0 N latitude (Jeremy Inlet, Edisto Island) closed from May 1st to May 31st. Federal waters and other state waters are closed when annual catch limit (ACL) is met.

License Requirements
In South Carolina, a license is required to fish recreationally (South Carolina Code of Laws, Section 50-5) or commercially (South Carolina Code of Laws, Section 50-5). Recreational fishing licenses are required of residents and non-residents fishing in state territorial waters as well as the EEZ. All persons under the age of 16, regardless of residency, and resident seniors who are 65 or older are not required to purchase recreational licenses. Other exemptions exist for active military and individuals with disabilities, check with the SCDNR for details. Commercial fishing licenses are required to sell seafood landed in South Carolina from South Carolina waters or from the EEZ.

Penalties for Violations
Penalties for violations of South Carolina laws and regulations are established in the South Carolina Code of Laws. Most violations of game and fish laws are misdemeanors though some may be elevated to misdemeanors of high and aggravated nature (Section 50-5).

Gear Restrictions
The taking of cobia for both recreational and commercial (federal waters only) purposes can occur with either rod and reel or gig, all other gears are prohibited.

Commercial Landings and Data Reporting Requirements

South Carolina requires commercial harvesters (South Carolina Code of Laws: Section 50-5) and seafood dealers (South Carolina Code of Laws: Section 50-5) to submit landings data. Information to be supplied for each trip includes trip date; vessel identification; trip number; species; quantity; units of measure; disposition; value; county or port landed; state landed; dealer identification; unloading date; market; grade; gear; quantity of gear; days at sea; number of crew; fishing time; and number of sets.

Commercial finfish harvest limits are equivalent to recreational limits unless otherwise noted. This means that commercial harvesters may land and sell no more than two cobia per person per day and minimum size and landing restrictions are the same as recreational. (South Carolina Code of Laws: Section 50-5)

Management Chronology

Prior to 1985: No Regulation

1985: Minimum total length of 37 inches or a fork length of 33 inches. No creel limit.

1987: Minimum fork length of 33 inches, no creel limit

1989: Concurrence with Federal regulations which established a fork length of 33 inches and possession limit of 2 fish per person per day.

1990: South Carolina law (SC Code of Laws: Section 50-5) sets state creel limit set at 2 fish per person per day (matching federal regulations).

1992: South Carolina Marine Recreational Fisheries Conservation Management Act, Saltwater Recreational Fishing License established.

2000: Establishment of Marine Resources Act (Chapter 5 re-write) with Federal regulations declared to be law of the state through Section 50-5-2730 when no specific South Carolina regulations exist.

2012: Cobia designated a Gamefish, commercial capture in South Carolina state waters prohibited.

2016:

- Establishment of the Southern Cobia Management Zone for waters south of 032^{o} 31.0 N latitude (Jeremy Inlet, Edisto Island).
- Creel limit of 1 fish per person per day and no more than 3 per boat for waters south of 032^{o} 31.0 N latitude (Jeremy Inlet, Edisto Island) and no more than 2 fish per person per day in all other South Carolina and Federal waters.

- Closure: Cobia harvest prohibited (catch and release only) from May 1st to May 31st in water south of 032° 31.0 N latitude (Jeremy Island, Edisto Island). Federal and other state waters close when annual catch limit (ACL) is reached.

c. NORTH CAROLINA

Cobia have been harvested in North Carolina since at least the 1950s (CMP FMP 1982). The fishery has primarily consisted of recreationally harvested fish either from the charter boat fishery or from private vessels with modest landings from shore based anglers. Commercial landings of cobia are considered incidental in other fisheries with no targeted fishery to date.

Historically, recreational fisherman targeted cobia from a vessel by anchoring and fishing either dead, or live bait or both 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 harvest of cobia in North Carolina from 1981 – 2016 have ranged from a low of 0 pounds (1983) to a high of 695,842 pounds (2015) with average landings of 165,146 over the 36-year time series (Figure NC1; Table NC1). 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 2005-2015, recreational cobia landings in North Carolina ranged from 66,258 to 630,373 pounds (avg. = 259,883 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 (Table NC2).

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 NC3). Recently, landings have ranged from 19,004 pounds (2007) to 52,6845 pounds (2015), averaging 34,674 pounds over the last ten years (Figure NC2).

The primary commercial gear used to harvest cobia has changed overtime. 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 fork length 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 handlie 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 handline fishery with gill nets being the top gear during most of those years.

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Tables and Figures

Table NC1. Recreational estimates of cobia harvest from North Carolina from 1981 – 2016.

Year	Harvest (pounds)	Year	Harvest (Pounds)
1981	6,484	1999	47,477
1982	66,342	2000	118,349
1983	0	2001	74,756
1984	191,237	2002	209,043
1985	20,985	2003	84,774
1986	178,128	2004	294,042
1987	79,943	2005	239,195
1988	106,749	2006	184,299
1989	115,372	2007	106,213
1990	118,387	2008	82,566
1991	128,709	2009	166,195
1992	120,261	2010	498,581
1993	94,990	2011	145,796
1994	94,394	2012	104,105
1995	144,757	2013	506,067
1996	99,867	2014	247,386
1997	154,862	2015	695,842
1998	125,546	2016	293,544

Table NC2. Average cumulative harvest totals (pounds and percent) of cobia harvested in North Carolina from 2011 – 2015 by bi-weekly time period.

	Private Vessels		Charter Vessels		Shore based		All Modes Combined	
Day Range	Cumulative Pounds	Cumulative Percent	Cumulative Pounds	Cumulative Percent	Cumulative Pounds	Cumulative Percent	Cumulative Pounds	Cumulative Percent
Apr 16-30	3,311	1					3,311	1
May 01-15	35,385	12	4,893	9			40,278	11
May 16-31	164,469	58	30,160	56			194,629	53
Jun 01-15	248,925	87	37,722	70	14,066	47	300,713	81
Jun 16-30	264,361	93	40,936	76	14,801	49	320,098	87
Jul 01-15	272,865	96	44,423	83	19,439	65	336,727	91
Jul 16-31	279,176	98	46,772	87	21,341	71	347,289	94
Aug 01-15	281,084	98	49,840	93	21,341	71	352,265	95
Aug 16-31	282,292	99	51,734	96	28,091	94	362,116	98
Sep 01-15	284,534	100	52,098	97	28,840	96	365,472	99
Sep 16-30	284,534	100	53,737	100	29,969	100	368,239	100
Oct 01-15	285,630	100	53,790	100			369,389	100

Table NC3. Total commercial landings of cobia from North Carolina from 1950 – 2016.

Year	Landings (Pounds)	Year	Landings (Pounds)	Year	Landings (Pounds)
1950	3,700	1973	2,545	1995	35,143
1951	600	1974	1,174	1996	33,404
1952	1,500	1975	2,081	1997	42,063
1953	10,000	1976	2,019	1998	22,197
1955	600	1977	973	1999	15,491
1956	4,400	1978	1,928	2000	28,754
1957	11,400	1979	3,552	2001	24,718
1958	9,800	1980	5,128	2002	21,058
1959	13,200	1981	5,260	2003	21,313
1960	11,600	1982	10,574	2004	20,162
1961	17,900	1983	4,279	2005	17,886
1962	19,800	1984	6,701	2006	20,270
1963	17,000	1985	6,640	2007	19,005
1964	12,000	1986	18,303	2008	22,047
1965	10,100	1987	32,672	2009	31,898
1966	9,500	1988	15,690	2010	43,715
1967	10,200	1989	14,898	2011	19,924
1968	7,300	1990	21,938	2012	31,972
1969	6,300	1991	23,217	2013	35,456
1970	7,300	1992	18,534	2014	41,798
1971	10,600	1993	20,431	2015	52,684
1972	3,219	1994	30,586	2016	48,244

Figure NC1. Recreational harvest of cobia from North Carolina from 1981-2016.

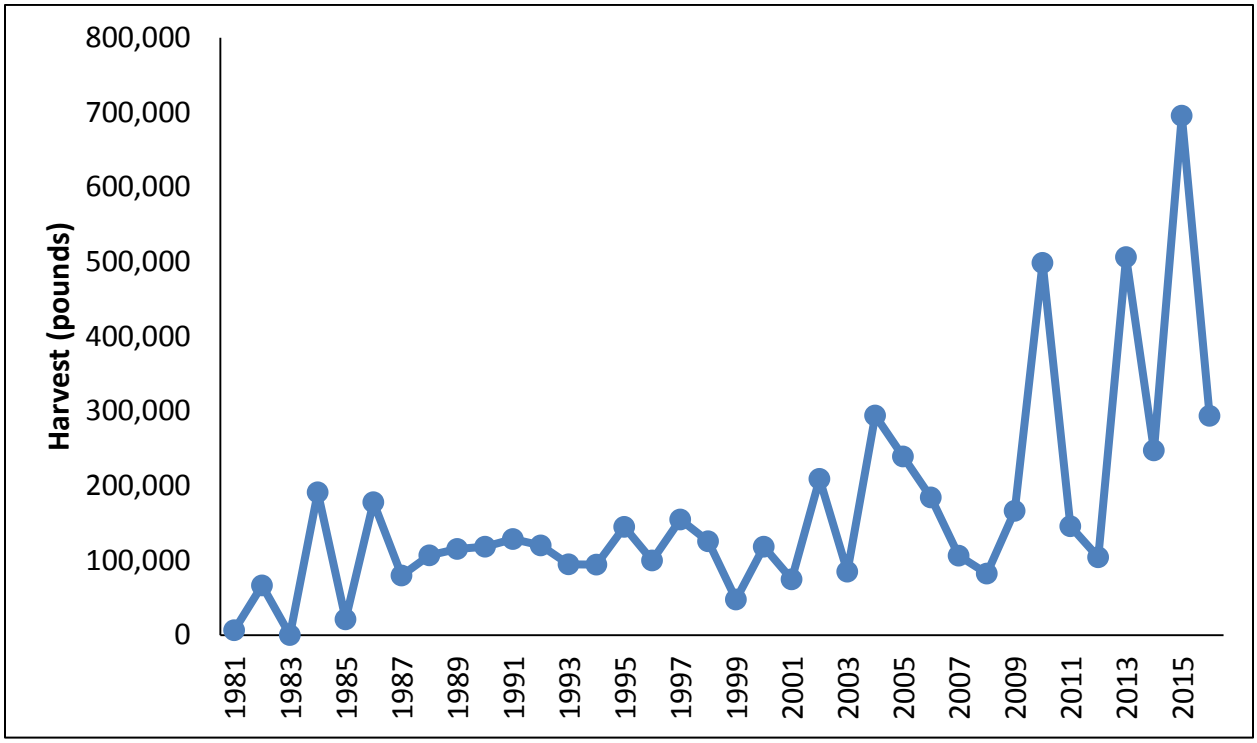
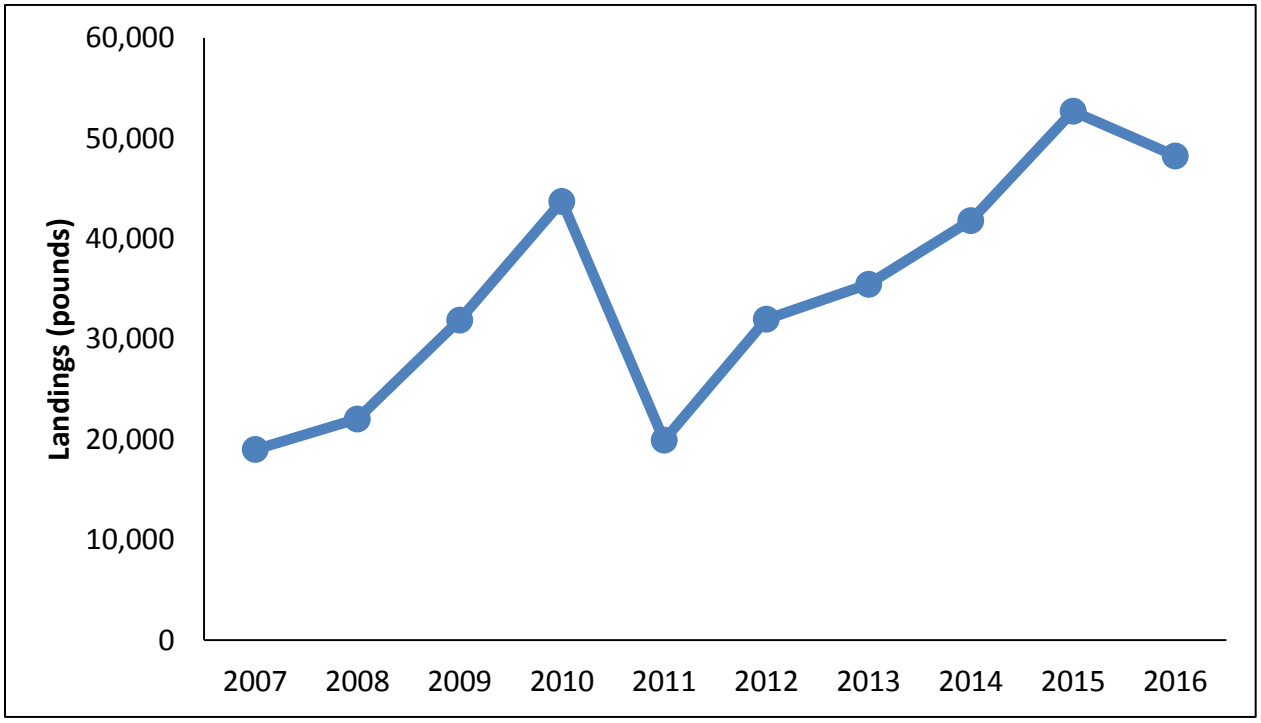


