Atlantic States Marine Fisheries Commission

South Atlantic State/Federal Management Board

August 7, 2014
12:30-2:30 p.m.
Alexandria, 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 *(P. Geer)*	12:30 p.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from May 2014	12:35 p.m.
3.	Public Comment	12:40 p.m.
4.	Spot and Atlantic Croaker Trigger Exercises Update (*C. McDonough*)	12:50 p.m.
5.	Consider Draft Addendum I to the Spot Omnibus Amendment and Draft Addendum II to the Atlantic Croaker Amendment I for Public Comment for Final Approval **Final Action** • Review of the Draft Addenda (*K. Rootes-Murdy*) • Public Comment Summary (*K. Rootes-Murdy)* • Consider final approval of Addenda I & II	1:05 p.m.
6.	Consider Fishery Management Plan Reviews and State Compliance (*K. Rootes-Murdy*) **Action** • Atlantic Croaker • Red Drum	2:05 p.m.
7.	Review and Consider Approval of 2015 Red Drum Stock Assessment Terms of Reference **Action** (*J. Kipp*)	2:15 p.m.
8.	Other Business/Adjourn	2:30 p.m.

The meeting will be held at the Crowne Plaza Hotel, 901 North Fairfax Street, Alexandria, Virginia; 703-683-6000

MEETING OVERVIEW

South Atlantic State/Federal Fisheries Management Board Meeting
Thursday, August 7, 2014
12:30 p.m. – 2:30 a.m.
Alexandria, Virginia

Chair: Pat Geer (GA) Assumed Chairmanship: 10/13	Technical Committee Chairs Atlantic Croaker: Chris McDonough (SC) Red Drum: Mike Murphy (FL)	Law Enforcement Committee Rep: Doug Lewis (GA)
Vice Chair: Jim Estes (FL)	Advisory Panel Chair: Tom Powers (VA)	Previous Board Meeting: May 14, 2014
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 May 2014

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. Spot and Atlantic Croaker Trigger Exercises Update (12:50 -1:05 p.m.) Action

Background

- Trigger exercises were established for both species for each non-assessment year to review trends in the fisheries.
- The Atlantic Croaker Technical Committee and Spot Plan Review Team met via conference call in July to review the 2013 data.
- The 2013 data update does not appear to have tripped the triggers for the past year, but this is based on preliminary data. The TC and PRT remain concerned about the trends in landings and length at age data. (**Supplemental materials**)

Presentations

- Update of the Atlantic Croaker & Spot Trigger Exercises by K. Rootes-Murdy

5. Consider Draft Addendum I to the Spot Omnibus Amendment and Draft Addendum II to the Atlantic Croaker Amendment I for Public Comment for Approval (1:05-2:05 p.m.) Final Action

Background

- At the May 2014 meeting, the Board approved a draft addenda to consider the use of a Traffic Light Approach (TLA) in assessing and managing the Spot and Atlantic croaker fisheries.

- The draft addenda proposes management options for Spot and Atlantic croaker fisheries that would apply the TLA to a management framework in assessing the species. Based on the annual updates, the Atlantic Croaker TC and Spot PRT would make recommendations on management measures to enact if needed. The TLA and management framework would replace the current annual trigger exercises if approved.
- The public provided comments through public hearings held in Maryland, Virginia, North Carolina and Georgia, as well as through written comments (**Meeting materials**).

Presentations

- Review of the Draft Addenda by K. Rootes-Murdy
- Public Comment Summary by K. Rootes-Murdy

Board actions for consideration at this meeting

- Consider final approval of the Draft Addenda

6. Consider FMP Review and State Compliance Reports (2:05-2:15 p.m.)

Background

- Compliance reports were due July 1, 2014 (**Meeting materials**).
- The Atlantic Croaker Plan Review Team reviewed each state report and compiled the Fishery Management Plan Review **(Meeting materials).**
- The Red Drum Plan Review Team reviewed each state report and compiled the Fishery Management Plan Review **(Supplemental materials).**

Presentations

- Overview of the Fishery Management Plan Review Reports by K. Rootes-Murdy

Board actions for consideration at this meeting

- Approval of the 2014 Fishery Management Plan Review and State Compliance Reports.

7. **Review and Consider Approval of 2015 Red Drum Stock Assessment Terms of Reference (2:15-2:30 p.m.) Action**

Background

- Red Drum is scheduled for a Benchmark Stock Assessment to be completed by August 2015.At the May 2014 Board meeting, the Red Drum Stock Assessment Subcommittee (SAS) was appointed by the Board.
- The Red Drum SAS has met twice via conference call to plan, determine a timeline, form working groups, and draft Terms of Reference to guide the Assessment process **(Meeting materials)**.

Presentations

- Overview of the 2015 Red Drum Stock Assessment Terms of Reference by J. Kipp

Board actions for consideration at this meeting

- Approval of the 2015 Red Drum Stock Assessment Terms of Reference

8. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

SOUTH ATLANTIC STATE/FEDERAL FISHERIES

MANAGEMENT BOARD

The Crowne Plaza Hotel – Old Town
Alexandria, Virginia
May 14, 2014

These minutes are draft and subject to approval by the South Atlantic State/Federal Fisheries Management Board. The Board will review the minutes during its next meeting.

Draft Proceedings of the South Atlantic State/Federal Fisheries Management Board Meeting
May 2014

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1. **Approval of Agenda by Consent** (Page 1).

2. **Motion to approve proceedings of February 6, 2014** by Consent (Page 1).

3. **Move to release Spot Addendum I and Atlantic Croaker Addendum II for public comment with the changes discussed today** (Page 15). Motion by Adam Nowalsky; second by Joe Grist. Motion carried (Page 15).

4. **Adjourn by Consent** (Page 22).

ATTENDANCE

Board Members

Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Bernie Pankowski, DE, proxy for Sen.Venables (LA)
Tom O'Connell, MD (AA)
Bill Goldsborough, MD (GA)
Russell Dize, MD, proxy for Sen. Colburn (LA)
Joe Grist, VA, proxy for J. Bull (AA)
Cathy Davenport, VA (GA)
Louis Daniel, NC (AA)
Mike Johnson, NC, proxy for Sen. Jenkins (LA)
Robert Boyles, Jr., SC (AA)
Ross Self, SC, proxy for Sen. Cromer (LA)
Patrick Geer, GA, proxy for Rep. Burns (LA)
Nancy Addison, GA (GA)
Jim Estes, FL, proxy for J. McCawley (AA)
Martin Gary, PRFC
Wilson Laney, USFWS

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

Ex-Officio Members

Chris McDonough, Croaker Technical Committee Chair

Staff

Bob Beal
Kirby Rootes-Murdy
Melissa Yuen
Toni Kerns

Guests

Loren Lustig, ASMFC GA
Doug Grout, ASMFC AA
Jack Travelstead, CCA
Jimmy Kellum, Kellum Maritime
Adriene Divertie, MD DNR
Justin LeBlanc, NCFA
Jerry Schill, NCFA
Brent Fulcher, NCFA
Johnathan Fulcher, NCFA
Emily Knortz, NCFA
Gurney Lee Collins, NCFA
Jeremy Gurthrie, NCFA
Josh Salter, NCFA
Dan Garrish, NCFA
Aron Styron, NCFA
Paul Bierman, NCFA
Thomas McArthur, NCFA
Taylor Smith, NCFA
Pam Schill, NCFA
Marty Frost, Salter Path, NC
Jerry Burns, Beaufort, NA
Bradley Styron, Cedar Island, NC
Richard Barlow, Cedar Point, NC
C.R. Frederick, Swansboro, NC
Kenneth Seigler, Hubert, NC
Jarrett Moore, Ocracoke, NC
Adam Tyler, Smyrna, NC
Arnold Leo, E. Hampton, NC
Aron Styron, Jr. NCFA

These minutes are draft and subject to approval by the South Atlantic State/Federal Fisheries Management Board. The Board will review the minutes during its next meeting.

The South Atlantic State/Federal Fisheries Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Ballroom of the Crown Plaza Hotel Old Town, Alexandria, Virginia, May 14, 2014, and was called to order at 9:25 o'clock a.m. by Chairman Patrick Geer.

CALL TO ORDER

CHAIRMAN PATRICK GEER: Welcome to the South Atlantic Board Meeting. My name is Pat Geer; I'm the chairman. I will do my best to try to get us back on schedule; but I think that is going to be virtually impossible at this point.

APPROVAL OF AGENDA

Let's start off with the approval of the agenda. Are there any changes to the agenda, any modifications? Hearing none; the agenda is accepted.

APPROVAL OF PROCEEDINGS

Approval of the proceedings from the February 2014 meeting; heading no objection to those; we will consider those approved.

PUBLIC COMMENT

We're going to have a brief public comment period. We have the North Carolina Fisheries Association members that have come up to the meeting today. I'm estimating about 20 of you.

Since we're pressed for time; we're going to take two public comments now. If we have time at the end, we'll consider others at that time. We're going to have Jerry Schill and Justin LeBlanc speak very briefly, five minutes apiece, and we'll go from there. I think, Jerry, you're up first. Please state your name and your affiliation.

MR. JERRY SCHILL: Mr. Chairman, my name is Jerry Schill with the North Carolina Fisheries Association. We appreciate the opportunity to comment on red drum management. Also in the room are a few Tarheel fishermen who are attending an ASMFC meeting for the first time. They're here because they have been very much affected by the issues related to red drum; and they want to make sure they have a voice in the future management of the species.

For background and for the benefit for those whom I have not yet met, I was president of NCFA 18 years, from 1987 to 2005 when I resigned to pursue other interests. My successor, Sean McKeon, resigned last fall. I agreed in the interim to help the organization rebuild and re-energize; but after three months I realized that I was having so much fun aggravating Louis Daniel that I begged the board to let me come back fulltime.

That is the reason I'm back. It is a life's mission; and I'm having a lot of fun doing it, Louis. This trip is costing our group and our fishermen thousands of dollars in travel expenses and lost fishing time and should highlight how important it is to the commercial fishing community and to our state.

Commercial fishermen have sacrificed greatly in the rebuilding of red drum. While it is not directed fishery, it is an important source of income to large-mesh gill netters while targeting flounder; yet we took an unprecedented action at a recent NCFA board meeting. After a four-hour very spirited discussion, our board voted unanimously to recommend an immediate closure to large-mesh anchored gill nets due to the tremendous population of red drum in the water.

Since our 250,000 pound cap had been exceeded for the fishing year, our fishermen cannot land red drum, which means regulatory discards. That amounts to waste, which the fishermen abhor, but it could also lead to a public relations and a political nightmare. DMF Director Louis Daniel reacted to our request by issuing a proclamation prohibiting the use of large-mesh gill nets effective May 5th.

Many fishermen have only one thing to do this time year and that is fishing with this gear. They would be fishing for flounder, black drum and sheepshead, but today they are fishing for concern for their future. I've only mentioned the

fishermen and yet what they provide is also important to dealers, restaurants and retail markets.

Only a few short weeks ago we took another huge step with a proposal to fund observers for the gill net fishery due to the interaction with sea turtles as a requirement for our state's ITP. That program would totally fund the observer program with no tax dollars by doubling our commercial license fees. That proposal will be considered by our state legislature, which convenes today.

The science will dictate what our cap will be in the future; but even if it is large increase, which we project it will be, the lack of flexibility in the plan is a huge problem. Without flexibility, staying in compliance with the plan will be difficult; but even if we do go out of compliance, do you all realize that it would be the very first time our state has gone out of compliance with an ASMFC Fishery Management Plan? That's right; we're in the minority in that regard.

Esse quam videri or to be rather than to seem; that is our state's motto. Yes, we can be a bit rambunctious at times and a tad excitable; but in addition to being hard working and very passionate about what we do, we know conservation and we practice it. Because of that, we like conservation equivalency measures and the flexibility given to managers that can reward fishermen for their extraordinary efforts such as what we are doing in North Carolina.