Figure NC2. Total commercial landings of cobia from North Carolina from 2007 – 2016.



IV. VIRGINIA

Description of the Fishery

1.3.1 Commercial Fishery

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; 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 (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.

Table VA1. Commercial cobia landings for Virginia in pounds, 1993-2016. Data before 2004 are more likely to contain duplicates and misclassifications.

Year	Landings (lbs.)
1993	5,982
1994	7,786
1995	21,942
1996	20,871
1997	11,710
1998	13,419
1999	5,808
2000	7,525
2001	10,228
2002	12,735
2003	7,698
2004	5,778
2005	5,719
2006	9,064
2007	6,052

2008	7,084
2009	6,282
2010	8,974
2011	8,755
2012	5,549
2013	10,865
2014	20,971
2015	25,516
2016	31,473

Table VA2. Percentage of commercial cobia landings for Virginia, by gear, 1993-2016

Year	Hook & Line	Pound Net	Other
1993	39	45	16
1994	32	50	18
1995	27	46	28
1996	51	38	10
1997	12	69	19
1998	38	48	13
1999	19	64	17
2000	20	21	60
2001	38	42	20
2002	45	28	27
2003	26	21	53
2004	29	10	61
2005	35	9	56
2006	31	15	54
2007	36	21	43
2008	51	13	37
2009	54	20	26
2010	66	3	31
2011	81	2	17
2012	61	3	36
2013	73	7	20
2014	85	6	9
2015	81	8	12
2016	81	7	11

1.3.2 Recreational Fishery

According to the Marine Recreational Fisheries Statistics Survey (MRFSS) and Marine Recreational Information Program (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 898,542 pounds in 2006 (Table 3). 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.

In addition to a large private recreational industry, there is a small, dedicated group of for-hire participants. Many of these captains/fishing guides utilize cobia towers and prefer sight-casting, although some still chum and fish using live bait.

Table VA3. MRFSS (1981-2003) and MRIP (2004-2016) estimates for recreational cobia landings in Virginia. The value for 2016 is preliminary.

Year	Harvest (pounds)	PSE
1981	4,705	.
1985	103,391	23.9
1986	77,695	39.4
1987	24,956	.
1989	105,819	50.4
1990	86,345	60.7
1991	412,996	49.5
1992	159,502	21.8
1993	93,858	47.8
1994	159,460	36.6
1995	200,794	45.6
1996	152,759	64.1
1997	358,225	59.5

1998	141,566	48.1
1999	101,308	41.8
2000	324,562	58.9
2001	367,003	40.7
2002	75,489	54
2003	37,213	.
2004	35,189	75.5
2005	516,764	53
2006	898,542	49.8
2007	352,071	41.7
2008	116,420	65.1
2009	445,993	31.3
2010	254,414	38.9
2011	107,424	57.8
2012	26,537	74.3
2013	224,442	49.9
2014	173,772	46.5
2015	882,022	48.9
2016	919,992	17.9

1.3.4 Non-Consumptive Factors

There are no known, considerable non-consumptive factors in Virginia's cobia fishery.

1.3.5 Interactions with Other Fisheries, Species, or Users

There are no known, considerable or problematic interactions between Virginia's cobia fishery and other fisheries, species, or users.

1.5 Impacts of the Fishery Management Program

1.5.1 Biological and Environmental Impacts

There are no known, considerable biological and environmental impacts from Virginia's cobia fishery.

1.5.2 Social Impacts

1.5.2.1 Recreational Fishery

Because of declines in the fisheries for other species in Virginia, the recreational cobia fishery has become one of the most important for anglers in recent years. MRIP estimates that this is a predominantly private-recreational fishery, but there is a small group of for-hire captains who fish mostly for cobia during summer months. As a result, any changes to the recreational cobia fishery can have considerable impacts on anglers and captains who have come to identify primarily as cobia anglers.

1.5.2.2 Commercial Fishery

Similar to the situation for the recreational sector, commercial hook-and-line fishermen have come to depend more on cobia as the quality of other fisheries in Virginia has deteriorated. In fact, it has become an actively targeted species for many such commercial fishermen, even though cobia has often been considered a bycatch species in other states and for other gears.

1.5.2.4 Non-consumptive Factors

There are no known, considerable non-consumptive factors in Virginia's cobia fishery.

1.5.3 Economic Impacts

1.5.3.1 Recreational Fishery

According to a National Marine Fisheries Service report, in 2014, angler expenditures generated $350 million in sales in Virginia (Lovell et al. 2016), and cobia has been among the top ten species for estimated recreational harvest since 2012. Additionally, the recreational cobia fishery is considered gear-intensive, as it can entail large, specific bucktail jigs for sight-casting or live bait, usually eels, for the more passive method of fishing. Larger nets can also be expensive for those who do not or cannot gaff cobia. The economic investments for the sight-casting fishery can be even higher, as some elect to have "cobia towers" installed on their boats and tend to travel to different spots more actively, thus using more fuel than those who chum and fish with live bait. However, those using chum and live boat often spend more money on those items, despite perhaps not using as much fuel. Altogether, the recreational cobia fishery can contribute considerable economic benefits to luremakers, marinas, bait shops, and other businesses in the Chesapeake Bay region.

1.5.3.2 Commercial Fishery

The dockside value of Virginia's commercial cobia fishery matches the variability in landings since the early 1990s, with the highest values occurring in the years 2014-2016. There have also been years of relative high value in the mid-1990s and low value in the mid-2000s. All dockside values are static and thus not adjusted for inflation.

Table VA4. Dockside values, not adjusted for inflation, of Virginia's commercial cobia fishery, 1993-2016.

Year	Landings (pounds)	Value (dollars)
1993	5,982	$9,602
1994	7,786	$4,184
1995	21,942	$35,221
1996	20,871	$26,235
1997	11,710	$12,506
1998	13,419	$13,626
1999	5,808	$10,373
2000	7,525	$11,883
2001	10,228	$18,898
2002	12,735	$23,104
2003	7,698	$14,706
2004	5,778	$10,890
2005	5,719	$7,979
2006	9,064	$11,687
2007	6,052	$10,009
2008	7,084	$13,275
2009	6,282	$12,061
2010	8,974	$17,469
2011	8,755	$17,968
2012	5,549	$11,584

2013	10,865	$28,136
2014	20,971	$55,838
2015	25,516	$70,764
2016	31,473	$84,032

1.5.3.4 Non-Consumptive Factors

There are no known, considerable non-consumptive factors for Virginia's cobia fishery that would be impacted economically.

1.5.4 Other Resource Management Efforts

1.5.4.2 Bycatch

There is no known, considerable bycatch in Virginia's cobia fishery.

3.0 MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

3.4 Summary of Monitoring Programs

3.4.1 Catch and Landings Information

In 2017, the Virginia Marine Resources Commission instituted mandatory reporting for the recreational cobia fishery. Required data include date of trip, number of anglers, and number of cobia caught and released (even if zero). Permits are also used to track the number of participants in the fishery. As this program develops, it could have potential for usage in stock assessments (e.g., as an index of abundance) or in management decisions (evaluating trends in harvest).

3.4.2 Biological Information

In June 2007, the VMRC began the Marine Sportfish Collection Project (MSCP). This project places freezers at various high traffic weigh stations, where recreational anglers can voluntarily leave legal size whole fish or carcasses. These fish are used to collect biological information such as length, age, and sex. Cobia is one such species accepted for processing and thus has a relatively large dataset for biological information. From 2007 through 2015, the VMRC received a total of 1,265 cobia donations. Before 2007, staff collected cobia carcasses sporadically from various fishing tournaments, totaling 376 samples from 1999 through 2006. In total, there are 1,687 samples of age data, with an average age of 5.3 years.

The Virginia Game Fish Tagging Program (VGFTP) began in 1995 and is jointly operated by the VMRC and the Virginia Institute of Marine Science (VIMS). It utilizes trained volunteers who

target and tag several primary species depending on data needs for the current year. From 1995 through 2015, there were 2,865 tags reported for cobia, with the most tags reported in 2012 (n=457, Musick and Gillingham 2016). During that same time period, 298 recaptures were reported, with 66 of them coming in 2015.

3.4.3 Social Information

There are no social impact programs monitoring Virginia's cobia fishery.

3.4.4 Economic Information

There are no economic programs monitoring Virginia's cobia fishery.