That flexibility is especially needed with a recovering or recovered stock. Red drum, for example, is playing havoc with our juvenile blue crab population. We sincerely hope that you will have some time at the end of your meeting to take comments from our fishermen who have made great sacrifices to be here. There is a real problem with how we deal with a recovering species.

Congratulations; now what? I don't care if you're talking about the increasing population of sea turtles or red drum; it is hard. I sat around a table like this when I was on the South Atlantic Council. It is really difficult when you're dealing with a recovering or recovered species. I would like to introduce Justin LeBlanc of Ocracoke, North Carolina, who is doing some work on behalf of NCFA and will speak to the technical aspects of red drum management. Thank you.

MR. JUSTIN LEBLANC: Thank you, Mr. Chairman. Thanks for the opportunity comment; I appreciate it. North Carolina commercial fishermen, many of them here today, have concerns about the North Carolina red drum cap of 250,000 pounds and the need for a better understanding of the abundance and age structure of the adult red drum population particularly in the northern management unit.

The SEDAR 18 report from 2009 states that given the data on the static spawning potential ratio over the past many years, it is likely that overfishing on red drum is not occurring. In fact, current data and opinion documents indicate that a recovered status for the northern stock is warranted. The assessment that is currently underway needs to address the uncertainty documented in SEDAR 18 regarding the abundance of older fish so that an updated FMP can reflect not only the health of the one to three year olds but the health of the adult population as well.

Since 1994 red drum have been under a successful FMP that has met or exceeded its target SPR of 40 percent. We are at the 20-year threshold estimated to be the timeline for recovery of this stock. North Carolina Department of Marine Fisheries Data suggests the spawner biomass for the stock is healthy and stable.

The current North Carolina cap of 250,000 pounds was established using commercial landings as a proxy. The landings' data used were obtained during the time period when the stock was depleted and was not derived from a biological framework. In our opinion the current harvest structure does not allow us to

obtain optimal yield and is not reflective of the stock's current health.

As Jerry mentioned, this year North Carolina commercial fishermen took the unprecedented step to close their large-mesh fishery because the yearly red drum cap had been harvested and bycatch mortality could have been very high due to the very large cohort moving through the slot right now. This action will significantly lower bycatch mortality to this large year class and will likely result in recruitment to the adult spawning biomass.

In addition, we believe that there is a very little bycatch mortality associated with the large-mesh gill nets for adult red drum. We also believe that a better understanding of hook-and-release mortality in the recreational sector is needed. Recreational fishing effort in this fishery often peaks during the hottest months of the year when oxygen is low and water temperatures are high, potentially increasing mortality.

We believe that the current review needs to take into account the reduction in fishing days and soak times mandated by the sea turtle compromise and the Section 10 Agreement with NMFS that we operate under. In conclusion, we believe that the current North Carolina cap needs to be increased as well as the North Carolina recreational bag limit.

All user groups in North Carolina have sacrificed to rebuild the stock. We should develop an FMP that allows us to maximize optimum yield. We also ask that the FMP be developed in such a way that North Carolina has the ability to manage the commercial TAC with some flexibility so that when large year classes are moving through the slot size, red drum do not become a choke species for the southern flounder fishery. We encourage the Atlantic States Marine Fisheries Commission to apply all resources available to complete the red drum assessment in a timely manner. Thank you.

CHAIRMAN GEER: Thank you very much, Jerry and Justin. Are there any questions for Jerry or Justin; any comments? Louis.

DR. LOUIS B. DANIEL, III: Just a comment; this has been an extraordinary year for the northern group, particularly for Virginia and North Carolina with what may be certainly a decadal year class if not a century year class coming through the fishery. I don't believe it is being seen similarly down in the southern region, at least not at this point. We know after 20 years of management that we're continuously rebuilding or continuing to rebuild the adult spawning stock. I think the information that we have through the longline survey should maybe give us that Holy Grail of spawning stock biomass estimates that could result in some actual quotas that are derived based on the stock assessment and population ecology.

It is true that the industry has really stepped up in North Carolina in last three months. I'm not going to say it is because Jerry is back; but it probably has something to do with it. But in terms of the increase in the license fees, the proposed closure and some modifications for this summer to try to reduce the discards I think is an excellent move on their behalf.

But as we move forward with our stock assessment on red drum, we've got to get a stock assessment. We've have got to get a northern and a southern stock assessment; and I am hopeful that we will be in a position to declare red drum recovered at the end of this upcoming stock assessment. Heads are nodding in relative agreement; but we won't know until we get the stock assessment.

But at that point I think we do need to start thinking outside of the box and recognizing that for the vast majority of us when we're harvesting red drum, we're really only harvesting one year class. It is kind of like an annual crop that lives to be 60 years old. Some years we have poor recruitment and in other years we have extraordinary recruitment and then in some years it is off the charts.

How can we collectively come up with a management plan that allows us to take advantage of those year classes but still protect those very strong year classes and to the

spawning stock? I have explained to some folks that have called me on this that our grandchildren will be aging the fish that are coming through the system right now; and it could be a major anchor to the northern group spawning stock for at least the rest of our lifetimes.

I just indicate to you that North Carolina is taking it very seriously. We're going to be developing a new fishery management plan to try to impart the flexibility that we can, but we're going to need some help from the commission as we move forward with I guess it would be Amendment 3, which should be an interesting exercise.

I appreciate the folks from North Carolina coming up and hope we will have some time at the end of the discussion to hear from some of the individual fishermen as well; because it has been a pretty tough pill to swallow to have those fish as abundant as they are but be unable to take advantage of that bounty this year. Thank you.

MR. SCHILL: Mr. Chairman, very quickly, and I know you're pressed for time; the kudos need to be given to the guys in the back, the fishermen. I didn't come up with this proposal. The fishermen themselves came up with the proposal to close the large-mesh gill net fishery. The fishers themselves have chosen to double their license fees in order to pay for these observers in the time of budget restrictions.

One thing that I have noticed that is the difference between my first 18 years in this, since I'm a retread now, other than my white hair is the change in the attitude of being engaged. This is the first time we have ever brought a delegation of fishermen to an ASMFC meeting. I think it is refreshing and I think it is important that they see the process and be engaged in that. Again, we appreciate the time. I did say to Chairman Daniel earlier that if you all would just change your policy, allow the public to talk as long as they want and limit the amount that you all talk, we would probably get out of here faster. Thank you, Mr. Chairman.

CHAIRMAN GEER: Point well taken. Thank you very much, Jerry and Justin; we greatly appreciate that. I want to move on so that we can finish up the items on our agenda and then hopefully have time for members of the association to speak.

ATLANTIC CROAKER DRAFT ADDENDUM I AND SPOT DRAFT ADDENDUM II FOR PUBLIC COMMENT

The next item on the agenda is Draft Addendum I for Atlantic Croaker and Draft Addendum II for Spot. We presented it to you at the last meeting. We want it to go out for public comment soon. The technical committee looked it over and they're got some suggestions today. I will turn it over to Kirby at this point.

MR. KIRBY ROOTES-MURDY: I will go through the draft addendum in its current form as quickly as possible but to allow also questions at the end if any crop up. Back in February the board initiated a draft addendum based on the technical committee's management memo outlining the traffic light approach in conjunction with a precautionary management framework.

Up on the screen right now is a potential timetable for how this addendum could move forward if approved today for public comment. Moving to the statement of the problem, the goal of the addendum is to address what the technical committee and plan review team for spot have termed as a current issue with the annual trigger exercises.

Under the current management program for Atlantic croaker, annual changes in the recreational and commercial landings are compared against the previous two years index values. If that index value falls below 70 percent of that two-year average, then at a minimum management action needs to be taken or the data examined further but without any specifications on how that would move forward.

For spot the index values, both fishery-dependent and fishery-independent indexes are

compared against a 10 percentile of their data time series. What we have found is that both of these triggers in themselves are limited in their ability to illustrate long-term trends, whether they be long-term declines or increases in stock abundance, as well as the fact that there is a high degree of variability in the year-to-year index values.

These things in combination make it difficult to respond to gradual but persistent changes without a formal management framework. To give just a little bit of background, both Atlantic croaker and spot are small sciaenid forage species that support commercial and recreational fisheries in the Mid and South Atlantic.

Both species migrate seasonally along the coast, moving northward and inshore to estuaries and bays during the warmer months of spring through fall and then southward and offshore in the more oceanic waters during the winter. Both species reach maturity fairly quickly at an average of about two years of age.

While spot are considered to be short-lived, living to a maximum of about six years; croaker can live up to 17 years but are more commonly seen at about ten years of age. The last benchmark stock assessment for croaker was conducted in 2010. What happened at that stock assessment was a change from looking at two different stocks to one coast-wide stock.

The assessment indicated that the resource is not overfished or experiencing overfishing, the biomass has increased, the biomass has increased and that the age structure had expanded since the 1980's. However, there were issues in trying to determine the stock status given model estimates were difficult in trying to incorporate concerns around shrimp bycatch in the shrimp trawl fishery as well as fishing mortality.

While state-level stock assessments for spot had been conducted over the years, a coast-wide benchmark stock assessment has not been conducted for spot; and as such their stock status remains unknown. Through the current management framework, as I mentioned earlier, for spot the triggers require that if the index values fall below the 10 percentile, then they're compelled to take management action, but there isn't a specific management action that is specified; and so this creates a little bit of cycle of not quite knowing what to do.

What the Atlantic Croaker Technical Committee and the Spot Plan Review Team wanted to do is move to looking at models are analyses that could better highlight trends. As such, the group decided to investigate the traffic light approach, which has been developed for data-poor fisheries. Basically, it is a three-color system where you have red, yellow and green.

The green and yellow boundary that you will find in the analysis is set at the long-term mean of the data that you're using whereas as the yellow and red boundary is set at 60 percent of the long-term mean, which can help indicate whether there has been a decline. Approximately it would be equivalent to a 40 percent decline.

In trying to use this type of analysis in conjunction with a more formal management approach, we looked at the North Carolina Blue Crab Adaptive Management Program and have tried to model the management options proposed in this addendum off of that. The important thing to note, as I'll go through kind of how these look for spot and croaker, in the case of North Carolina Blue Crab Management Program, they used the traffic light approach as a stock assessment essentially; and we are not trying to do that here.

Really, the goal of this is to try to provide analysis and highlight trends with management options in the interim between now and when a stock assessment gets completed. We've moved to characterize these things not as stock characteristics but as population characteristics. In looking at Atlantic croaker we focused on two specific types of population characteristics.

The first one is an abundance characteristic. This is comprised of fishery-independent data;

specifically the New England Fishery Groundfish Trawl Survey, the VIMS Juvenile Fish; and Blue Crab Survey; the North Carolina Program 195 Survey and the SEAMAP Trawl Survey. The hashed lines you see up there are marked at the 60 percent threshold of the reference period, which for croaker is set at 1996 through 2008.

This was a reference period that was actually highlighted in the 2010 stock assessment as being able to encapsulate both highs and lows in the fishery in terms of abundance. The upper bound is the 60 percent so essentially twice that of the lower bound. This is similar to how the North Carolina Blue Crab Management Program was developed, but they set theirs as 75 percent and 50 percent. Essentially these thresholds are when management action would have to triggered or would essentially be triggered based on having them exceeded for a certain amount of time that I will go over in the management options; but this is for the adult abundance.

The next one is the harvest characteristic. Generally, in applying the traffic light approach, it has been done to stock characteristics, as I mentioned. In lieu of not having comprehensive stock characteristics to use, we wanted to incorporate a harvest characteristic given that the current trigger exercises used commercial and recreational data.

This is just slight deviation, as I said, from how the approach has been applied in other fisheries. As I mentioned, we have the surveys that were applied for the annual triggers currently used, but the hope is that the technical committee and PRT would be able to review this analysis annually and be able to move to incorporate the best available data as it becomes readily available.

One data source in particular that we would like to incorporate down the road would be the NEAMAP Trawl Survey. I will just quickly show you what it looks like for spot, the adult abundance. The reference period for the spot traffic light approach is based on the 1989 to 2012 time period; and this is really because of what we have in terms of available data; so we figured that this is able to incorporate again the highs and lows in the figure that effectively capture that range.

For the adult abundance, the fishery-independent indexes that are used is again the Groundfish Trawl Survey, the Maryland Chesapeake Bay Seine Survey and the SEAMAP Trawl Survey. We have it also for the harvest characteristic, which again is based on the commercial and recreational data.

Next I want to go through the management options that are being proposed in the addendum. There are only three. The first one and the last one are kind of uniform in how they would be applied. The second one has a little bit more detail, and I will go through that. For the first management option, status quo; this would simply allow the triggers to stay in their current form without incorporating the traffic light approach. This is done annually but there would be in turn no changes.

For the second management option, I will go first through the Atlantic croaker one and then the spot. We have this set up, as I said, similar to how it has been proposed in other adaptive management frameworks. Essentially this would be a coast-wide measure that would be applied based on the 30 percent threshold being crossed.

For Atlantic croaker that would be for three years of consecutively exceeding that 30 percent threshold of the proportion of red in the analysis. We have listed up here a number of measures that could be applied. These are not currently set so that they would be these across the board. For example, we don't have bag limits specified in here; and we need some guidance from the board on what appropriate bag limits could be incorporated.

The 30 percent threshold that is tripped for three years for either the adult abundance characteristic or the harvest characteristic would cause these measures to be enacted coastwide. Once they have been established, the harvest

characteristic could not be used to annually update and compare to determine increases or decreases because of the possibility of management action having an influence on that indices basically.

The timetable for this would be, as I said, three years of consecutively exceeding the 30 percent threshold, interim management measures would be in place for three years, after which they could be taken off based on improvements in those indices. For spot we decided to look at a two-year time period rather than three given the life history characteristics I mentioned earlier. We focused on primarily a size limit and closures.

For both species the closures that are proposed in here are based on recreational data we have, wave data over the last two years in terms of when landings have been highest. Again, for both croaker and for spot, Option 2 is applying a coast-wide set of measures for all those states that have a declared interest.

The last option, Option 3, instead of applying a coast-wide measure of set of measures, it would be a state-by-state approach where the technical committee and plan review team would determine what the percent reduction would be needed to achieve a reduction that gets that indices under the 30 percent threshold.

Essentially it would be proportional to how much that indices has exceeded the threshold. As such, the states would be able to determine what measures would be most appropriate for them to implement in order to meet these reductions as needed. The timetables could be set as similar to the coast-wide measures that were proposed.

Again, I just want to reiterate that the hope is for both species to be added to the stock assessment schedule and that the management frameworks proposed in Options 2 and 3 are intended to provide guidance in the interim period between now and when those stock assessments get completed. One other thing just to note is that regardless of which option may be taken later on if the document is approved, the annual trigger exercises will be conducted this year; and there is the possibility of having an updated traffic light analysis with that presented at potentially the August meeting. If you have any questions, just let me know.

CHAIRMAN GEER: I have a quick question probably for Chris. Looking at these graphics, it appears that the abundance characteristics of both the croaker and the spot are doing okay; whereas, the harvest characteristics is showing a decline.

MR. CHRIS McDONOUGH: Yes, actually we covered a little bit of this in the report from the February meeting. The discrepancy between the harvest characteristic and the fishery-independent indices goes to the age structure of each of those. Essentially the fishery-independent indices are primarily age two fish or younger; and the recreational and the commercial harvest are age three-plus. Plus, a lot of the increased – you know, they have been increasing in the independent indices in recent years. A lot of that is driven by the Mid-Atlantic at the coast-wide level.

MR. JOHN CLARK: I just have a question on these spot measures. Are these just examples of what could be put in place; because a minimum size limit of six inches would eliminate using spot as bait in a lot of areas for recreational fishermen that catch spot to use as bait?

MR. ROOTES-MURDY: The minimum sizes that we have listed in the current coast-wide measures are based on first maturity essentially to allow for a year class to come through and reach full maturity. As I mentioned, these are just a set of options that are currently being proposed; and we're looking for feedback from the board on what could work for those sets of coast-wide measures; whether it be size limit, bag limit and season closures are two of those.

MR. ROBERT H. BOYLES, JR.: Kirby, good job on this. I want to make sure just operational as this is going to public comment; but should this approach be approved? I'm concerned by

those of us who are blessed with having to manage fish through the legislative process and the timing associated and the timeframes associated with these triggers and the timing in which we would have to respond; can you comment on what this plan could contemplate? Let me ask it a little bit more directly. If we find a yellow or a red based on that three-year review, how quickly are we going to need to respond in order to remain compliant? Has that been contemplated yet?

MR. ROOTES-MURDY: I would say at this point of the document we haven't fully tried to capture that yet. We're just really laying out what potential measures would be, but that is something we could consider in this or would ask for feedback on.

DR. DANIEL: A couple of points and some suggestions. Delaware brought up the spot bait issue with the recreational fishery; and there needs to be some characterization of the bait component of the commercial fishery as well. At least for North Carolina and Virginia those would be significant impacts to the bait industry; and we don't need to ignore that.

There have been circumstances where for stock rebuilding and stock recovery we've had to forego using some species as bait. River herring is the one that comes immediately to mind. It is certainly something that we will hear in public meetings in North Carolina and Virginia about; I can assure you.

The other point that I think is important at this stage – and we've had some conversation about it. Kirby did a good job getting a paragraph in the document on shrimp trawl bycatch. The ultimate document I think needs to flesh that out some more. From the discussions around this board and this table, there seems to be this general thought that we've done a lot in shrimp trawl bycatch reduction. It is really kind of confounding everyone as to what more we can do.

I provided information at the last meeting on what North Carolina is doing, and we are working with industry over the next three years to try to develop more appropriate bycatch reduction devices. There is a general sense at least in some of our jurisdictions that shrimp trawl bycatch is the sole culprit for the decline in weakfish, croaker and spot.

I believe this board needs to clarify that for the public; because that is what we're going to hear a lot about is that, well, if you just get rid of shrimp trawls, your spot, croaker and weakfish problems go away. I don't believe there is any evidence that any of us have collectively around this board that would suggest that's the case.

Chris, we talked about this at the last meeting. I don't think we know what the absolute impact of the shrimp trawl fishery is on those three big species. I think we need to be forthcoming in what we do know and any concerns that we do have. When I look at the information that we have, I don't know what component or mortality shrimp trawling makes up.

We will be asked those questions; and I think we need to have a board response to that part of this plan. It is going to be a very difficult plan to develop. I don't think anybody thinks that a spot/croaker plan is to be a cakewalk. It will not be. Perhaps just bag limits may be more appropriate – bag limits and seasons may be more appropriate management tools than size limits; but we'll see when we go to the public. I just felt like those were some points that needed to be on the record as we move forward.

MR. ROOTES-MURDY: Thank you, Louis. One of the goals I think of this addendum is that if we were to go forward with some of the measures that are proposed in it, as you had highlighted at the previous meeting, this could serve as really a way to trying to eliminate what those unknowns are.

If we are able to put measures in place and not see responses in the fishery that would show improvement, then that could indicate that the lone culprit is something like shrimp trawl bycatch. If we are able to do something like put measures in place and not see improvements,

then that might also be telling as well; so we are considering that with this addendum.

MS. TONI KERNS: I just wanted to go back to Robert's question of timing of implementation. I think that there is sort of two tracks that the board could take here. One is that you could set a timeframe now to include in the public comment how fast you need to respond; or if one of those thresholds in the stop light is hit, then when the board is deciding which measure to respond with, you could indicate a timeframe in which you need to respond at that time that you choose the measure.

MR. JOE GRIST: It ties into what Robert is asking. In order to have a timely response in any management, the data is going to have to be timely, too. When are the independent indices available to run the stop light? Currently the state reports are not due, which you would get the harvest from, until November 1st.

Are we also talking about needing to move those up to have some type of ability that if this is tripped and we have to take action, that we can find out the second half, let's say, a year for the next year; are we talking about an overwinter and a rush in the spring to try and do something? I mean, when is the data going to be available to actually know when we may have to do something?

MR. ROOTES-MURDY: I'll comment and then may Chris might be able to further expand. Joe, as you know, we have the annual trigger exercises and we try to get them in the summer. With Atlantic croaker we have our compliance reports due July 1st. We also have the spot compliance reports due in November.

The goal of having those trigger exercises done in the summer was to help anticipate whether or not management action may be needed to be taken; and if so adequate time would be allowed. I think we anticipate being able to have this information available from a previous year in a timely enough manner to make the board aware of management actions as they might need to come up for the following year.

MR. ADAM NOWALSKY: My question was with regards to the use of the management framework in the options that you had put up on the board and the accompanying text in the current addendum proposed. A management action should be enacted when either one of the population characteristics consecutively achieve or exceed a threshold. Could you comment on the merits of either one versus both of them and what would be the benefit to us as managers to act when either one versus both of them and how it might actually reflect what is going on in the stock status as well.

MR. McDONOUGH: Okay, I want to make sure I got the whole thing. You're asking basically between both the harvest characteristic being tripped as well as the fishery independent from that? Okay, the way we have done the trigger exercise in the past where we've essentially – say, with croaker, you had to trip one of the harvest indices, either commercial or recreational, as well as one of the fishery-independent – I can't remember now; I think it was one or it might have been two – it was just one, okay – and I think what we had in mind was to keep a similar working model in place in the sense that both would have to be evaluated.

If it was just the harvest characteristic that tripped with the declines that are showing now in both data sets in that analysis versus what shows up in the fishery-independent indices and that characteristic, the technical committee would then have to kind of pick it apart and see, okay, is this really something that is going to warrant a management response; and then able to kind of pull that back into the traffic light and say, okay, the independent indices are coming up.

If we can separate it out on an age basis or something like that where we can account for that, then we can say, all right, there is this decline going on. However, these other indicators I would say that a response isn't warranted, which is something we actually did a couple of years ago with the trigger exercise.

However, with the traffic light, because it is a little more sensitive, and looking at these over two-year period for spot and three-year period for croaker, if we indeed are seeing these changes or declines, then that gives us hopefully a little more lead time into implementing a management response as well as giving us just more information, hopefully.

Some of the data as it is available – and this kind addresses what Joe said – even though the spot report is not due until the end of the year, that was done mainly just because we already have so many reports due in the middle of summer, we pushed it back; but we're still doing those trigger exercises at the same time because the data is available and it has to be done. Usually by the August meeting we're presenting that stuff; so it is usually pretty available.

MR. ROY MILLER: I have a comment. I have a concern about the implementation of coast-wide measures. If you will indulge me with just a moment two or history, Atlantic croaker stocks are hugely important in the Delaware Bay Region, both on the New Jersey side the Delaware side and up along the New Jersey coast.

Their abundance over the years historically you could show a correlation with winter weather events; namely, cold winters, juvenile croaker that invade Delaware Bay in the fall have poor survival; and so a year class will be virtually wiped out by an exceedingly cold winter. That has been the history of the species.

Consequently, croaker in our region have waxed and waned mostly in regard winter weather conditions over the years. A serious of tough winters like in the late 1970's, once the mature croaker that were present passed on, there were no juveniles to replace them and the species greatly declined.

Now, if we're tied to coast-wide management measures, then it doesn't really recognize the migratory nature of the species; you know, invading the northern ranges of its habitat in response to weather events, climate change, whatever you want to call it. Sometimes I think that any conservation measures that we may take on croaker locally in the Delaware Bay Region would be meaningless in terms of a population impact. I just am concerned that we would have to needlessly implement let's say a higher size limit or a higher bag limit when in fact everything is weather-driven at the northern end of the range.

I don't really know how to adjust the proposed management. I appreciate the elegance of the traffic light approach. I think it is a way of at least taking some prescriptive action in lieu of a stock assessment, but I would just appreciate any suggestions you might have for those of us who have jurisdictions in the northern range of the species. What I said for croaker also applies to a certain extent for spot. Thank you.