3.4.5 Observer Programs

There are no observer programs monitoring Virginia's cobia fishery.

3.5 Stocking Program *(if appropriate)*

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 coming in those first two years. Recapture information indicated habitats ranging 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 it did not due to the small number of releases.

3.6 Bycatch Reduction Program

There is no bycatch reduction program in place for Virginia's cobia fishery.

3.7 Habitat Program

There is no habitat program for cobia in Virginia.

References

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Appendix III

Cobia Management Options from the Working Group

for South Atlantic Board Review

The Atlantic States Marine Fisheries Commission's (ASMFC) Cobia Plan Development Team and Working Group have met on several occasions by conference call since the February 2017 South Atlantic Board (Board) meeting. The draft FMP should be completed soon and be ready for consideration of approval at the August meeting for public meetings in the early fall.

The purpose of this review is to provide the information discussed by the Working Group and to solicit Board recommendations for the various management options to be considered in the FMP for public review.

Background:

Based on data through 2011, the SEDAR 28 (2013) stock assessment concluded that Atlantic cobia and Gulf cobia were not overfished (SSB>MSST) and overfishing was not occurring (F>MFMT). SEDAR 28 also incorporated genetic and tagging data, and the stock boundary was set at the Georgia/Florida line. The Councils modified the stock boundary and updated the annual catch limits for Atlantic Migratory Group (GA-NY) cobia and Florida east coast cobia through CMP Amendment 20B. The changes were implemented in March 2015.

In 2015 and 2016, Atlantic cobia landings exceeded the ACL and the overfishing level (OFL) recommended by the SSC after SEDAR 28. As defined by the Council, landings > OFL indicate that overfishing occurred in 2015 and 2016. NMFS reduced the recreational season length of Atlantic cobia in 2016 and 2017.

As a result of the overages of the recreational ACL, the Atlantic States Marine Fisheries Commission was asked to consider complementary management of the AMG cobia stock. The ASMFC directed the South Atlantic Board to develop a complementary plan with the basic objectives to maintain catches within the Council prescribed catch limits and to provide states with the flexibility to provide maximum opportunities for their respective stakeholders involved in the fishery.

Summary of the Fishery:

Recreational landings and commercial landings and value are presented in Tables 1 and 2. Landings north of Virginia are sporadic and will be included in the FMP. For purposes of this discussion, we focused on the 4 primary states that land cobia.

Table 1. Recreational landings of Atlantic Cobia from 2005-2015 in pounds. Data sources: SEFSC

Year	VA	NC	SC	GA	Total
2005	577,284	322,272	5,793	3,358	908,707
2006	733,740	104,259	101,018	4,824	943,841
2007	322,887	90,197	268,677	64,708	746,469
2008	167,949	66,258	50,108	257,690	542,006
2009	552,995	123,061	76,229	3,997	756,282
2010	232,987	561,486	65,688	79,855	940,015
2011	136,859	121,689	3,565	90,375	352,488
2012	36,409	68,657	224,365	105,193	434,623
2013	354,463	492,969	19,130	29,224	895,786
2014	214,427	277,489	31,927	20,642	544,485
2015	718,647	630,373	123,952	67,804	1,565,186

* There are no MRIP-estimated recreational landings of AMG Cobia in states north of Virginia.

Table 2. Commercial Cobia landings (pounds) and revenues (2014 dollars) by state/area, 2010-2015.

Year	GA/SC	NC	Mid-Atlantic*	Total
		Commercial Landing in Pounds		
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	71,790
Average	3,867	37,559	14,732	56,158
		Dockside Revenues (2014 dollars)		
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

Georgia and South Carolina landings are combined to avoid confidentiality issues. Source: SEFSC Commercial ACL Dataset (December 2015) for 2010-2014 data; D. Gloeckner (pers. comm., 2016) for 2015 data. Mid-Atlantic States include Virginia, Maryland, New York, New Jersey. Landing are also reported from Rhode Island in New England.

BOARD DISCUSSION ISSUES:

Size and Bag Limits:

The current Council plan proposes a 1 fish bag limit and a 36" FL minimum size limit for federal waters. States appear prepared to complement these measures in state waters if they haven't already. The Working Group suggests that the ASMFC FMP complement these actions and not provide opportunities to adjust at this time.

State by State Allocations:

Arguably, one method to provide states with the greatest flexibility in managing their recreational cobia fishery is to provide a specific allocation or percentage of the current Annual Catch Limit (ACL) to each state. The Working Group has spent significant time reviewing the AMG cobia landings data, recognizing that cobia are a pulse fishery that are considered a rare event species in the MRIP program.

The SAFMC used the SEFSC data for the SEDAR 28 Cobia stock assessment and those data have been certified as best available data by the Council's Science and Statistics Committee (SSC). The Board directed staff to use the SEFSC data in developing this plan, however, understanding and recognizing the differences in the two methods is important moving forward.

Concerns have been raised regarding the differences between the recreational landings data estimated from MRIP data from the Office of Science and Technology (OST MRIP) and landings generated by the Southeast Fishery Science Center (SEFSC). The primary difference in the methodologies center around average weights of the fish used to expand numbers harvested to pounds landed by state. The OST MRIP estimates are based on actual fish observed and may be estimated based on one fish, while SEFSC estimates require a sample of at least 30 fish to generate an average (Table 3).

States without a sample size of 30 for a specific year may use an average over several years (e.g., Virginia) or lumped with another state to meet the required sample size of 30 fish (e.g., SC and GA).

Table 3. Comparison of OST and SEFSC average weights for Virginia, North Carolina, South Carolina, and Georgia (2010-2015) (source: SEFSC; MRIP website).

State-Year	Cobia #	OST Landings	OST Weight (lbs.)	SEFSC Landings	SEFSC Weight (lbs.)
Va-2010	7,056	254,414	36.1	239,153	33.9
Va-2011	4,119	107,424	26.1	139,622	33.9
Va-2012	1,051	26,537	25.2	35,614	33.9
Va-2013	10,735	224,442	20.9	363,865	33.9
Va-2014	6,490	173,772	26.8	219,993	33.9
Va-2015	21,173	882,022	41.7	717,676	33.9
NC-2010	15,125	498,581	33.0	558,984	37.0
NC-2011	4,478	145,796	32.6	119,347	26.7
NC-2012	2,050	104,106	50.8	66,302	32.3
NC-2013	19,224	506,067	26.3	491,527	25.6
NC-2014	9,804	247,386	25.2	275,777	28.1
NC-2015	16,166	695,842	43.0	642,213	39.7
SC-2010	2,102	67,946	32.3	61,424	29.2
SC-2011	0	0	0	0	0

SC-2012	6,835	201,223	29.4	221,024	32.3
SC-2013	634	9,873	15.6	15,146	23.9
SC-2014	1,137	26,439	23.3	28,377	25.0
SC-2015	4,182	124,933	29.9	124,316	29.7
GA-2010	2,637	89,840	34.1	77,064	29.2
GA-2011	3,304	74,651	22.6	88,049	26.6
GA-2012	3,185	97,766	30.7	102,996	32.3
GA-2013	1,189	25,183	21.2	28,427	23.9
GA-2014	792	19,079	24.1	19,768	25.0
GA-2015	2,282	26,499	11.6	67,851	29.7

Staff and the Working Group expressed concerns regarding the average weights as being high. In some years, the average size exceeds the weight required to receive a citation for an outstanding catch.

Staff provided the Working Group with multiple views of the landings from both the OST MRIP and SEFSC that included head boat landings, various time series (3, 5, and 10 years), and an option that considered 50% of the 10 year time series to account for historical landings and 50% of the 5 year average to account for the more recent time series (Tables 4-7).

Table 4. Average AMG Cobia landings and percentage by state for the 3 yr., 5 yr., 10 yr., and 50% 10 yr. + 5 yr. averages (**2005-2014**) (Data source: SEFSC w/ headboat).

State	3yr/%	5yr/%	10yr/%	5yr/10yr%
Georgia	51,051 lbs. 8.1%	63,873 lbs. 10.1%	64,391 lbs. 9.0%	64,132 lbs. 9.5%
South Carolina	91,174 lbs. 14.5%	67,751 lbs. 10.7%	83,054 lbs. 11.7%	75,402 lbs. 11.2%
North Carolina	279,163 lbs. 44.5%	303,329 lbs. 47.8%	221,266 lbs. 31.1%	262,297 lbs. 39.0%
Virginia	206,491 lbs. 32.9%	199,649 lbs. 31.5%	342,608 lbs. 48.1%	271,128 lbs. 40.3%
Total	627,879 lbs. 100%	634,602 lbs. 100%	711,319 lbs. 100%	672,959 lbs. 100%

Table 5. Average AMG Cobia landings and percentage by state for the 3 yr., 5 yr., 10 yr., and 50% 10 yr. + 5 yr. averages (**2006-2015**). (Data source: SEFSC w/ headboat).

State	3yr/%	5yr/%	10yr/%	5yr/10yr%
Georgia	39,474 lbs. 4.0%	61,993lbs. 8.2%	71,100 lbs. 9.2%	66,546 lbs. 8.7%
South Carolina	58,845 lbs. 5.9%	80,088 lbs. 10.6%	95,212 lbs. 12.3%	87,650 lbs. 11.4%
North Carolina	471,250 lbs. 47.0%	320,015 lbs. 42.2%	253,529 lbs. 32.7.0%	286,772 lbs. 37.4%
Virginia	433,845 lbs. 43.2%	295,354 lbs. 39.0%	354,811 lbs. 45.8%	325,082 lbs. 42.4%
Total	1,003,414 lbs. 100%	757,450 lbs. 100%	774,652 lbs. 100%.	766,050 lbs. 100%

Table 6. Average AMG Cobia landings and percentage by state for the 3 yr., 5 yr., 10 yr., and 50% 10 yr. + 5 yr. averages (**2005-2014**) with headboat landings (Data source: OST MRIP website).

State	3yr/%	5yr/%	10yr/%	5yr/10yr%
Georgia	47,997 lbs. 8.6%	61,916 lbs. 10.6%	68,249 lbs. 10.0%	65,082 lbs. 10.3%
South Carolina	82,170 lbs. 14.7%	63,653 lbs. 10.9%	76,263 lbs. 11.1%	69,958 lbs. 11.0%
North Carolina	286,507 lbs. 51.3%	300,944 lbs. 51.5%	228,728 lbs. 33.4%	264,836 lbs. 41.7%
Virginia	141,584 lbs. 25.4%	157,318 lbs. 27.0%	311,639 lbs. 45.5%	234,478 lbs. 37.0%
Total	558,258 lbs. 100%	583,831lbs. 100%	684,879 lbs. 100%.	634,354 lbs. 100%

Table 7. Average AMG Cobia landings and percentage by state for the 3 yr., 5 yr., 10 yr., and 50% 10 yr. + 5 yr. averages (**2006-2015**) with headboat landings (Data source: OST MRIP website).