MR. ROOTES-MURDY: We are aware of the fact that there might be environmental factors that contribute to abundance. One of the goals we hope to have achieved through this addendum is addressing those sources of data possibly down the road, if needed. That is a possible element of what the traffic light could incorporate. As I mentioned before, we want to have the best available data used when available. I guess what I'm trying to say is the hope is that possibly down the road we could be considering environment factors in that traffic light approach as well.

MR. NOWALSKY: Just to follow up on my last question; I appreciate all the information. It was certainly very helpful. I guess it doesn't answer for me, though, the question that the current option in addendum says that we would take action if the population characteristics, either the adult abundance or the harvest, if either one of those traffic light approaches indicated a need for action.

My question would be what are the merits of the "or" approach versus "and" approach; and is it just purely a management question for us or is there a real biological reason to use the "or" approach and would it be beneficial to take this document out for public comment with both in

as options, using the "or" approach and the "and" approach and getting comment from the public on when we should be responding.

MR. McDONOUGH: Okay, I get what you're saying, kind of doing one or the other might paint us back into a corner a bit more than doing an "and" approach. The one thing, though, is that with the – with the sensitivity of doing it with the triggers or even with the traffic light is that if you set the – I guess the difficult with an "and" approach is that with both of them, if you have to trip both of them, then it becomes really conservative and it hardly ever gets tripped. Whereas, the "or" approach – and I guess maybe we could come up with something in between or some type of combination. Right now they're weighted equally; and so maybe further refinement of it would help clarify that. I know that doesn't answer your question very well.

MR. NOWALSKY: No; I think it leads me perhaps to an approach of "or" would bring this discussion before the board to decide whether action is warranted; but "and" might require us to take action.

MR. McDONOUGH: I guess that is a good interpretation.

DR. WILSON LANEY: To add to Adam's question – and I will defer to Chris and Kirby on this; but I guess I was looking at these, Chris, from the perspective that you mentioned earlier, which is that the fishery-independent index tells us more about what is going on with regard to the year class strength, because we're looking at age two and younger in those indices.

Whereas, the harvest parameter maybe is telling us more about what is going on with year class survival and the adult fish once they've reached maturing. I was looking at it from the perspective that given the "or" gives the board a little bit more flexibility in addressing one or the other of those two life stages, if you want to look at them as separate life stages.

If we had recruitment failure a couple of years in a row, then we would expect the fishery-independent index to trip the trigger earlier. If on the other hand something is going on with the upper end – to pick up on comments made earlier in week; maybe striped bass are eating all the spot; and all of a sudden on the harvest end we see a big decline or something like that, then we could deal with one or the other end of the life cycle appropriately through appropriate management measures.

I do kind of like what Adam just suggested is that maybe we could look at it from the perspective of the "or" being the normal case; but if we do get an "and", if both of them are tripped at the same time, that would seem to indicate a more critical need for some sort of management action because we would be experiencing possibly some sort of recruitment failure on the one end and reduction of adult spawning stock biomass on the other end.

I don't know; I guess we haven't thought about it in those terms, and maybe that's something the technical committee needs to discuss and talk about. It seems to have some merit. I agree with you; it would make it more difficult. If they both tripped at the same time, that would mean something really significant was going on, but it probably would be less likely that they would both trip at the same time. I will defer to you guys on that; but does that make sense?

MR. ROOTES-MURDY: Wilson, I would just point out that one of the issues we have been dealing with in the current annual trigger exercise is that it has been a very high bar to cross to enact some kind of either consideration of management for spot or to start a stock assessment for croaker.

Because of that and the fact that data can be revised annually that further compounds or confuses what was a previous year's assessment based on those bars, it becomes much more difficult to respond as well as it creates – I would argue that it further makes it difficult to effectively address declines that we might be seeing or increases. Having them weighted more toward – when you have it as an "and",

then you create much more complexity in trying to force an action.

CHAIRMAN GEER: Are there any other comments? I believe what the technical committee is looking for is, first of all, the measures that are on there, should any of them be removed or anything else be considered. They're looking for items on that. I have heard some people say that maybe the size would be problematic. I'm looking to you folks.

MR. McDONOUGH: Yes; that was put there as an example mainly because it is an option. With the species like these, for most people bag limits are much more palatable and more easily to understand. And the same with the seasonal closures; it is options that are available; so we want to make sure you guys have everything you can consider.

MR. GRIST: And just a little more clarification on the moderate management versus elevated management; what type of level reduction, if that could be a little clearer as to what that represents, because you actually put in eight inch versus nine inch. Are those just examples and just off the hip or was there some calculation to say this is more than the other and one inch will make a significant difference and that type of thing?

MR. ROOTES-MURDY: You're speaking to the current measures that are in place for croaker, for example?

MR. GRIST: I'm looking at Table 2, size limit, 8-inch recreational and commercial for a moderate; elevated management, 9 inches; so again are those just you plugged in some numbers for examples; is there something behind those two numbers? They're very specific versus if you look at all the other options, you have Xs in there and not available. How did those get there so that the public understands those aren't fixed?

MR. ROOTES-MURDY: The 8-inch size limit; that would be actually just a minimum measure, right, so not every state in the management range has a size limit in place currently. That would be really forcing a size limit across the management range. That is where that number came from. The elevated one I think was plugged in and kind of looked at more in conjunction with other measures that might be added on. You have the seasonal closure as well as a bag limit and the size. In that regard it would be a more elevated response. But in terms of the specific; in this stage the document can be adjusted to reflect a more appropriate size limit based on the board's response.

CHAIRMAN GEER: Joe, were you suggesting that things like the bag limit and trip limit, where there is an X there is an actual number put there?

MR. GRIST: No; unless that work has been done; I don't think so. Unless we can say a moderate management level represents a 10 percent reduction in overall or 20 percent; I don't think there is anything we can put there. We have specific numbers placed in other spots, so I was just trying to clarify what those represent; because what does moderate mean.

Moderate to three different people means three different things. To some it could be very significant; and to some people it would be nothing. That is what saying, just a little more clarity on the moderate versus the elevated, what that really means for the public's benefit; so when they provide us comment, they know what they're commenting on.

MR. ROOTES-MURDY: So, again, the moderate response would be putting in essentially in the context of – you know, we'll start with croaker, well, and to a certain degree, spot. These would be minimum measures across the board. For the elevated response, this is trying to be a much more restrictive response; and as such there are more options that are added on – there are more management measures that would be added on; and as such it is constraining effort much more.

In turn it is a tiered approach, the first one being only two measures whereas the second is the

more restrictive one. For spot we have it as being – well, for both species we have it as being closures in the recreational and gear restrictions in the commercial. So, again, it is a tiered approach where the moderate response is to try to have an initial minimum measure response; and the elevated is to be much more restrictive in terms of trying to address a much more essentially worse trend.

CHAIRMAN GEER: Okay, we're running short on time and I'm going to try to stay on schedule. The goal was to try to get this to the point where it is ready to go out for public comment. Are there any changes that you want done to this; is it ready for public comment; and let's forward with that. Adam.

MR. NOWALSKY: I would like to move to add an option under both – and before we begin typing, I'll express what I'd like to see and then we can try to consolidate that in words. I would like to see the option for both the spot and the croaker where the management action would take place if both of the population characteristics were triggered, both of them versus "or".

Now, whether we structure that and you want the motion crafted as we have in Option 2 for each where it is "or"; Option 2 is "and"; and then we have a sub-option for each one as a statewide versus a coastwide or how you would like to do that and how you'd like me to craft it. I know you need a valid motion to have discussion, but I don't want to sit here and talk about describing the entire motion, rewording Option 2 and Option 3 as they currently exist under each one, just changing the word "or" to "and". Maybe I could get some help from staff on how to best move forward with that in an easy-to-craft manner.

EXECUTIVE DIRECTOR ROBERT E. BEAL: It's pretty tricky, but I think there have been other comments around the table that folks seem to be comfortable with the direction you're going in, Adam; to provide some more flexibility to the board and not paint the board quickly in a corner with only one of these triggers being met.

I think on the record you have described what you'd like to see pretty well; and if there is no objection to that around the table, I think staff can – and I don't know if you necessarily need to try to capture all your thoughts in one motion. If there is no objection to that, staff can work with Kirby and get that option included. If Kirby feels he has clear guidance I guess is the other part of it.

MR. ROOTES-MURDY: To answer your question, Adam, I think a clear option could be a tiered one to the previous set of options, which would be applying it to whichever one is decided; such that if Option 2 is decided, depending on the species; that it would be instead of an "or", it would be an "and" whether it is coast-wide or state-by-state measures, if that makes sense. Going through kind of a decision tree, you make a decision on the first option and then off of that determine whether it would be an "and" or "or". Does that capture what you were hoping for?

MR. NOWALSKY: I'm fine with that; and I'm just amazed how friendly we can do things at the South Atlantic Board. (Laughter)

CHAIRMAN GEER: We had a long discussion about that last night. Robert.

MR. BOYLES: Let me ask a question; another and/or question, Kirby, just to make sure; because I think what Adam is – the path he is going, and I agree with him, is that – and I may have missed this – these potential management measures; are they "and" or "or" – I think what I'm interested in is giving the board the maximum flexibility to respond to the data and to the situation as it is presented to us with the FMP review each year. Would we potentially have to implement a size limit and a bag limit and a seasonal closure or are those just a suite of options; just clarify that for me if you could, Mr. Chairman.

CHAIRMAN GEER: I believe those are just all options; is that correct?

MR. ROOTES-MURDY: Again, to get back to what Pat had mentioned before, with the table we have currently set up, it would be most helpful probably moving forward if in that table for the coast-wide measures what options you would prefer not have to in there; because right now it would be set at if the proportion of red is triggered for three years, then those three would go into place; whereas if you wanted to make a change in that language so that only two of them go into place. Now, for the Option 3, it is left up to the states to determine what suite of measures they would like to have. I mean, it could be just one measure; it could be three or four. It is just a question of what would be most appropriate at the state level to meet that percent reduction and harvest.

DR. DANIEL: Listening around the table, I want to speak in favor of as much flexibility as we can have to the board; so I agree with those comments. While the size limit does give me some pause potentially with the commercial side and not as much with the recreational side, and there may be options that you could do different things for different sectors. We've done that oftentimes and we do it a lot in North Carolina.

I think keeping as much in there for the public to comment on is a good thing. My not concern but my questions are really centered around what Joe brought up in terms of we need to be clear that this is not a stock assessment. We're not getting population biomass estimates on these two species.

The measures that we're proposing similar to the blue crab stop light in North Carolina is to try to do something that would reduce harvest. There is not a percentage attached to it and that could raise some questions to the public, well, what percentage and why do you need that percentage. I'm not sure we can answer those questions without a full-blown stock assessment.

This is sort of the preliminary stage; this is sort of the mid-state between doing nothing and maintaining status quo, which we have done for these two species and ultimately getting a stock assessment that we may have or may not in the near future. I don't know that you can assign a percent reduction that is consistent across the board for all jurisdictions.

I'm also intrigued with the winter issue for the northern region. We have been dealing with that with speckled trout in North Carolina and have closed the fishery if we have a major cold stunt event with the hope that those fish that are left over and did make it through the winter would have the greatest likelihood of spawning.

I don't know whether that's a similar circumstance that could be taken or similar track that could be taken in the northern region on spot and croaker or even if the jurisdictions up there would want to take that move. Those are kind of my comments on it, Mr. Chairman. I think the big thing is getting as much flexibility and as many options out there as we can, the best information that we can, and look at what other states are doing.

Robert just told that their legislature is getting ready to go with I think a 50-fish aggregate limit for spot, croaker, and kingfishes in South Carolina. We're getting ready to talk about kingfishes here in just a little while. Are there lessons we can learn from what some of the other states that have taken management action on these species that we might be able to glean from so that those that have been proactive and done something aren't going to go back and change, and maybe we can adapt to them.