State	3yr/%	5yr/%	10yr/%	5yr/10yr%
Georgia	24,379 lbs. 2.5%	49,211 lbs. 6.6%	70,868 lbs. 9.1%	60,039 lbs. 7.8%
South Carolina	56,647 lbs. 5.7%	74,809 lbs. 10.0%	88,334 lbs. 11.3%	81,571lbs. 10.7%
North Carolina	483,890 lbs. 48.8%	340,418 lbs. 45.5%	274,266 lbs. 35.1%	307,342 lbs. 40.2%
Virginia	426,745 lbs. 43.0%	282,839 lbs. 37.8%	348,164 lbs. 44.5%	315,501 lbs. 41.3%
Total	991,661 lbs. 100%	747,277 lbs. 100%	781,632 lbs. 100%.	764,453 lbs. 100%

Excluded from all these analyses are landings data from north of Virginia. Using SEFSC data, those landings are:

2005 – Delaware – 1,480 lbs.

2006 and 2012– New Jersey – 27,863 lbs., 69,655 lbs.

2010 and 2016 – Maryland – 1,287 lbs., 1,762 lbs.

Average landings and percentages by state vary based on the time series selected and the landings estimate used. As a result of concerns raised over the variability in average weights throughout the management unit and the observation that total numbers of fish harvested were consistent between methods, we examined the landings by number of fish to eliminate any bias or concern relative to average weights. While any time series of landings may be selected, the time series of 2005-2014 using 50% of the 10 year average and 50% of the 5 year average appears to smooth out the variability in the results from other time series, and was used in this simple comparison (Table 8).

Table 8. Average AMG Cobia landings and percentage by state 50% 10 yr. + 5 yr. averages compared to numbers of fish harvested (**2005-2014**) with share of ACL (620,000 pounds) for both methods (Data source: SEFSC w/ headboat).

State	5yr/10yr-lbs.	ACL	5yr/10yr-#	ACL
Georgia	64,132 lbs. 9.5%	58,900 lbs.	n = 2,221 10.2%	63,240 lbs.
South Carolina	75,402 lbs. 11.2%	69,444 lbs.	n = 2,521 11.6%	71,920 lbs.
North Carolina	262,297 lbs. 39.0%	241,800 lbs.	n = 8,932 41.2%	255,440 lbs.
Virginia	271,128 lbs. 40.3%	249,860 lbs.	n = 7,999 36.9%	228,780 lbs.
Total	672,959 lbs. 100%		n = 21,673 100%	

Based on the review of the Working Group, there was clear interest in considering numbers of fish to examine allocations among states if that is a direction of the Board.

Board Decisions:

Time series options (years used and number of years)

Use average weights (SEFSC or MRIP) or numbers of fish

Seasonal Options:

Data are sparse for analysis of seasonal options outside of wave data and are variable based on the years chosen for review (Figure 1). Peak landings occur during wave 3 from Georgia through North Carolina (May-June) with limited landings after wave 3. Landing vary for Virginia with peaks occurring during waves 3 and 4 (July-August) and landings occurring as late as wave 5.

Figure 2 provides coastwide landings for the most recent years (2013-2015) and indicates an extension of availability later into the fall (wave 5).

The SAFMC examined the potential for changing the start date to the fishing year to May 1 using the most recent landings information (2013-2015). This option was removed from the framework document because fishing year changes can only be done through an amendment. Based on their analysis, and recognizing that landings of AMG cobia are minimal prior to May 1, Table 5 indicates that season lengths could be extended by 3-4 days by delaying the coastwide opening until May 1.

Based on review, coastwide, seasonal options are limited. A January 1 start date for the fishing year and vessel limits that range from 1 to 6 fish, result in seasonal closures that range from July 15 – August 22. Changing the fishing year to begin May 1, provides coastwide seasons that close from July 19 – August 25.

State specific impacts of a coastwide seasonal closure vary. Based on the most recent years (2013-2015), the majority of the catch is taken during waves 2 and 3 in Georgia (80%), South Carolina (82%), and North Carolina (90%), whereas 70% of the catch is taken during waves 4 and 5 in Virginia.

While Virginia had no wave 2 landings reported from 2006-2015, wave 2 accounted for nearly 100% of the landings in Georgia, and 16-26% of the landings in North Carolina and South Carolina respectively, in some years.

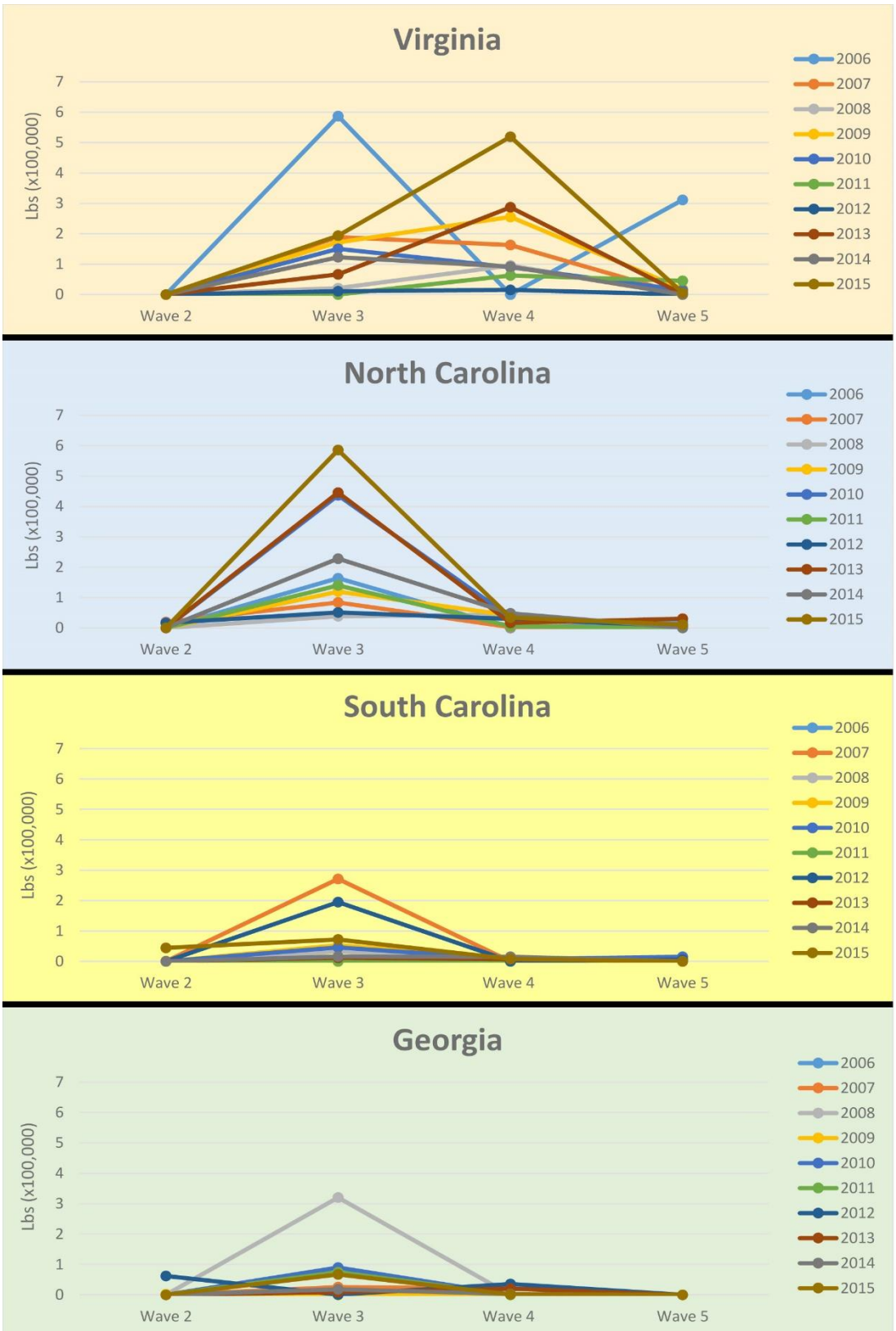


Figure 1. Recreational catch of Atlantic cobia by wave from 2006-2015 for Waves 2-5. Data sources: SERO and MRIP database—Framework 4.

Table 9. Framework 4 proposed but omitted Table 2.2.1. Estimated dates when Atlantic cobia recreational landings would meet the recreational ACL under the range of minimum size limits, bag limits, and vessel limits, if the fishing year is changed to May 1-April 30. Highlighted cells are the current Preferred Sub-alternatives in Action 1.

	Minimum Size Limit (inches fork length)								
	33	34	35	36	37	38	39	45	50
Bag Limit									
1 per Person	5-Jul	8-Jul	13-Jul	19-Jul	26-Jul	3-Aug	8-Aug	None	None
2 per Person	2-Jul	6-Jul	10-Jul	16-Jul	23-Jul	31-Jul	4-Aug	None	None
Vessel Limit									
1 per Vessel	2-Aug	7-Aug	14-Aug	25-Aug	20-Mar	None	None	None	None
2 per Vessel	14-Jul	18-Jul	23-Jul	31-Jul	8-Aug	18-Aug	24-Aug	None	None
3 per Vessel	8-Jul	12-Jul	16-Jul	23-Jul	30-Jul	8-Aug	13-Aug	None	None
4 per Vessel	6-Jul	9-Jul	14-Jul	21-Jul	27-Jul	5-Aug	10-Aug	None	None
5 per Vessel	5-Jul	8-Jul	13-Jul	20-Jul	26-Jul	4-Aug	9-Aug	None	None
6 per Vessel	3-Jul	7-Jul	11-Jul	18-Jul	24-Jul	1-Aug	6-Aug	None	None

Note: As with **Table 2.1.1** this analysis assumed consistent regulations in state and federal waters, and estimated the dates based on recreational landings from 2013-2015.