MR. GRIST: I'll be brief. Going on this this and/or slant here such as on Table 2; maybe the language should be "could include" such as with your moderate recreational. As I understood Kirby to say a size limit and a bag limit and a closure; it could include one of them; it could include all three of them, but keep that extremely flexible; so maybe that type of language is what you need; because there would definitely would be a debate as we would need all three of those in an option if it is just saying moderate.

CHAIRMAN GEER: All right, we're running out of time. Adam.

MR. NOWALSKY: Would you like a motion to send this out for comment with the changes that have been discussed here today, Mr. Chairman?
CHAIRMAN GEER: I would love something, yes.

MR. NOWALSKY: I so move.

CHAIRMAN GEER: Can you clarify that a little bit.

MR. NOWALSKY: **Move to release the addendum for public comment with the changes discussed today.**

CHAIRMAN GEER: I've got a second from Joe Grist. All those in favor raise your right hand; those opposed; any null votes; abstentions. **The motion carries**. Kirby will work on those changes; and I'm assuming it will be on the agenda in the August meeting as well. All right, thank you very much for that conversation.

OVERVIEW OF SHEEPSHEAD AND KINGFISH FISHERIES

CHAIRMAN GEER: We're going to move on now. As Louis said, we're going to continue the top with our underloved sciaenids; and we're going to be talking about the potential of adding sheepshead and whiting as management plans. Kirby.

MR. ROOTES-MURDY: I have two species' overviews that I'll go over through fairly quickly, but I'll have time for questions at the end of each. I would ask for the discussion of these two to wait until after I get through both of them. The first one is the sheepshead fishery overview. Sheepshead are a common marine fish found from Nova Scotia down through Brazil.

The population that ranges from Nova Scotia to Florida is actually regarded as a subspecies of the Archosargus probatocephalus. They can be found near jetties, wharves, pilings, shipwrecks and waters warmer than 15.5 degrees Celsius. Adults mature between the ages of two and five with approximate size for males reaching between 7 to 14 inches and 9 to 14 inches in females.

They can grow up to about 35 inches total length with a weight of possibly 22 pounds; though average size and weight vary along the Atlantic Coast. Sheepshead also have been found to live as long as 35 years based on aging work. Sheepshead spawn in near and offshore waters and proximate reefs and wrecks during the late winter and early spring with juveniles inhabiting grassy flats and dispersing to high-relief hard-bottom areas as they mature.

They're omnivorous but feed mostly on crustaceans. Studies have shown that prey type may influence the strength of their jaw. They have incisors and molars as well. It is unclear whether sheepshead are truly a migratory species. Evidence suggests in the Gulf and the Atlantic that sheepshead migrate from nearshore to offshore waters, but generally inhabit state waters.

Little evidence has shown for whether they migrate north to south. Regarding coast-wide commercial landings versus recreational landings, primarily sheepshead is a recreational fishery with about 74 percent of the total landings between the two being of recreational harvest. Recreational harvest has averaged about 1.5 million pounds annually over the last ten years with Florida having the highest proportion of the catch as on the next slide I'll show you; and second two being South Carolina and North Carolina at approximately 11 and 10 percent.

In terms of the value of sheepshead, commercial landings have averaged about 550,000 pounds over the last three years; as I mentioned with Florida and increasingly North Carolina making up the bulk of these landings. 2012 commercial landings were valued at approximately $397,000. Regarding management, sheepshead were formerly managed by the South Atlantic

Fishery Management Council under the Snapper Grouper Reef Fish Complex, but were removed in 2012 largely due to most of the landings being found in state waters rather than federal waters. Currently up on the board right now are the state-by-state measures that are in place for commercial and recreational fisheries. If you have any questions on what I just presented, let me know.

MR. BOYLES: Just a clarification; Kirby, would you put that last slide up, please, on the commercial management measures. Our management measures in South Carolina, that 14-inch minimum size and 10-fish possession and 30-fish boat applies to both recreational and commercial.

MR. ROOTES-MURDY: Thank you. If there are any points of clarification or corrections, I appreciate that.

MR. JIM ESTES: Kirby, is there any evidence that our stocks mix from state to state?

MR. ROOTES-MURDY: I can't speak to that. I don't have a tremendous amount of background in sheepshead; but from what I understand, there hasn't been shown a lot of evidence that they migrate north to south, so I'm not sure of the influence of northern found species to those in southern areas.

CHAIRMAN GEER: Moving on to whiting.

MR. ROOTES-MURDY: Next I will just go through southern kingfish quickly. Southern kingfish, Menticirrhus americanus, are a short-lived sciaenid. Some kingfish begin spawning in their first summer with most kingfish maturing by about age one. The spawning season for kingfish ranges from May through October.

Most kingfish that are landed commercially are around age three with a maximum age observed at approximately eight years old. Southern kingfish stock abundance has not been assessed due to a lack of biological and to a certain degree landings' data. Problems with data include aggregate commercial landings for the three Menticirrhus species, a lack of time series especially in biological data and no or limited measurements from dominant commercial fisheries, as well as questionable identification and landings' estimates in the recreation fishery.

Regarding distribution, there is also limited data and evidence of whether they're truly migratory or not between southern, northern and Gulf species. Looking at commercial and recreational landings, over the last ten years it has been approximately a 50/50 split. Commercial landings have been approximately 1.14 million pounds over the last decade, having declined from approximately 2.5 million pounds in the mid-eighties.

Florida and North Carolina have had the highest proportion of these landings. It is important note that for the commercial landings they're listed as an aggregate kingfish of king whiting; so there is not a different listing in terms of commercial landings of northern or southern or Gulf by the National Marine Fisheries Service.

In looking at the recreational harvest in the South Atlantic, recreational estimates have peaked in 1983 at about 2.6 million pounds; reaching a low of about 577,000 pounds in 1998 and have been maintained at about an average of 1.5 million pounds during the time series. During this period of time, the southern states, primarily Florida, Georgia and South Carolina have made up the bulk of the harvest.

In 2013 South Carolina had the largest estimated harvest at about 550,000 pounds followed by Florida at 238,000. In terms of management, there is currently no management measures in place along the Atlantic Coast for kingfish; but I wanted to go through just very briefly that this species has been looked at by the board previously.

In 2008 there was a Kingfish Technical Committee that was formed and presented to the board a memo outlining available data on kingfish. Due to impediments and lack of available data, they moved at that time to not

initiate a stock assessment; but based on the information provided to the board, the technical committee was tasked with developing a list of research priorities and needs.

I have just a short list that I'll go through in terms of how those have been updated since 2008. Aggregate commercial data has increased. There has been work completed in North Carolina to better seek identification information with few errors observed. Effort along the coast continues to be monitored in both commercial and recreational catches.

Regarding the time series of data needed for commercial effort in South Carolina and Georgia, back in 2008 it was indicated that approximately 15 years of data was needed. Currently we are at ten years for South Carolina and twelve years for Georgia. Recreational release mortality has been estimated about 30 percent for the last thirteen years based in information provided by the National Marine Fisheries Service.

As I mentioned earlier, there is limited information on the movement and migration of the species in part due to a lack of tagging studies by the states. As I mentioned earlier, the identification errors do persist within the MRFSS and MRIP data. There have been otolith projects completed both in North Carolina and Georgia in terms of aging. That is where some of those high and medium research priorities that were identified back in 2008 stand currently. If you have any questions, just let me know.

DR. DANIEL: I guess not so much a question but a couple of comments. The sheepshead issue really stems from the South Atlantic Council removing them from the management unit in the Snapper Grouper Complex. What that did was that basically removed any management plan that included sheepshead. One of the thoughts here was whether or not this board wanted to move forward and try to implement some measures to protect sheepshead.

I think the only measures were a 20-fish bag limit, I believe was the measure that was in place; but with the commercial fishery you had to have a snapper grouper commercial permit, which is extremely limited and very expensive to get. It has opened up some opportunities for the commercial fishery by removing them from the management unit.

That is kind of where that came from. With the Menticirrhus species, North Carolina went forward with a Kingfish FMP in North Carolina. We did stock assessments I believe on all three. We had those go out to peer review and they were rejected because of the lack of information from the other states with the assumption that they're fairly migratory; and I think they are.

The question really came up then, well, if we're going to do anything with Menticirrhus it needs to be done interjurisdictionally. There is that potential of lumping them in with sort of a sciaenid groundfish complex might be a simple way to do it, if that is something the board is interested in doing, and lumping them in with spot and croaker.

The final thing is based on my experience with sheepshead – and this mostly was out of South Carolina – they tend to move inshore or offshore as opposed to up and down the beach. Sheepshead may be a little more state-specific than at least Menticirrhus species. This is just for the board's consideration and comment.

MR. BOYLES: Mr. Chairman, a finer point on Dr. Daniel's point – and I'm sorry Chris had to leave to catch a flight – with our trammel net survey on sheepshead from 1991 through 2013, 2,344 sheepshead tagged; 193 recaptures; 8.23 percent recapture rate; distance traveled by recapture fish ranged from zero to 90 miles with the average distance of 5.6 miles.

The majority of the fish were recaptured by recreational anglers. We've got evidence of one interstate movement in our tagged sheepshead; so I think just to put some data for the board and answer Jim's question about tagging studies. Unfortunately, we don't have similar data on

whiting; but I think it is safe to say that we see sheepshead as more of a cross-shelf species than an interstate species.

DR. LANEY: In answer in Jim's question, also, with regard to sheepshead, I'm looking at a table here, Jim, from a study that was done by FMRI scientists in northern Indian River Lagoon; and they had tagged – let's see, it looks like, inside the no-take zone they tagged 597. They tagged 520 outside. The bottom line is they got 32 or 2.9 percent of 1,117 fish tagged.

I haven't had time to look through the rest of the report and see how far they moved; but it looks like from the figure they have in here that they didn't move very far; so it seems to confirm the same sort of results that South Carolina found in their study. I know, Joe, Virginia has an angler tagging program. I looked at your – I don't know whether I was looking at a most recent report or not; you may want to say something about the Virginia sheepshead tagging results from angler-based tagging program.

MR. GRIST: I can only give a general comment and more backing up what Robert said. I don't have the specific information with me as far as how much have been crossing the state; but the last I remember, speaking with this with Louis Gillingham – he is part of the tagging project – is it was more of an out and back in type of move. I would have to look at the data specifically, Wilson, to comment further.

CHAIRMAN GEER: Okay, are there any other comments? Robert.

MR. BOYLES: I appreciate the situation that everyone finds themselves in. Particularly with sheepshead; you take it out of the FMU of the South Atlantic Council and it kind of slips below the stock assessment radar. We're very concerned about it in South Carolina. As you saw, our legislature implemented some management measures for both recreational and commercial fisheries.

As Louis alluded to as well, our General Assembly is now considering a small sciaenid aggregate bill which would take into account spot, croaker and whiting; very, very important species recreationally; some commercial landings in South Carolina mostly in the form of shrimp trawl bycatch; something again we're concerned with in terms of just keeping a finger on the pulse.

I think the question before the board is are we interested in engaging in more formal interstate management. I guess I'll be the first to say is I'm not very interested right now. Again, I recognize the situation that we all find ourselves with in terms of rejected stock assessments. We don't want any of us to be in those situations; but I think with where we are with respect to our resources and the budgets that we have I'm not sure that the juice is going to be worth the squeeze here.

I think this is a very helpful discussion for us to have. Kirby, I appreciate your pulling all this information together for us; but from my perspective from where we sit – and I hate to say this, but I think we're okay going it alone for the moment given all the other pressures and requirements on the commission.

DR. LANEY: Well, just a point of information for the board; the Habitat Committee is currently working on a sciaenid source document that I think may be of use to the board in the future when we get that completed. Melissa Yuen has been pulling together all of the habitat sections from all of the existing commission sciaenid plans.

I believe we're going to add kingfishes to that because they were on the ASMFC's Species of Interest List, I think. That will be a pretty complete document. I, for one, would be interested, Robert, in hearing from you in the future about how your sciaenid plan moves forward and what sort of results you see from that.