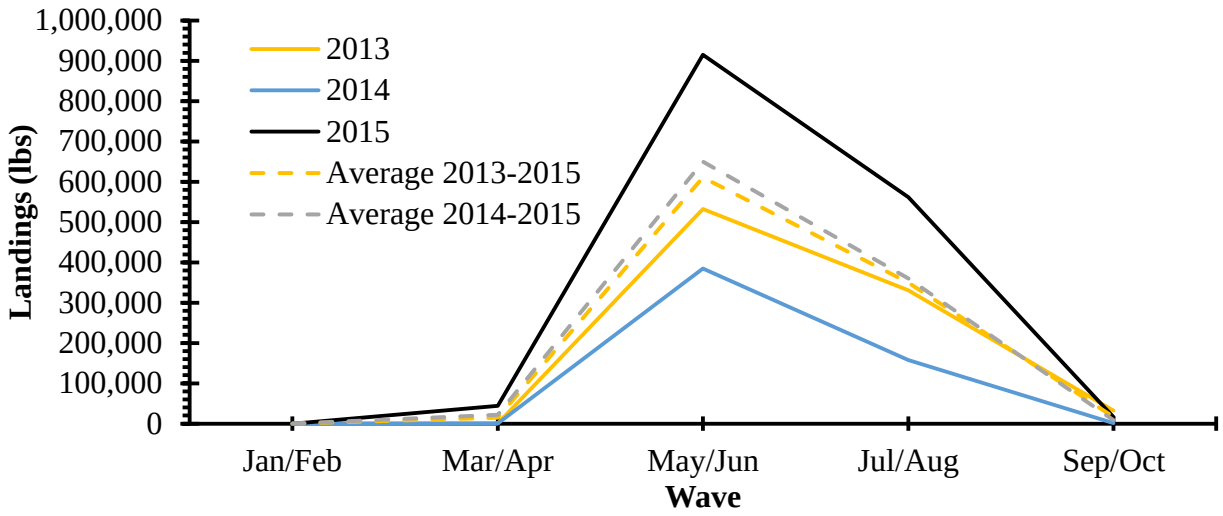


Figure 2. Framework Figure 2.2.1. Atlantic recreational landings for January-October of 2013, 2014, 2015, average 2013-2015 landings, and average 2014-2015 landings by two-month wave. The landings for 2015 are preliminary. Source: SEFSC Recreational ACL Dataset

A detailed analysis of state specific landings information was conducted by C. Wilson with NC DMF. The analysis was provided to members of the Working Group and the PDT. Summary findings illustrate the variability in the impacts of seasons, size limits, bag and vessel limits on the individual states. These data tend to indicate that mandated seasonal options remove flexibility from the states and that the data are available, though confidence varies, for states to modify seasonal opening based on the interests of their unique situation.

A summary table provides some of the general information from the state specific analysis (Table 10). The analysis also provides state specific information at the month level as opposed to wave. The analyst does not recommend reducing time periods less than 1 month due to data limitations.

Table 10. Cobia Harvest reductions by state from a 36" FL size limit (36"), a 36" FL size limit with a 1 fish bag limit and season open May 1 (May 1), a 36" FL size limit with a 1 fish bag limit and season open June 1 (June 1)

State	36"	May 1	June 1
Georgia	28%	37%	60%
SC	11%	58%	66%
NC	5%	49%	73%
VA	11%	44%	48%
Total	**11%**	**47%**	**61%**

In summary, variability in catch rates over the past decade indicate that landings are increasing and have recently exceeded the ACL by a wide margin. A consistent size limit of 36" FL in state and federal waters along with a 1 fish bag limit is unlikely to constrain catches if recent years harvest are an indication of future success. Consequently, vessel limits, season start dates, and season lengths are the primary mechanisms we examined to further constrain landings to achieve the FMP objective of maintaining catches within the ACL.

Board Decisions/Discussion:

Are specific seasons options wanted for the FMP or are they best left to the states to develop and have approved by the TC and Board?

If specific seasons are needed in the FMP, should, they be based on a state specific allocation? What would be another viable option to ensure equity and accountability?

Regardless of the allocation scheme used, if at all, concern has been raised over tracking the ACL on a state or coastwide basis in real time using MRIP. While all states may have port agents to observe catches, effort data are unavailable until after waves are complete and could result in impacts despite best efforts to control.

Should the plan attempt to develop alternative quota monitoring methods that use a multiple of years to provide states to adjust after year 1 or an overage if landings are too high or too low based on initial measures? These efforts would have to be developed with NMFS and the Council.

The PDT expressed some interest in spawning season closures, suggesting that an early season closure that extended through May would provide an increase in population egg production. The state of South Carolina has implemented a May closure in their southern management unit to reduce harvest and facilitate spawning.

Based on current state actions that implement 3-4 fish vessel limits, we are unclear as to how those limits may constrain catches to the level required for NMFS to re-open the EEZ to harvest. Providing access to the cobia resource in federal waters is a critical need for most states. Prior to final approval of the draft for public hearings, we need to discuss how we might complement federal actions in state waters or vice versa. Based on recent performance in the fishery, vessel limits greater than 2 may impact the fishery in the EEZ. However, later start dates or in season closures at the state level may provide NMFS with the assurance they need to minimize the chances of exceeding the ACL.

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Mark Belton, Secretary
Joanne Throwe, Deputy Secretary

September 6, 2017

Maryland proposal to initiate addendum to reopen historic commercial black drum fishery.

Introduction:
The state of Maryland is seeking to reopen its historic commercial black drum fishery at levels commensurate with other South Atlantic States. We welcome review of the following proposal by the Black Drum Technical Committee and would hope to discuss initiating an Addendum at the annual meeting of the Commission in October 2017.

Background:
During the late 1990's, the state of Maryland began a tag and release program for Black Drum in order to gather critical life history, migration and recreational harvest data for the species. This program compensated commercial watermen for black drum encountered in pound nets. The watermen were prohibited from taking the fish, but were paid for fish that were tagged and released from their nets. In 1998, the compensation/tagging program was eliminated but commercial harvest was not reinstated. Commercial watermen would periodically request reinstatement of harvest, but this never became a priority issue and commercial harvest was not remained closed. Then in 2013, the fishery was formally and permanently closed when ASMFC approved the Interstate Fishery Management Plan for Black Drum in 2013, which states in section 4.2: "*In order to avoid the establishment of any new commercial fisheries for black drum, all states shall maintain their current level of restrictions, i.e. no relaxation of current commercial fisheries management measures.*" As a result of this language in the plan, the Maryland Chesapeake Bay was frozen in a commercial moratorium, which is the most conservative management for black drum among the South Atlantic states.

Maryland Proposal:
With findings of a positive stock status and to honor requests from the commercial fishing community, Maryland proposes to initiate an Addendum that would allow modest commercial harvest of black drum within Maryland.

We are proposing to reopen the Chesapeake Bay commercial black drum fishery with a ten fish per vessel per day harvest limit and a 28 inch minimum total length size limit. This equates to a daily trip limit of approximately 500 pounds.

Vessel Limit Rationale: Maryland DNR conducted a tagging study from 1995-1997 in which 457 black drum were weighed. Mean weight for fish over 28 inches was 46.6 pounds, indicating a ten fish limit would be similar to a 500 pound per day limit. Ninety-one percent of the weights were taken in 1997, which appeared to be a year in which mean length may have been higher than normal. Maryland DNR has also conducted a pound net survey from 1993 to the present, which encounters low numbers of black drum. Mean length from the late 1990's tagging study was 1104 mm total length (n=900) compared to a pound net survey mean length of 883 mm total length from 1993-2016 (n=131), indicating greater variability in lengths than the tagging study. This indicates that 10 fish will often weigh less than 500 pounds.

Size Limit Rationale: The 28 inch total length size limit represents the length of 100% maturity, would ensure no increase in mortality on immature black drum. Tagging study and pound net survey length frequencies indicate 3% and 37% of black drum, respectively, would have been discarded if a 28 inch size limit had been in place. Again the broader time period of the pound net survey takes more inter annual variability into account, making it likely, that in the long term, the higher discard rate is more accurate.

Both North Carolina and Florida currently have 500 pound per day commercial limits, and Maryland's proposal would allow for a Maryland harvest that is comparable to harvest regulations along the Atlantic Coast (Table 1).

Estimated Impacts of Maryland's Proposal: The objective of this request is to reinstate a historical fishery which would have little impact on the coastal harvest. From 1973-1997, the time period for which landings by area are available in Maryland, Chesapeake Bay commercial black drum harvest ranged from zero to 41,552 pounds, with an annual average harvest of 11,475 pounds. The majority of these landings were taken in pound nets. There were no commercial harvest restrictions from 1973-1993, and a 16 inch minimum total length size limit and 30,000 pound annual Chesapeake Bay commercial quota from 1994-1997. Compared to the 2015 total coast-wide harvest 1,486,327 pounds, the addition of Maryland's historical average or maximum Chesapeake Bay harvest would lead to increases in total harvest of 0.8% and 2.8% respectively. Our proposal is more restrictive than the regulations that were in place from 1973 to 1997, so impacts of Maryland harvest to the coast-wide total would likely be on the low end of this range.

The 2015 coastwide benchmark stock assessment (data through 2012) indicated the stock was not overfished and overfishing was not occurring. The current total harvest target is 2.12 million pounds and the threshold is 4.12 million pounds, with a 2015 total harvest of 1.49 million pounds. Current fishing levels are 30% below the target indicating additional landings from reopening the Maryland Chesapeake Bay commercial harvest, at a more restricted level, would be unlikely to exceed the target and very unlikely to lead to overfishing.

[1]**Table 1. Black drum regulations for 2015.** The states of New Jersey through Florida are required to meet the requirements in the FMP. All size limits are total length.

State	Recreational		Commercial			Notes
	Size limit	Bag limit	Size limit	Trip Limit	Annual Quota	
ME - NY	-	-	-	-	-	
NJ	16" min	3/person/day	16" min	10,000 lbs	65,000 lbs	
DE	16" min	3/person/day	16" min	10,000 lbs	65,000 lbs	
MD	16" min	1/person/day 6/vessel (Bay)	16" min		1,500 lbs Atlantic Coast	Chesapeake Bay closed to commercial harvest
VA	16" min	1/person/day	16" min	1/person/day *	120,000 lbs	*without Black Drum Harvesting and Selling Permit
NC	14" min - 25" max; 1 fish > 25" may be	10/person/da y	14" min - 25" max	500 lbs		

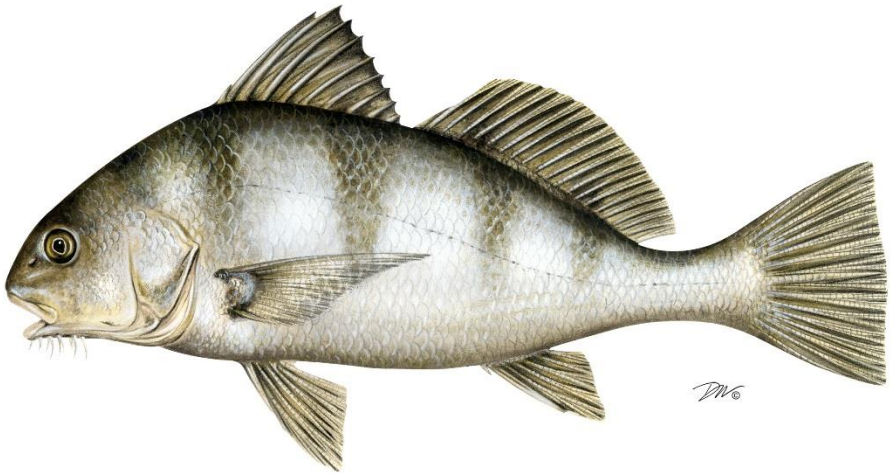
[1] Table is taken from: 2016 Review of the Atlantic States Marine Fisheries Commission Management Plan for Black Drum (*Pogonias cromis*), 2014 and 2015 Fishing Years. Located online at: http://www.asmfc.org/species/black-drum

SC	14” min - 27” max	5/person/day	14” min - 27” max	5/person/day		Commercial fishery primarily bycatch
GA	14” min	15/person/da y	14” min	15/person/day		
FL	14” min - 24” max; 1 fish >24” may be	5/person/day	14” min - 24” max	500 lbs/day		

2017 REVIEW OF THE ATLANTIC STATES MARINE FISHERIES COMMISSION FISHERY MANAGEMENT PLAN FOR

BLACK DRUM (*Pogonias cromis*)

2016 FISHING YEAR



The Black Drum Plan Review Team

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I. Status of the Fishery Management Plan

Date of FMP Approval:	Original FMP – June 2013
Management Areas:	The entire Atlantic coast distribution of the resource from New Jersey through the east coast of Florida
Active Boards/Committees:	South Atlantic State/Federal Fisheries Management Board; Black Drum Technical Committee, Stock Assessment Subcommittee, Plan Review Team; South Atlantic Species Advisory Panel

The Atlantic States Marine Fisheries Commission (ASMFC) adopted an interstate Fishery Management Plan (FMP) for Black Drum in 2013. Prior to the FMP, management was state-specific, from no regulations in North Carolina to various combinations of size limits, possession limits, commercial trip limits, and/or annual commercial quotas from New Jersey to Florida. The Maryland portion of the Chesapeake Bay was closed to commercial fishing in 1998.