MR. GRIST: Going back to what Robert said; I agree on going it alone at this time. Back in 2007 our industries came together in front of our Finfish Advisory Committee and they put forth

the idea for Virginia to have management on sheepshead; and that is where we are with the four-fish recreational and the 500-pound trip limit on the commercial. I definitely think at this point going it even just to the states is the best plan, but I appreciate the update on the information. That is some good work.

CHAIRMAN GEER: Is there anybody who feels we should move forward? I'm not seeing much. All right, I would say we don't need a motion on that. We've got one last item on the agenda. We have to populate some of our committee memberships at this time. We have to get some members for the South Atlantic Advisory Panel as well as our stock assessment subcommittee for red drum.

POPULATE SOUTH ATLANTIC SPECIES COMMITTEES MEMBERSHIP

MR. ROOTES-MURDY: This will be really quick. I just wanted to bring two things to the board's attention; the first being the South Atlantic Species Advisory Panel; and the second being the need to populate the Red Drum Stock Assessment Subcommittee. First on the AP, attendance has been fairly poor in the past few years. Between this year of 2014 and 2013 we've had two calls. While we don't have tremendous work in terms of engaging them, those calls have been poorly attended. The request is for the states to really consider who their current members are on the advisory panel; and if they have changes they'd like to make, to let us know down the road.

The second is that with the 2015 Red Drum Stock Assessment set to begin planning and coordination, we need to populate our subcommittee. If people have members they would like to nominate today, that would be great – we also need a Chair – but if not, that can be communicated to us at a later date. The last item was just to show who was on the subcommittee the last time and the need to replace them given that people have moved on to other positions.

CHAIRMAN GEER: Does the yellow mean that they're going to participate in this one?

MR. ROOTES-MURDY: The yellow means that they were on the last subcommittee. The subcommittee is technically dispersed after the stock assessment is completed. The yellow is indicating the people who had been on the stock assessment but are no longer even part of the Red Drum Technical Committee.

MR. GRIST: For Virginia I would like to definitely get my name off that list; and I would like to place in my stead Sally Roman from our staff.

MR. BOYLES: I would like to replace Mike Denson. I think Mike has a lot to offer here, but I suggest to you Dr. Steve Arnott of our staff.

CHAIRMAN GEER: Jim, have you got anybody?

MR. ESTES: I assume by what I read there that Mike Murphy is remaining on the committee.

MR. ROOTES-MURDY: Yes; he will need to be appointed, but, yes, he has so far taken part in the planning call.

MR. ESTES: If we're repopulating, I would suggest Mike, if he is willing to do that.

MR. ROOTES-MURDY: And for Georgia I would recommend Carolyn Belcher. Louis, anybody from North Carolina?

DR. DANIEL: I would like to keep Lee on there.

MR. THOMAS O'CONNELL: If you're looking for more members, I would be happy to recommend Harry Rickabaugh from Maryland.

CHAIRMAN GEER: Okay, we need a chairman, but I don't think anybody was willing to jump up and be chairman unless it is one of those folks that was named. I know Carolyn was not interested in chairing the committee.

If any of those folks just desperately want to lead this crew, please come forward and let one of us know. Is that enough? Is there any objection to this group? Hearing none; all right. I'm sure our staff members are going to say thank you very much for this great honor.

PUBLIC COMMENT FROM NORTH CAROLINA FISHERIES ASSOCIATION

Okay, we promised the North Carolina Fisheries Association a few more minutes to speak. They're going to have three speakers; they're going to have three minutes apiece. We're running late; so, guys, keep on time. We have Brent Fulcher, Bradley Styron and Ken Siegler.

MR. BRENT FULCHER: Mr. Chair, my name is Brent Fulcher. I'm from North Carolina, Acting Chairman of the North Carolina Fishery Association; also support between our two businesses in coastal North Carolina over 300 coastal fishermen. I have also have large ocean-going trawlers that work from Massachusetts to Florida and participate in many fisheries.

I'd like to say again thank you, Mr. Chair and the Atlantic States Marine Fisheries Board, for taking the opportunity to allow us to speak and allowing our delegation of North Carolina fishermen to attend and participate in your process. North Carolina fishermen are and always have been in favor of sustainable fisheries as it is necessary for them to have long-term employment in the fishing industry.

One thing I heard here earlier, when you were speaking about the spots, I heard you speaking briefly about size limits. And, especially when you start to talk about size limits recreationally – and I'm going to just touch briefly on that and then I'm going to pass the microphone to Mr. Bradley Styron and Mr. Siegler that is here to speak about the drum issue, also.

From talking to many fishermen, recreational and commercial, when you speak to recreational fishermen – just last week I spoke to individuals came in one of my retail stores and he had been off on a headboat catching black sea bass. I had asked them what they were catching. I figured triggerfish and he said triggerfish and black sea bass.

He said but the black sea bass, they were catching them as hard as they could, but they were throwing them back because they were a half inch too short. I kind of looked down and mumbled and he said, "What's wrong?" I said, "It's just said you throwing those fish back; they probably won't live." He said, "Them fish couldn't have lived; their bladders were hanging out of their mouth."

That brings me to what I want to talk about. It is the belief of many commercial fishermen that the mortality rate in the recreational fishery is extremely high due to the release mortality of undersized fish. Most times those fish are plenty large enough for food consumption, but they had to be returned because of being to the illegal size.

Please consider recommending creel limits or bag limits and not necessarily size limits when you come up with management plans especially recreationally. You need to implement mandatory retention to prevent high grading if you do that. I think that it would possibly mitigate excessive mortality and at the same time increase the maximum economic yield to all the coastal communities that you represent. I thank you for your time and I am going to turn the microphone over to Bradley Styron.

MR. BRADLEY STYRON: My name is Bradley Styron. I am a commercial fisherman from Cedar Island, North Carolina. I would like to thank you for the opportunity to speak here today. On this red drum issue, we've been locked in the 250,000 pound cap since the nineties. For several years we failed to even meet that with as low as 61,000 pounds out of a possible 250,000.

Last year we did; we went over 110,000. But, you know, you can look at that in several ways. We look at it as the management plans have worked; that we have an abundance. It is the first year and probably the first year in three or

four we even come close. I think in 2012 we landed 61,000 pounds; in 2011 we landed 91,000.

Over the years we've left a lot of fish on the table; and now it is an opportunity for us to have a chance to get something back, but we're locked into this cap that we went over last year. We agreed voluntarily – and it didn't come without a lot of heartache – to shut down the fishery to address the overage. We're good stewards of the resource. I think we have proven that.

It is time I think for us to get something back. We have almost 16 years in this; and out of the 16, 15 we've been at 40 percent SPR. That speaks highly of the regulatory process. It is time now for us to get something back. We're here today to put a face on the plight; and we're looking for options and we're looking for some flexibility. To try to keep us in this fishery; we're certainly not rich people. We're just hard-working people that deserve a chance. Do any of you have any questions? Thank you for the opportunity to speak.

MR. KEN SIEGLER: Mr. Chairman, my name is Ken Siegler. I'm from Hubert, North Carolina, and a commercial fisherman in the community. It was estimated it would take 15 to 20 years to recover the northern regional red drum stocks. Presently you'd be hard pressed to find an estuary or a backwater creek, point or marsh, moisture rock, river, bay, sounds/inlet in North Carolina that does not have some number of red drum present; looking at any shoal or any inlet and see a robust stock of three- to five-year-old fish in preparation of joining the offshore spawning stock.

Listen to the radios of vessels as they transit the EEZ with color scopes and hear of schools stacked fathoms deep, a mile or more in length. In 1990 a harvest cap of 300,000 pounds that was based on historical landings was set for the industry; the SPR, 1.3 percent. In 1991 a harvest cap was reduced to 250,000 pounds in concert with the one-fish creel limit and slot size limitations and the populations began to expand. In 1994 a 30 percent SPR goal was set and the overfished threshold for the northern region was met. Then a new goal was set of 40 percent SPR and that goal was met in 1996. In 2001 North Carolina instituted a bycatch provision for red drum with populations at moderate levels. The regulation appeared to have merit.

As the population increased, additional harvest could be allowed to avoid wasting of resources and regulatory discards. Currently the red drum population is robust profound. Such strong year classes of fish present significant issues for both fishermen and managers; managers bound by decade-old federal guidelines and fishermen trying not to catch fish they can't avoid simply because of their sheer numbers.

At this point a bycatch provision appeared to be no longer an appropriate management strategy. If employed to control harvest, the provision becomes counterproductive. With such an abundance of fish present, reducing the number of fish allowed to be harvested serves only to relegate how many fish must be wasted to harvest a few.

A commercial fisherman's desire has always been to conserve resources. We can no longer rely upon reactionary management through antiquated provisions which relegate and mandate waste of resources to control harvest. Future management strategies must be based in science, must be sound, flexible and not be mandated to waste such priceless fisheries resources. Our very jobs and livelihoods depend upon parameters and we can no long afford the loss of jobs that support our communities and fragile economy.

Members of the commission, red drum stocks are recovered. We applaud a job well done. What is required now is management of a recovered fishery; management that acknowledges such extraordinary abundance and doesn't put fishermen out of work because there are so many fish in the water.

Approaches to management we'd like you to consider is looking at changing the beginning

year date – fishing date from September to April 1. The spring and the summer months are the times when the water temperatures are the highest and the fish are most prone to not survive the encounter. Fall temperatures are cooler; and if the fish have to be let out of the net, then those fish would most likely have a better chance of survival.

In 2012 we left 150,000 pounds of fish unharvested. In 2011 we left 115,000 pounds of fish unharvested. In 2010 we left 80,000 pounds of fish unharvested. That is over 190,000 pounds of unharvested fish. It is felt that some flexibility here can be looked at to where we have such under fish we need some acknowledgement of that fact and with some kind of roll-forward provision not for harvest but merely to cover any overage that may occur in the following year would be a big help. Thank you.

ADJOURNMENT

CHAIRMAN GEER: Thank you very much, all three of you, for coming. I greatly appreciate and I wish we could have given you some more time. Are there any comments or questions for the three gentlemen? We are moving forward with stock assessments. Is there any other business before the board? We're adjourned.

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(Whereupon, the meeting was adjourned at 11:05 o'clock a.m., May 14, 2014.)

Draft Addenda for Public Comment

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM I TO THE OMNIBUS AMENDMENT FOR SPOT AND DRAFT ADDENDUM II TO AMENDMENT I TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC CROAKER

Vision: Sustainably Managing Atlantic Coastal Fisheries

Approved for Public Comment
May 2014

Draft Addenda for Public Comment

Public Comment Process and Proposed Timeline

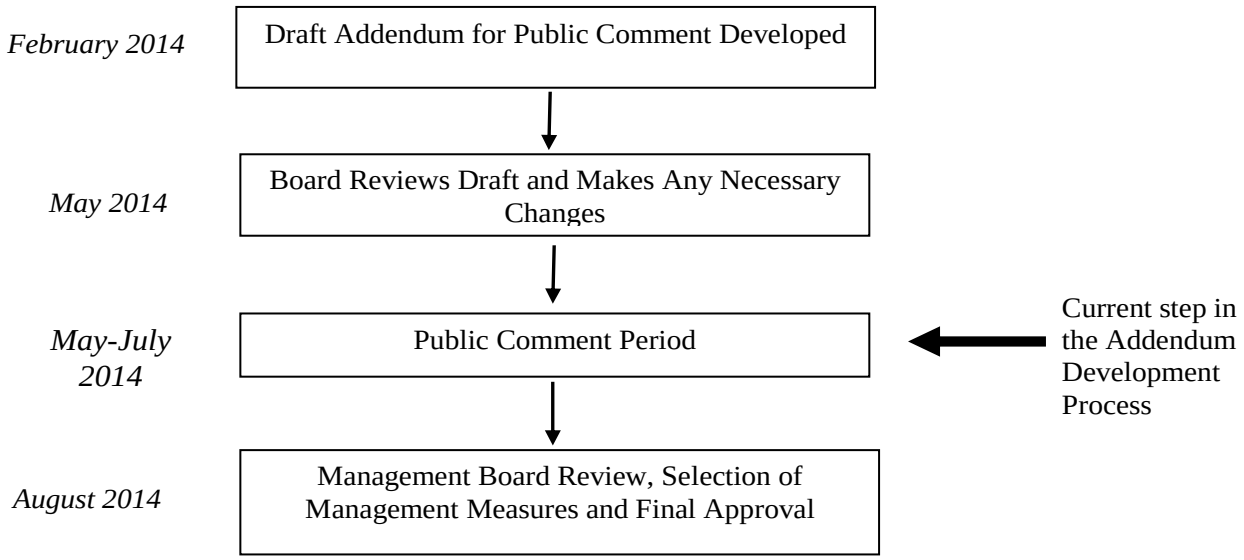
In February 2014, South Atlantic State/Federal Fisheries Management Board (herein after referred to as "Board") approved a motion to initiate the development of an addendum to the Interstate Fishery Management Plans (FMP) for Atlantic Croaker and Spot to employ the traffic light approach in order to better manage these species. This draft addenda presents background on the Atlantic States Marine Fisheries Commission's (ASMFC) management of Atlantic croaker and spot, the addendum process and timeline, and a statement of the problem. This document also provides options for Atlantic croaker and spot management for public consideration and comment.