The FMP requires all states with a declared interest in the species to have established a maximum possession limit and minimum size limit of at least 12 inches by January 1, 2014, and to have increased the minimum size limit to at least 14 inches by January 1, 2016. The FMP also includes a management framework to adaptively respond to future concerns or changes in the fishery or population.

There are four plan objectives:

- Provide a flexible management system to address future changes in resource abundance, scientific information, and fishing patterns among user groups or area.
- Promote cooperative collection of biological, economic, and sociological data required to effectively monitor and assess the status of the black drum resource and evaluate management efforts.
- Manage the black drum fishery to protect both young individuals and established breeding stock.
- Develop research priorities that will further refine the black drum management program to maximize the biological, social, and economic benefits derived from the black drum population.

The management unit for black drum under the 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).

II. Status of the Stocks

In the 2015 Black Drum Benchmark Stock Assessment, the Stock Assessment Subcommittee (SAS) selected the Depletion-Based Stock Reduction Analysis (DB-SRA; Dick and McCall 2011) as the preferred method for estimating catch reference points. The SAS considered the Depletion-

Corrected Average Catch (DCAC; McCall 2009) analysis, but ultimately rejected this method. DCAC did not incorporate removals into a population dynamics process, and uncertainty existed over how changes in the exploitation rate time series may impact the sustainable yield relative to the current stock condition.

Based on the DB-SRA results, black drum life history, indices of abundance, and history of exploitation, the black drum stock is not overfished and not experiencing overfishing (ASMFC 2015). Median biomass exhibited slow and steady decline from 135.2 million pounds in 1900 to 90.78 million pounds in 2012, though the median biomass estimate in 2012 is still well above the necessary level to produce maximum sustainable yield (B_{MSY}; 47.26 million pounds). The median maximum sustainable yield (MSY) estimate is 2.12 million pounds and provides an annual catch target that can be used to sustainably manage the fishery. The median overfishing limit (OFL) estimate is 4.12 million pounds and provides a catch threshold that indicates overfishing when exceeded. The OFL is the maximum exploitation rate at the current biomass that does not lead to overfishing.

III. Status of the Fishery

The following discussion utilizes results from direct queries of the Marine Recreational Information Program (MRIP) data through their website. Adjustments needed to make these consistent through time (convert pre-2004 MRFSS data, adjust for changes in for-hire component of survey, and deletion of 1981-1985 headboat data) have not been made here.

Total black drum landings from New Jersey through the east coast of Florida are estimated at 1.53 million pounds in 2016, a 2.8% increase from total harvest in 2015 (Tables 2 and 3, Figure 2). 2016 harvest is 30% below the previous ten-year (2006-2015) average. The commercial and recreational fisheries harvested 14.7% and 85.3% of the 2016 total, respectively.

Commercial landings of black drum span from New Jersey through Florida, excluding the Maryland portion of the Chesapeake Bay (Table 2). Coastwide commercial landings show no particular temporal trends, ranging from approximately 120,000 to 400,000 pounds annually over the last 14 years (Figure 2). Black drum commercial landings in 2016 were estimated at 225,253 pounds, a 5% decrease from those of 2015. North Carolina led commercial harvest with 40% of the landings, followed by Virginia and Delaware with 25% and 22%, respectively (Table 2). Virginia and North Carolina have historically been the major commercial harvesters, while Delaware has caught increased percentages of the commercial harvest over the last two years.

Recreational harvest of black drum peaked in 2008 at 789,216 fish (or 5.2 million pounds; Tables 3 and 4). Since 2000, the number has fluctuated without trend between 166,334 and 789,216 fish (weight has fluctuated between 744,267 and 5.2 million pounds; Figures 2 and 3). Recreational harvest increased from 166,344 fish in 2015, the lowest number since 1993, to 396,021 fish in 2016.

After a year where the coastwide recreational average weight per fish (recreational harvest in pounds divided by recreational harvest in numbers) showed a large increase (7.5 pounds per fish in

2015), average weight declined in 2016 to 3.29 pounds per fish, which is closer to the time series average from 1981-2016 of 3.74 pounds per fish. Years that have shown large increases in coastwide average weight (i.e. increases to recreational harvest in pounds without proportional increase to recreational harvest in numbers) have typically occurred during years when Mid-Atlantic states (Virginia-New Jersey) have caught increased percentages of the coastwide recreational harvest (Tables 3 and 4).

The 2016 recreational harvest represents a 6% decrease in numbers and a 32% decrease in pounds from the previous ten year (2006-2015) average. Florida anglers landed the largest share of the coastwide recreational harvest in numbers (59%), followed by North Carolina (18%) and South Carolina (16%). Since the beginning of the recreational time series (1981) anglers have released increasing percentages of caught fish, with percentages of recreational fish released exceeding 70% in each of the past 3 years. In 2016, 73% (1.1 million fish) of the recreational catch was released (Figure 3, Table 5). It is worth noting that release rates seemingly plateaued around 50% from the late 1990s through 2013, when the FMP took effect, establishing minimum sizes in every state and requiring that undersized drum be released for the first time. Recent high release rates can be attributed to these measures, as well as encouragement of catch and release practices.

It should also be noted that depending on the state, percent standard error (PSE) of recreational harvest in numbers ranged widely in 2016, from 29.3-102.2%. Values in most previous years were greater than 50%. PSE values above 50% are regarded as uncertain and are typically attributed to a high level of variability in the harvest estimates. Since harvest estimates are expansions of field intercepts and phone surveys, these high PSE levels indicate higher levels of uncertainty in the expansion estimates for harvest as well as B2 (released alive) estimates. However, this is common for many recreational fisheries and the data trends indicated are still reliable for general management advisement.

IV. Status of Assessment Advice

Current stock status information comes from the 2015 benchmark stock assessment (ASMFC 2015) completed by the ASMFC Black Drum Stock Assessment Subcommittee and Technical Committee, peer reviewed by an independent panel of experts, and approved by the South Atlantic State-Federal Fisheries Management Board for use in management decisions.

The stock assessment could be improved by applying a more complex, data-rich assessment method such as a statistical catch-at-age model. Data limitations that need to be addressed to successfully make this transition are biological sampling (length and age) of recreational and commercial fisheries and a fishery-independent survey to track abundance and age structure of the mature stock. Additionally, information about commercial discards and movement of fish along coast and between water depths would improve the assessment.

V. Status of Research and Monitoring

There are no monitoring or research programs required annually of the states except for the submission of a compliance report. The following fishery-dependent (other than catch and effort data) and fishery-independent monitoring programs were reported in the 2016 reports.

Fishery Dependent Monitoring

- New Jersey DEP – Sampled from commercial fishery. Total length and sex were recorded and otoliths collected (n=53).
- Delaware DFW – Black Drum were not sampled in 2016 due to the unavailability of commercially and recreationally caught fish. Black drum sampling is being conducted in 2017.
- Maryland DNR – Conducted commercial pound net survey from late spring through summer. (2016: 4 fish, mean total length: 952 mm).
- Virginia MRC –
    - Conducted a biological monitoring program to sample commercial and recreational harvest (2016 – commercial: 447 samples for length and weight, 434 for sex, and 393 for age; recreational: 88 samples for length, 21 for weight, 80 for sex, and 87 for age).
    - Conducted Virginia Game Fish Tagging Program with volunteer anglers (2016: 96 fish tagged and 5 recaptured).
- North Carolina DMF – Conducted commercial sampling of black drum bycatch (2016: n=811; mean total length=17 in).
- South Carolina DNR – Terminated the state finfish survey and took over MRIP intercept sampling in 2013 (information reported through MRIP). Commercially reported black drum are captured through commercial monitoring program.
- Georgia CRD – Collected age, length, and sex data through the Marine Sportfish Carcass Recovery Project (2016: 115 black drum, mean length 402.3 mm centerline length).
- Florida FWC – Conducted Florida trip ticket program monitoring commercial catch and effort. Numbers of fish per trip in 2016 decreased from 2015, but were above the long-term average of the time series (1986-2016).
- NMFS – Collected recreational catch, harvest, release, and effort data, as well as length measurements via MRIP.

Fishery Independent Monitoring

- New Jersey DEP –
    - Ocean Trawl Survey: 28-year time series average is 0.16 (2016: 0.07).
    - Delaware Bay Trawl: 26-year time series average is 0.15 (2016: 0.04)
    - Delaware River Seine: 37-year time series average is 0.06 (2016: 0.04).
- Delaware DFW – Conducted two finfish trawl surveys (16ft for juveniles; 30ft for adults). Older than young-of-year (YOY) black drum are rarely captured, and no long term trend is evident.
- Maryland DNR – Conducted the Coastal Bays Fisheries Seine Survey in Maryland's coastal bay and generally catches juvenile fish. Annual mean catch per haul exhibits no trend and

high variation. Annual mean catch per haul in 2016 was near the time series mean and increased from 2015.

- North Carolina DMF – Conducted a gill net survey in Pamlico Sound to characterize size and age distribution, and to produce an abundance index (2016: CPUE=1.33, above the time series average of 1.00).
- South Carolina DNR – Conducted an estuarine trammel net survey for subadult abundance (2016: CPUE=0.458, increase from 2015).
- Georgia CRD –
    - Conducted an estuarine trammel net survey for subadult biological data and abundance index (2016 – Altamaha: n=29, CPUE=0.23; Wassaw: n=10, CPUE=0.08).
    - Conducted an estuarine gill net survey for YOY biological data and abundance index (2016 – Altamaha: n=23, CPUE=0.13; Wassaw: n=7, CPUE=0.05).
- Florida FWC-FWRI – Conducted two seine surveys monthly in northeast and central southeast Florida to develop annual estimates of adult relative abundance. Declining trend is seen in the northeast, while the southeast exhibits an increasing trend.

VI. Status of Management Measures and Issues

Fishery Management Plan
The Black Drum FMP requires all states with a declared interest in the species to have established a maximum possession limit and minimum size limit of at least 12 inches by January 1, 2014, and to have increased the minimum size limit to no less than 14 inches by January 1, 2016.

De Minimis
The black drum FMP allows states to request *de minimis* status if, for the preceding three years for which data are available, their average combined commercial and recreational landings (by weight) constitute less than 1% of the average coastwide commercial and recreational landings for the same three-year period. A state that qualifies for *de minimis* will qualify for exemption in both their commercial and recreational fisheries.

De Minimis Requests
No state requested *de minimis* status through the annual reporting process.

VII. Implementation of FMP Compliance Requirements for 2014 and 2015

The PRT finds that all states have implemented the requirements of the Fishery Management Plan.

VIII. Recommendations of the Plan Review Team

<u>Management and Regulatory Recommendations</u> (H) =High, (M) =Medium, (L) =Low

- Develop management mechanism (e.g., traffic light analysis) to evaluate annual fishery independent and dependent indices to assess stock status and recommend management action if needed. (H)

Prioritized Research and Monitoring Recommendations (H) =High, (M) =Medium, (L) =Low

Stock Assessment and Population Dynamics

- Age otoliths that have been collected and archived. (H)
- Collect information to characterize the size composition of fish discarded in recreational fisheries. (H)
- Collect information on the magnitude and sizes of commercial discards. Obtain better estimates of black drum bycatch in other fisheries, especially juvenile fish in south Atlantic states. (H)
- Increase biological sampling in commercial fisheries to better characterize the size and age composition of commercial fisheries by state and gear. (H)
- Increase biological sampling in recreational fisheries to better characterize the size and age composition by state and wave. (H)
- Obtain estimates of selectivity-at-age for commercial fisheries by gear, recreational harvest, and recreational discards. (H)
- Continue all current fishery-independent surveys and collect biological samples for black drum on all surveys. (H)
- Develop fishery-independent adult surveys. Consider long line and purse seine surveys. (H)
- Collect age samples, especially in states where maximum size regulations preclude the collection of adequate adult ages. (H)
- Conduct reproductive studies, including: age and size-specific fecundity, spawning frequency, spawning behaviors by region, and movement and site fidelity of spawning adults. (M)
- 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. (H)
- Conduct tagging studies using implanted radio tracking tags that are compatible with coastal tracking arrays along the Atlantic coast in order to track movement and migration of adults. (H)
- Improve sampling of night time fisheries. (M)
- Conduct studies to estimate catch and release mortality rates in recreational fisheries. (H)
- Collect genetic material (i.e., create “genetic tags”) over a long time span to obtain information on movement and population structure, and potentially estimate population size. (M)
- Obtain better estimates of harvest from the black drum recreational fishery, especially in states with short seasons. (M)

IX. References

ASMFC. 2013. Interstate Fishery Management Plan for Black Drum. Arlington, VA.

ASMFC. 2015. Black Drum Stock Assessment for Peer Review. Atlantic States Marine Fisheries Commission, Stock Assessment Report. 352 p.

Dick, E.J. and MacCall, A.D. 2011. Depletion-Based Stock Reduction Analysis: A catch-based method for determining sustainable yields for data-poor fish stocks. Fisheries Research, 110: 331-341

MacCall, A.D. 2009. Depletion-Corrected Average Catch: a simple formula for estimating sustainable yields in data-poor situations. ICES Journal of Marine Science, 66: 2267-2271.

X. Figures

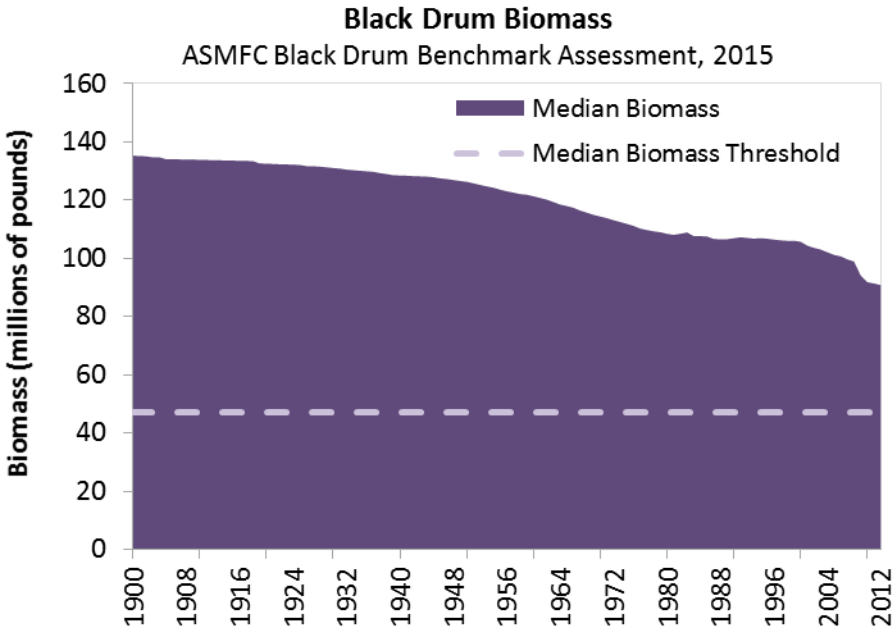

Figure 1. DB-SRA estimates of Median biomass and threshold 1900-2012 (Source: ASMFC 2015).

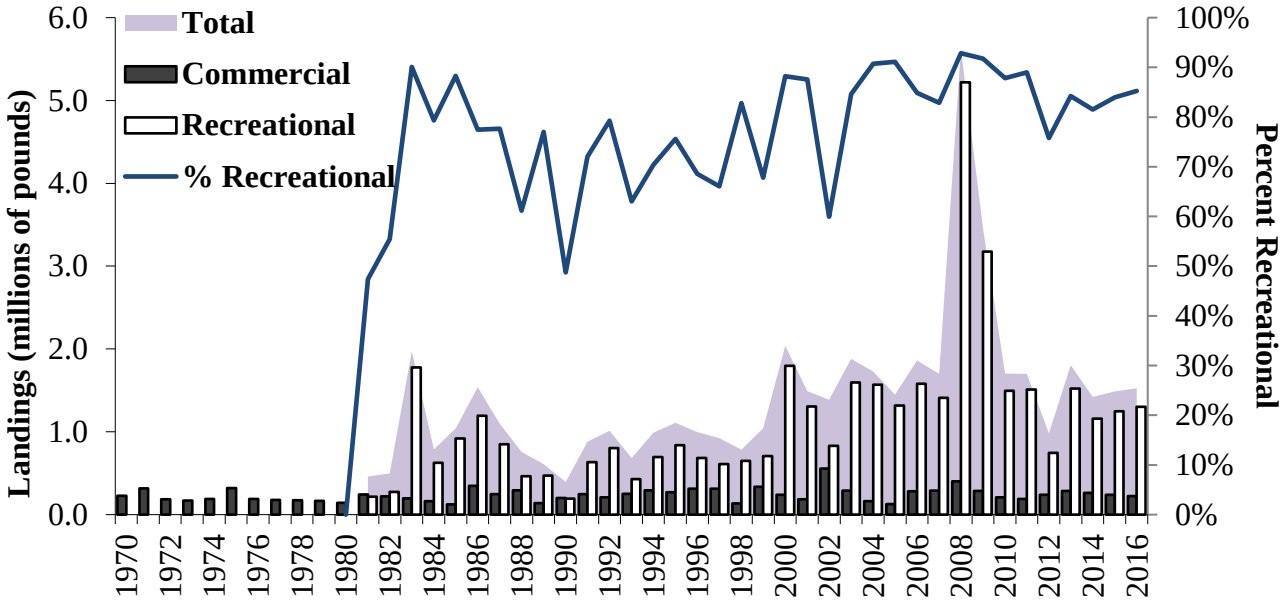

Figure 2. Commercial and recreational landings (pounds) of black drum. Recreational data not available prior to 1981. See Tables 2 and 3 for values and data sources.

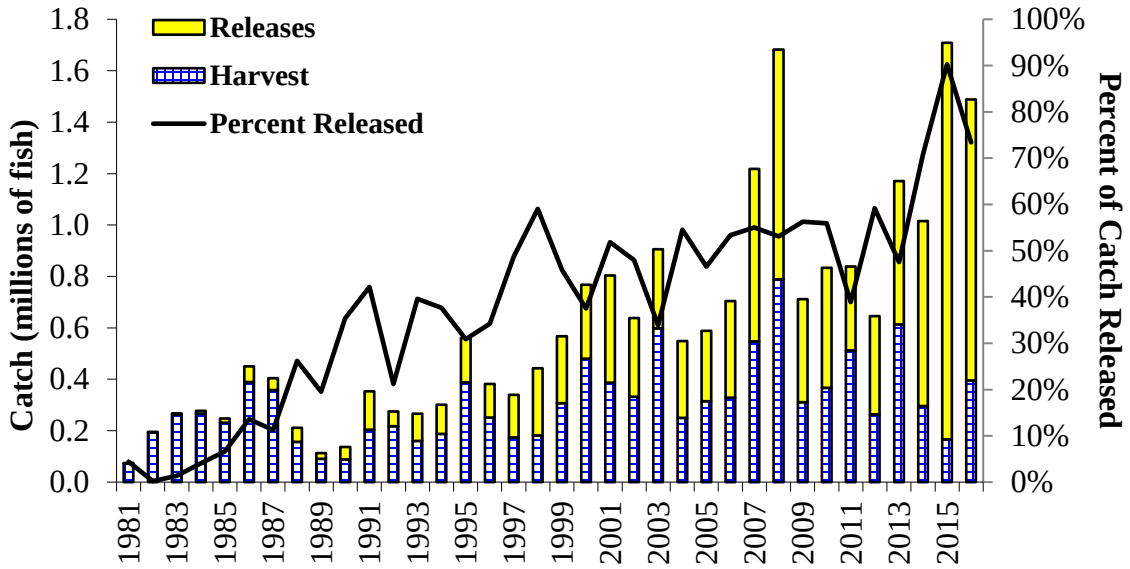

Figure 3. Recreational catch (harvest and alive releases) of black drum (numbers) and the proportion of catch that is released. See Tables 4 and 5 for values and data sources.

XI. Tables

Table 1. Black drum regulations for 2015. The states of New Jersey through Florida are required to meet the requirements in the FMP. All size limits are total length.