The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is **July 2, 2014** at **5:00 p.m.** Comments received after that time will not be included in the official record. You may submit public comment in one or more of the following ways:

1. Attend public hearings in your state or jurisdiction.
2. Refer comments to your state's members on the South Atlantic State/Federal Fisheries Management Board or Advisory Panel, if applicable.
3. Mail, fax, or email written comment to the follow address:

Mail: Kirby Rootes-Murdy
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200A-N
Phone: (703) 842-0740
Arlington, VA 22201

Email: krootes-murdy@asmfc.org
(Subject: Croaker/Spot Draft Addendum)
Fax: (703) 842-0741



1.0 Introduction

ASMFC has coordinated interstate management of Atlantic croaker (*Micropogonias undulatus*) and spot (*Leiostomus xanthurus*) from 0-3 miles offshore since 1987. The management area extends from New Jersey to the east coast of Florida for Atlantic croaker and Delaware to the east coast of Florida for spot. Atlantic croaker is currently managed under Amendment 1 (2005) to the Atlantic Croaker FMP. Spot is managed under the Omnibus Amendment (2011) to the Spot, Spotted Seatrout, and Spanish Mackerel FMPs. Management authority from 3-200 miles from shore lies with NOAA Fisheries.

The purpose of this draft addenda is to consider alternative management programs for Atlantic croaker and spot with the application of the Traffic Light Approach (Caddy and Mahon, 1995; Caddy, 1998, 1999) as a precautionary management framework. The Board initiated this addenda at its February 2014 meeting following the development of the Traffic Light Approach (TLA) report and management memo by the Atlantic Croaker Technical Committee (TC) and Spot Plan Review Team (PRT). The TC and PRT recommend both species for a benchmark stock assessment with the proposed Traffic Light Approach providing guidance in the interim period.

2.0 Overview

2.1 Statement of the Problem

Under the current management program for Atlantic croaker, annual changes in recreational and commercial landings are compared with the average of the previous two years' index value. If the index value drops below 70% of the previous two year average, at a minimum, examination of the data is required by the TC.

Under current management program for spot, index values are compared to the 10^{th} percentile of the indices time series. If two of these indices (one of which must be fishery-independent) are below the 10^{th} percentile the PRT is to recommend to the Board that it consider management action.

Both the Atlantic croaker and spot management triggers are limited in their ability to illustrate long-term declines or increases in stock abundance. Under the current annual trigger exercises, the high degree of variability in year to year index values make it difficult to respond to gradual but persistent decreases in the trigger indices without a formal management framework in place.

2.2 Background

Atlantic croaker and spot are small sciaenid forage species that support commercial and recreational fisheries in the Mid- and South Atlantic regions. Both species migrate seasonally along the coast, moving northward and inshore to estuaries and bays during warmer months (spring-fall) and southward and offshore to more oceanic waters in the winter. Both species feed on planktonic organisms as post-larvae and young of the year, and as juveniles and adults prey on bottom dwelling organisms such as worms and crustaceans. While both species reach maturity by approximately age two, spot are considered a short-lived species rarely living beyond six years. Atlantic croaker can live up to 17 years, but more commonly live no longer than 10 years.

The last benchmark stock assessment for Atlantic croaker was conducted in 2010. Unlike previous assessments it evaluated the resource as a single coastwide stock. The assessment indicated that the resource is not experiencing overfishing, biomass has increased, and age-structure has expanded since the late 1980s. However, it could not determine stock status given uncertain model estimates due to limited data on shrimp trawl bycatch and fishing mortality. While state level stock assessments for spot have been conducted over the years, a coastwide benchmark assessment has not yet been done. As such the stock status of spot is unknown.

Amendment 1 to the Atlantic Croaker FMP tasks the TC with conducting annual trigger exercises to assess the stock in years between benchmark stock assessments. This level of monitoring - with the stipulation of initiating a stock assessment based on the results of the trigger exercises - was enacted to enable the Board to better monitor changes in stock abundance. The Omnibus Amendment initiated annual trigger exercises to monitor the status of spot resource while also directing the Board to consider management action depending on the results of the trigger exercise. Without coastwide minimum management measures for either species, the current trigger exercises do little to provide effective management in between stock assessments.

Additional concerns have been raised over the significant level of bycatch and discards that may be occurring through the shrimp trawl fishery for both spot and Atlantic croaker (ASMFC 2010, 2011). While bycatch monitoring programs have been enacted in some states, such efforts have not encompassed the entire management range for either species. Though bycatch reduction devices have been introduced in the shrimp trawl fishery, there has not been observed increases in abundance for either spot or Atlantic croaker in recent years. Addressing these bycatch concerns, as well as the potential for increased regulatory discards in directed fisheries caused by changing the current management program for both species will need to be considered by the Board.

In relatively short-lived species like spot or a fast-growing, early maturing species like Atlantic croaker it is preferable to respond to persistent periodic declines that occur over several years rather than respond to rapid annual changes. Declines that occur over several years require close monitoring in order to anticipate when or if management action may be required. With this in mind, management responses that use techniques showing multi-year changes and trends would be more useful than simply examining year to year changes. Knowing the level at which to respond or initiate some type of management action should be based on long-term knowledge of general stock indications as well as how that stock has changed over time. The Traffic Light Approach offers the ability to illustrate trends based on relevant stock characteristics that can include historical abundance, life history parameters, and response to fishing pressure; this approach can also incorporate assessment based reference points.

Traffic Light Approach (TLA)

The TLA was originally developed as a precautionary management framework for data poor fisheries whereby reference points could be developed that would allow for a reasonable level of resource management. The name comes from assigning a color (red, yellow, or green) to categorize relative levels of different indicators for either a fish population or a fishery. These indicators can be combined to form composite characteristics within similar categories and can include biological indicators, such as growth and reproduction; population level indicators, such as abundance and stock biomass estimates; or fishery indicators, such as harvest/landings and

fishing mortality. However, each indicator must be evaluated separately to determine its appropriateness for use in management.

In general practice when applying the TLA, the green/yellow boundary is typically set at the long-term mean of the data series reference period (Halliday et al., 2001) of the indicator and the yellow/red boundary is set at 60% of the long-term mean, which would indicate a 40% decline from the series mean. Index values in the intermediate zone can be represented by a mixture of either yellow/green or yellow/red depending on where they fall in the transition zone. Since increasing proportions of red reflect decreasing trends away from the time series mean, the relative proportion of red of the indicator may offer one way of determining if any management response is necessary.

North Carolina Blue Crab Adaptive Management Framework

One current example of the TLA was recently implemented for the North Carolina blue crab fishery (Table 1) by the North Carolina Division of Marine Fisheries (NCDMF). The NCDMF developed a management framework that applies the TLA to stock characteristics (adult abundance, recruit abundance, and production) derived from fishery-independent data (NCDMF surveys). Within the management framework, two levels of management response were developed based on the relative proportion of red within each characteristic. A moderate response is required when the traffic light characteristic meets or exceeds 50% red for three consecutive years and can result in actions that limit harvest such as restricting trip level harvest for sponge crabs, institution of minimum and/or maximum size limits for female crabs, or seasonal closures in spawning areas. An elevated management level response is initiated when the traffic light characteristic meets or exceeds 75% proportion of red for three consecutive years and can result in more restrictive management actions such as prohibition of sponge crabs, no peeler harvest, or closure of the fishery through season closures, gear restrictions or both.

Table 1. North Carolina Blue Crab Adaptive Management Framework

Stock Characteristic	Moderate management level (50% red)	Elevated management level (75% red)
Adult abundance	A1. Increase in minimum size limit for male and immature female crabs A2. Reduction in tolerance of sub-legal size blue crabs (to a minimum of 5%) and/or implement gear modifications to reduce sublegal catch A3. Eliminate harvest of v-apron immature hard crab females	A4. Closure of the fishery (season and/or gear) A5. Reduction in tolerance of sub-legal size blue crabs (to a minimum of 1%) and/or implement gear modifications to reduce sublegal catch A6. Time restrictions
Recruit abundance	R1. Establish a seasonal size limit on peeler crabs R2. Restrict trip level harvest of sponge crabs (tolerance, quantity, sponge color) R3. Close the crab spawning sanctuaries from September 1 to February 28 and may impose further restrictions	R4. Prohibit harvest of sponge crabs (all) and/or require sponge crab excluders in pots in specific areas R5. Expand existing and/or designate new crab spawning sanctuaries R6. Closure of the fishery (season and/or gear) R7. Gear modifications in the crab trawl fishery
Production	P1. Restrict trip level harvest of sponge crabs (tolerance, quantity, sponge color) P2. Minimum and/or maximum size limit for mature female crabs P3. Close the crab spawning sanctuaries from September 1 to February 28 and may impose further restrictions	P4. Prohibit harvest of sponge crabs (all) and/or require sponge crab excluders in pots for specific areas P5. Reduce peeler harvest (no white line peelers and/or peeler size limit) P6. Expand existing and/or designate new crab spawning sanctuaries P7. Closure of the fishery (season and/or gear)

Applying the Traffic Light Approach to Atlantic Croaker & Spot

The TLA has utility in addressing declines in harvest or production of Atlantic croaker and spot fisheries. Additionally, some of the management tools utilized in the blue crab adaptive management framework could be applied to the Atlantic croaker and spot fisheries, particularly size limits, possession limits, and seasonal closures. While the Blue Crab Adaptive Management Framework uses the TLA as a stock assessment, the TLA can provide management guidance in lieu of a current stock assessment for either spot or Atlantic croaker. The TC and PRT recommend both species for a benchmark stock assessment with the proposed TLA providing guidance in the interim period.

For Atlantic croaker and spot, the TC and PRT determined a more appropriate production characteristic for both species would be a 'harvest' characteristic comprised of composite commercial landings and recreational harvest data. These indices are currently used in the annual trigger exercises for these species. Similarly, a composite of fishery-independent survey indices could be used to derive the adult abundance characteristic. As the TLA is not considered a stock assessment for either species, the characteristics would be understood as population characteristics rather than stock characteristics. For both species, the TC and PRT would utilize the best available data and modify the TLA as needed in an annual review and update.

3.0 Management Options

If options 2 or 3 are approved by Board action, they will replace the current annual trigger exercises for Atlantic croaker (under Amendment 1) and spot (under the Omnibus Amendment).

3.1 Atlantic Croaker Management Options

Option 1 - Status Quo

Under this option, there is no change to the annual trigger exercises. The current trigger exercises specify that if either the most recent year's commercial landings or recreational harvest are less than 70% of the previous two year average for their respective category a new stock assessment will be initiated. Additionally, if the TC notices substantial changes in one or more of the remaining trigger categories (biological data monitoring, commercial fisheries effort vs. landings, recreational catch rates, or surveys), the TC can also request that a stock assessment be conducted.