State	Recreational		Commercial			Notes
	Size limit	Bag limit	Size limit	Trip Limit	Annual Quota	
ME - NY	-	-	-	-	-	
NJ	16” min	3/person/day	16” min	10,000 lbs	65,000 lbs	
DE	16” min	3/person/day	16” min	10,000 lbs	65,000 lbs	
MD	16” min	1/person/day 6/vessel (Bay)	16” min		1,500 lbs Atlantic Coast	Chesapeake Bay closed to commercial harvest
VA	16” min	1/person/ day	16” min	1/person/ day*	120,000 lbs	*without Black Drum Harvesting and Selling Permit
NC	14” min - 25” max; 1 fish > 25” may be retained	10/person/ day	14” min - 25” max	500 lbs		
SC	14” min - 27” max	5/person/day	14” min - 27” max	5/person/day		Commercial fishery primarily bycatch
GA	14” min	15/person/ day	14” min	15/person/ day		
FL	14” min - 24” max; 1 fish >24” may be retained	5/person/day	14” min - 24” max	500 lbs/day		

Table 2. Commercial landings (pounds) of black drum by state, 2003-2015. (Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD and ACCSP, Arlington, VA, except where noted below)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
2003			631	111,554	90,525		*	9505	289,312
2004	15,202	4,092	1,039	64,823	62,445		*	12,653	160,254
2005	1,970	10,059	165	66,660	44,989		*	5,249	129,092
2006	16,454	70,097	552	65,973	125,214		*	3,975	282,265
2007	1,218	37,704	172	91,385	148,231		*	12,770	291,480
2008	1,487	9,563	*	69,825	301,998	*	*	19,348	402,221
2009	6,408	30,551	*	82,437	148,995	*	*	15,671	284,062
2010	3,079	49,535	*	69,659	69,195	*	*	15,677	207,145
2011	3,130	49,514	*	56,747	56,084	*	*	22,333	187,808
2012	19,017	10,828	*	98,789	94,353	*	*	14,302	237,847
2013	16,251	24,507	*	87,730	127,170	*	*	28,450	284,632
2014	14,731	18,498	*	86,711	51,216	*	*	91,585	262,741
2015	3,865	39,282	*	93,552	51,089	*	*	50,447	238,235
2016	2,210	49,109	270	56,832	90,012	*	0	26,820	225,253

*indicates confidential landings because less than three dealers reported.

Table 3. Recreational landings (pounds) of black drum by state, 1981-2015. (Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	0	0	0	95,051	0	3,495	7,614	111,369	217,529
1982	0	0	0	0	2,720	13,222	6,278	253,705	275,925
1983	69,193	0	603,101	706,113	0	61,594	6,765	328,922	1,775,688
1984	0	0	0	38,672	0	5,452	31,848	549,047	625,019
1985	0	50	43,946	301,264	3,838	63,206	37,646	467,715	917,665
1986	103,942	3,220	219,916	395,311	62,146	24,503	52,558	330,239	1,191,835
1987	0	623	0	462,348	51,463	61,011	45,848	230,085	851,378
1988	0	0	0	36,203	79,484	60,861	28,804	258,667	464,019
1989	0	0	192,996	54,086	2,170	44,234	44,715	131,163	469,364
1990	0	2,378	0	8,147	3,767	22,270	51,723	103,101	191,386
1991	0	1,399	0	83,090	10,558	13,878	96,295	428,316	633,536
1992	0	0	0	237,596	20,082	30,276	30,037	485,267	803,258
1993	0	1,153	0	1,087	31,474	43,092	26,842	326,596	430,244
1994	0	0	0	2,807	92,749	15,801	99,814	484,657	695,828
1995	0	0	149,158	20,685	227,582	66,787	53,721	319,812	837,745
1996	0	4,027	0	97,782	172,959	68,865	8,635	330,368	682,636
1997	0	11,372	0	36,130	156,981	190,835	28,366	186,417	610,101
1998	0	15,499	0	91,296	102,534	51,655	19,004	368,574	648,562
1999	0	2,203	8,498	0	170,793	81,777	12,058	430,690	706,019
2000	0	6,381	17,207	12,097	259,623	276,622	188,957	1,036,211	1,797,098
2001	165,041	356	0	331	188,201	16,813	32,496	903,239	1,306,477
2002	9,492	5,930	10,246	14,554	474,619	58,679	24,880	233,136	831,536
2003	214,250	0	12,282	96,730	355,717	243,887	135,127	535,717	1,593,710
2004	809,306	2,592	20,891	11,880	221,925	30,190	57,953	411,968	1,566,705
2005	519,635	25,945	0	83,349	63,161	58,997	46,485	520,948	1,318,520
2006	792,896	23,607	25,212	26,834	162,932	63,057	33,147	452,507	1,580,192
2007	202,375	14,830	0	238,718	220,454	71,471	84,495	576,048	1,408,391
2008	2,998,236	19,795	0	497,913	524,138	115,043	244,350	817,806	5,217,281
2009	1,435,892	43,001	0	1,036,270	121,038	42,903	30,203	464,661	3,173,968
2010	251,577	76,316	48,166	8,203	305,517	120,224	169,331	516,412	1,495,746
2011	126,647	15,844	0	284,264	151,407	46,847	19,504	867,708	1,512,221
2012	13,718	2,869	0	5,508	243,965	103,088	59,278	315,841	744,267
2013	36,406	6,832	0	30,749	713,047	102,429	59,219	571,489	1,520,171
2014	3,567	9,144	20,822	26,213	60,406	79,185	66,955	891,379	1,157,671
2015	184,862	12,169	11,157	17,538	115,609	35,668	15,761	855,328	1,248,092
2016	74,936	772	7,442	22,772	238,012	154,870	51,946	751,782	1,302,532

Table 4. Recreational landings (numbers) of black drum by state, 1981-2015. (Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	0	1,502	0	2,874	0	8,642	3,665	54,969	71,652
1982	0	0	0	0	1,682	11,028	8,464	172,414	193,588
1983	2360	0	13,308	30,797	0	27,161	9,867	179,691	263,184
1984	0	0	1,915	1,886	0	7,575	14,239	240,470	266,085
1985	0	114	937	5,630	5,196	16,810	38,835	163,720	231,242
1986	2,798	14,605	5,668	11,767	18,697	21,108	55,040	259,168	388,851
1987	0	943	3,019	11,760	41,644	27,347	40,390	233,092	358,195
1988	0	0	0	1,225	10,553	15,568	21,525	107,293	156,164
1989	0	0	4,284	1,188	394	9,125	39,162	36,922	91,075
1990	0	1,704	0	840	2,112	15,048	16,227	52,741	88,672
1991	0	2,240	0	1,153	8,712	5,121	32,697	154,133	204,056
1992	0	0	0	5,330	7,877	13,600	19,021	171,190	217,018
1993	0	3,786	0	1,827	32,184	16,136	20,736	85,739	160,408
1994	0	0	0	1,411	53,345	8,635	18,254	106,267	187,912
1995	0	0	4,064	3,505	272,426	26,774	25,056	56,086	387,911
1996	0	206	0	3,993	134,926	28,033	6,718	77,295	251,171
1997	0	411	0	643	53,107	43,432	9,997	66,691	174,281
1998	0	412	649	3,271	44,822	14,073	5,378	112,404	181,009
1999	0	714	528	10,403	116,407	50,997	5,572	122,718	307,339
2000	0	1,194	964	2,708	113,205	63,284	62,637	235,869	479,861
2001	7,983	1,385	0	1,200	144,088	11,570	13,360	207,575	387,161
2002	5,496	3,314	3,358	4,547	197,211	28,376	23,074	67,024	332,400
2003	15,828	0	2,158	11,431	273,024	114,905	43,902	137,191	598,439
2004	15,152	320	2,351	2,485	97,262	18,384	18,568	94,967	249,489
2005	19,998	1,303	0	9,439	75,924	83,874	20,355	103,462	314,355
2006	42,070	11,462	701	1,556	92,956	93,384	20,080	66,415	328,624
2007	21,095	4,152	0	21,697	209,372	96,494	50,670	144,434	547,914
2008	74,982	6,973		26,097	359,702	54,490	91,777	175,195	789,216
2009	35,782	1,151		21,535	92,058	18,613	15,610	126,384	311,133
2010	8,593	1,450	2,731	730	122,709	34,383	69,547	127,214	367,357
2011	8,590	918	0	30,386	211,396	13,660	10,590	236,625	512,165
2012	526	111	0	1,577	139,363	28,006	19,134	74,596	263,313
2013	4,207	1,111	0	1,944	363,466	35,994	18,290	188,578	613,590
2014	150	506	1,881	3,071	24,058	30,238	15,304	220,565	295,773
2015	4,917	320	733	824	35,529	16,017	8,287	99,717	166,344
2016	2,997	54	190	2,187	71,708	61,642	24,126	233,117	396,021

Table 5. Recreational alive releases and dead discards (numbers) of black drum by state, 1981-2015. (Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD.)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981		0		0		0	1,008	2,300	3,308
1982					0	417	0	0	417
1983	0		0	0		0	852	2,832	3,684
1984			646	0		1,360	0	9,296	11,302
1985		0	564	0	0	0	3,250	12,677	16,491
1986	0	0	138	0	7,659	1,091	8,988	43,219	61,095
1987		452	0	0	473	485	6,519	37,558	45,487
1988				0	6,186	892	2,975	45,339	55,392
1989			0	0	213	1,575	8,892	11,455	22,135
1990		752		0	3,291	824	2,002	41,648	48,517
1991	996	273		0	1,931	0	11,664	134,080	148,944
1992				0	731	0	5,998	51,623	58,352
1993		2,270		4,214	6,053	2,375	2,487	87,653	105,052
1994				2,601	4,969	5,655	2,241	98,061	113,527
1995			1,250	19,077	101,866	2,829	1,114	47,413	173,549
1996		0	2,534	14,945	55,227	2,214	363	55,446	130,729
1997		0	1,106	6,671	35,537	6,380	213	115,821	165,728
1998		2,893	0	17,432	50,208	1,548	6,312	182,776	261,169
1999		0	0	1,859	75,409	14,086	2,504	166,416	260,274
2000		0	0	886	56,741	47,605	20,643	162,054	287,929
2001	6,319	21,271	1,173	28,902	139,525	7,219	13,820	198,900	417,129
2002	20,246	3,332	7,998	44,056	82,297	11,697	18,851	117,831	306,308
2003	1,003	3,132	0	20,588	128,873	4,051	27,804	122,288	307,739
2004	0	524	0	16,093	98,385	19,076	42,326	123,266	299,670
2005	21,172	12,960	2,525	19,620	95,255	17,847	10,458	94,682	274,519
2006	29,024	1,031	0	81,509	93,229	27,296	29,285	114,635	376,009
2007	27,550	3,980	470	27,351	226,463	37,763	34,869	311,372	669,818
2008	223,332	5,961	0	9,327	188,680	124,748	65,881	274,681	892,610
2009	105,053	1,111	0	10,594	69,484	35,395	22,622	155,665	399,924
2010	25,592	1,575	1,744	19,637	102,348	25,677	39,981	249,265	465,819
2011	1,775	5	7,971	60,724	104,286	20,483	4,671	126,563	326,478
2012	10,498	356	19,351	7,182	91,895	67,242	19,765	165,569	381,858
2013	0	27,135	6,414	22,192	121,306	78,262	10,066	291,543	556,918
2014	10,669	4,886	0	63,623	361,514	66,209	8,248	204,889	720,038
2015	172,650	2,439	4,969	69,560	559,251	483,046	13,087	237,077	1,542,079
2016	5,388	211	107	13,524	566,785	217,342	15,686	272,681	1,091,724