Option 2 - Coastwide Management Framework based on threshold

The thresholds for the proportion of red in the population characteristic that would determine a management response would be as follows:
30%- this represents moderate concern to the fishery with moderate management response
60%- this represents significant concern to the fishery with elevated management response

The TC determined that these thresholds currently serve as adequate proxies based on fishery-dependent and fishery-independent data during the last 30 years. A minimum threshold significantly higher than 30% may not work effectively in addressing declining trends. An example of when these thresholds have been met or exceeded during the last 20 years are provided in figures 1 and 2.

Sub-Option 2A. Single Population Characteristic criteria for Management Action
Management action should be enacted when either one of the population characteristics consecutively achieve or exceed a threshold during a three year period.

Sub-Option 2B. Multiple Population Characteristic criteria for Management Action
This management option would require that both population characteristics achieve or exceed the proportion of threshold (Adult abundance 'AND' Harvest) for the specified three year period.

Under option 2A or B management measures would remain in place for three years to promote consistent coastwide measures and allow for sufficient time to evaluate population response (Table 2). Once management action has been taken, the thresholds will not be applied to the harvest characteristics in assessing the fishery for three years, as the fishery-dependent data may be influenced by management action.

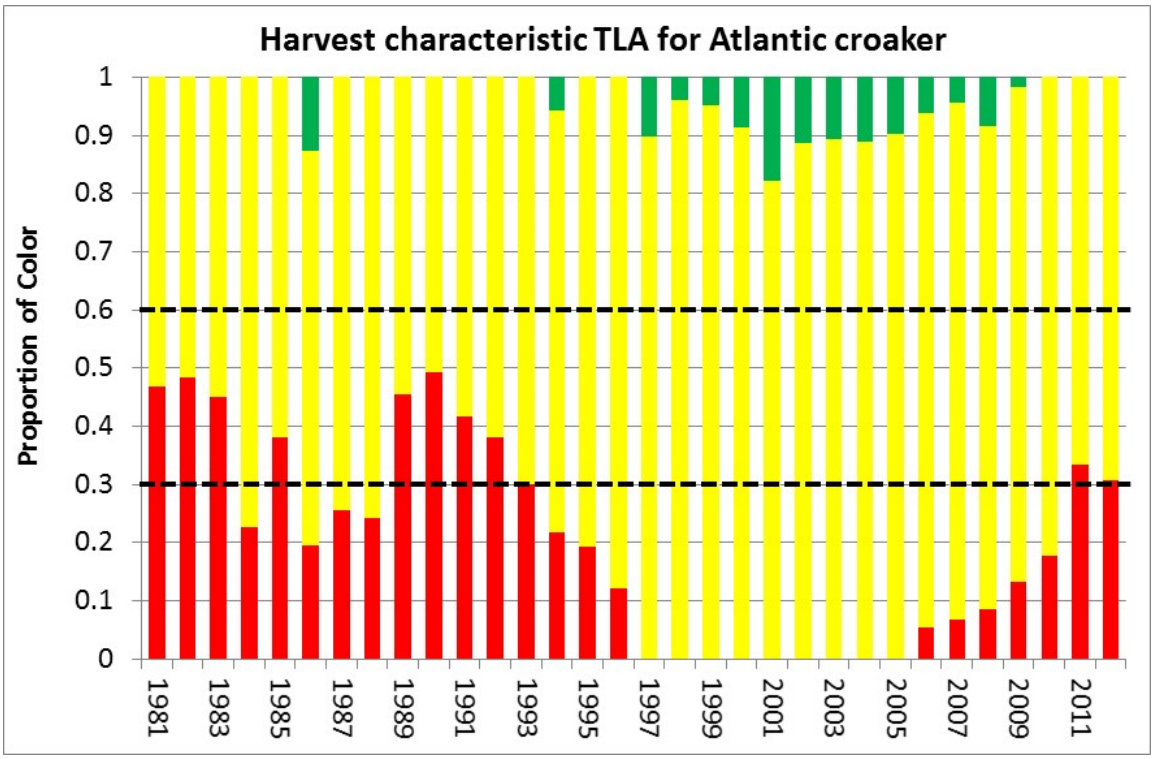


Figure 1. Composite TLA using Commercial Landings and Recreational Harvest for Atlantic Croaker with Management Thresholds of 30% and 60% Proportion Red (Base years 1996 – 2008).

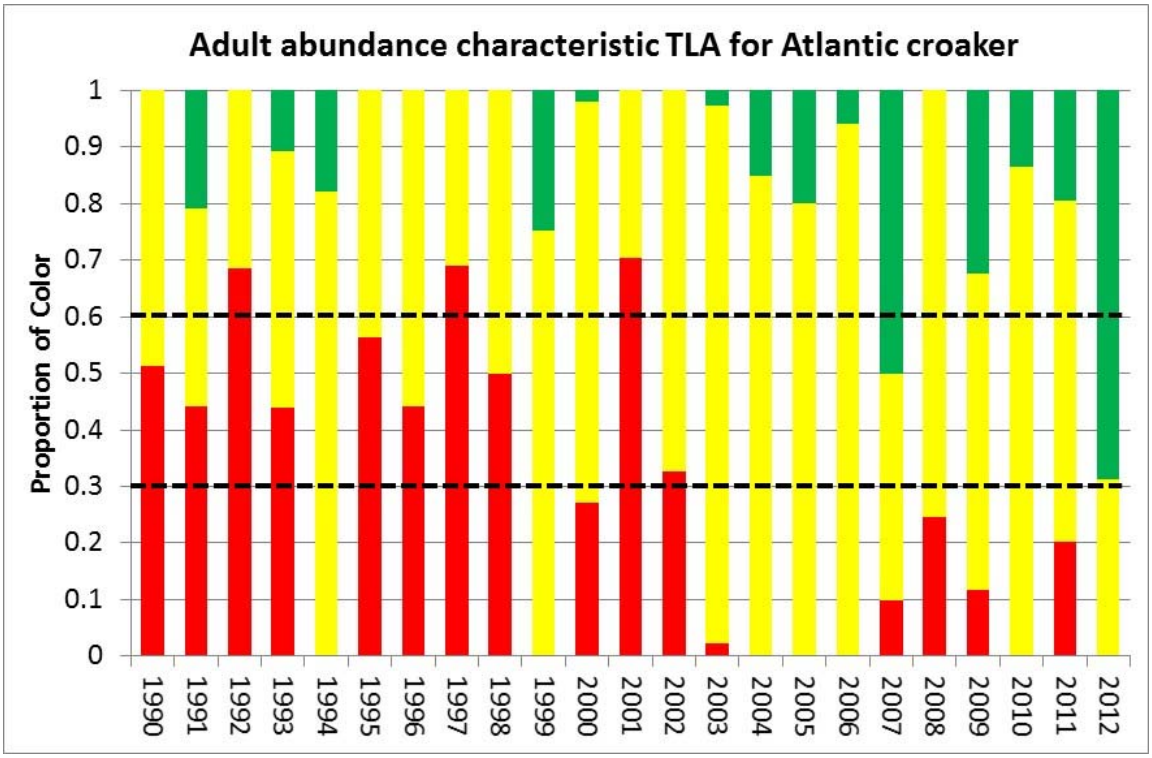


Figure 2. Composite TLA using Fishery-independent Surveys and Index for Atlantic Croaker with Management Thresholds of 30% and 60% proportion red (Base years 1996 – 2008).

Management Measures

The TC would recommend the appropriate percent reduction in harvest needed and measures to achieve the harvest reduction on a coastwide basis to be approved by the Board.

Under this option, possible management tools for consideration once the above thresholds are exceeded include bag limits, size restrictions, time & area closures, and gear restrictions. An example of each of these tools is provided in Table 2. Seasonal closures were determined from inspection of coastwide recreational harvest estimates during 2010-2012 and assessed based on the time period during which harvest was highest. Size limits were determined based on evidence of size at first maturity. Please note that the listed management tools under each sector (recreational and commercial) are considered as a set of measures to be implemented together. The Board will determine which set of measures, in consultation with the TC, are most appropriate for the needed management action, if this management option is approved.

Table 2. Coastwide Fishery Management Measures for Atlantic Croaker Management Framework

Population Characteristic	Moderate management level (at least 30% red for 3 consecutive years)		Elevated management level (at least 60% red for 3 consecutive years)	
	Recreational	**Commercial**	**Recreational**	**Commercial**
Adult abundance Or Harvest	Size limit: 8" minimum (coastwide) Bag limit: X number/day limit (coastwide) Closures: state specific areas closure for 20 days after May 1 & before Oct 1	Catch limit: 8" minimum (coastwide); Trip Limit: X pounds/day limit (coastwide) Closures: NA	Size limit: 9" minimum (coastwide) Bag Limit: X number/day limit (coastwide) Closures: state specific areas closure from Aug 1-Sept 1 Gear Restrictions: (e.g., landings from gillnets prohibited from August 1-30)	Catch limit: 9" minimum (coastwide); Trip Limit: X pounds/day limit (coastwide) Closures: state specific areas from Sept 1-Nov 1 Gear Restrictions: (e.g., landings from gillnets prohibited from August 1-30)

Option 3 – State-by-State Management Framework Based on Threshold
Proportion Thresholds
Under this option, thresholds for the proportion of red in either population characteristic would be the same for initiating management action as under the Coastwide Management Framework (Table 2). These thresholds are listed below:
30%- this represents moderate concern to the fishery with moderate management response
60%- this represents significant concern to the fishery with elevated management response

Sub-Option 3A. Single Population Characteristic criteria for Management Action
This management option would require management action be enacted when either one of the population characteristics consecutively achieve or exceed a threshold during a three year period.

Sub-Option 3B. Multiple Population Characteristic criteria for Management Action
This management option would require that both population characteristics achieve or exceed the proportion of threshold (Adult abundance 'AND' Harvest) for the specified three year period.

Under Sub-option 3A or B, management measures would remain in place for three years to promote consistent measures and allow for sufficient time to evaluate population response.

Management Measures
The TC would recommend the appropriate percent reduction in harvest needed and measures to achieve the harvest reduction on a state-by-state basis rather than be applied coastwide to be approved by the Board. This allows the states to meet the individual needs of their state's fisheries. The application of an overall harvest percentage reduction would be proportional to the magnitude of exceeding the trigger, using a combination of management tools that include size limits, bag/trip limits, seasonal closures, and gear restrictions.

3.2 Spot Management Options

Option 1 - Status Quo
Under this option, there is no change to annual trigger exercises. The current trigger exercises specify that the Board will be prompted to consider new management action when the terminal value in two of the relative abundance indices are equal to or below their respective data set's 10^{th} percentile (for the entire time series). At least one of the relative abundance indices must be a fishery-independent index.

Option 2 – Coastwide Management Framework based on threshold
Proportion Thresholds
The thresholds for the proportion of red in the population characteristic that would determine management response would be as follows:
30%- this represents moderate concern to the fishery with moderate management response
60%- this represents significant concern to the fishery with elevated management response

The PRT determined that these thresholds currently serve as adequate proxies based on fishery-dependent and fishery-independent data during the last 30 years. A minimum threshold significantly higher than 30% may not work effectively in addressing declining trends. An example of when these thresholds have been met or exceeded during the last 20 years are provided in figures 3 and 4.

> **Sub-Option 2A. Single Population Characteristic criteria for Management Action**
> This management option would require management action be enacted when either one of the population characteristics consecutively achieve or exceed a threshold during a two year period
>
> **Sub-Option 2B. Multiple Population Characteristic criteria for Management Action**
> This management option would require that both population characteristics achieve or exceed the proportion of threshold (Adult abundance 'AND' Harvest) for the specified two year period.

Under sub-option 2A or B, Management measures would remain in place for two years to promote consistent measures and allow for sufficient time to evaluate population response (Table 3). Once management action has been taken, the thresholds will not be applied to the harvest characteristics in assessing the fishery for two years, as the fisheries dependent data may be influenced by management action.

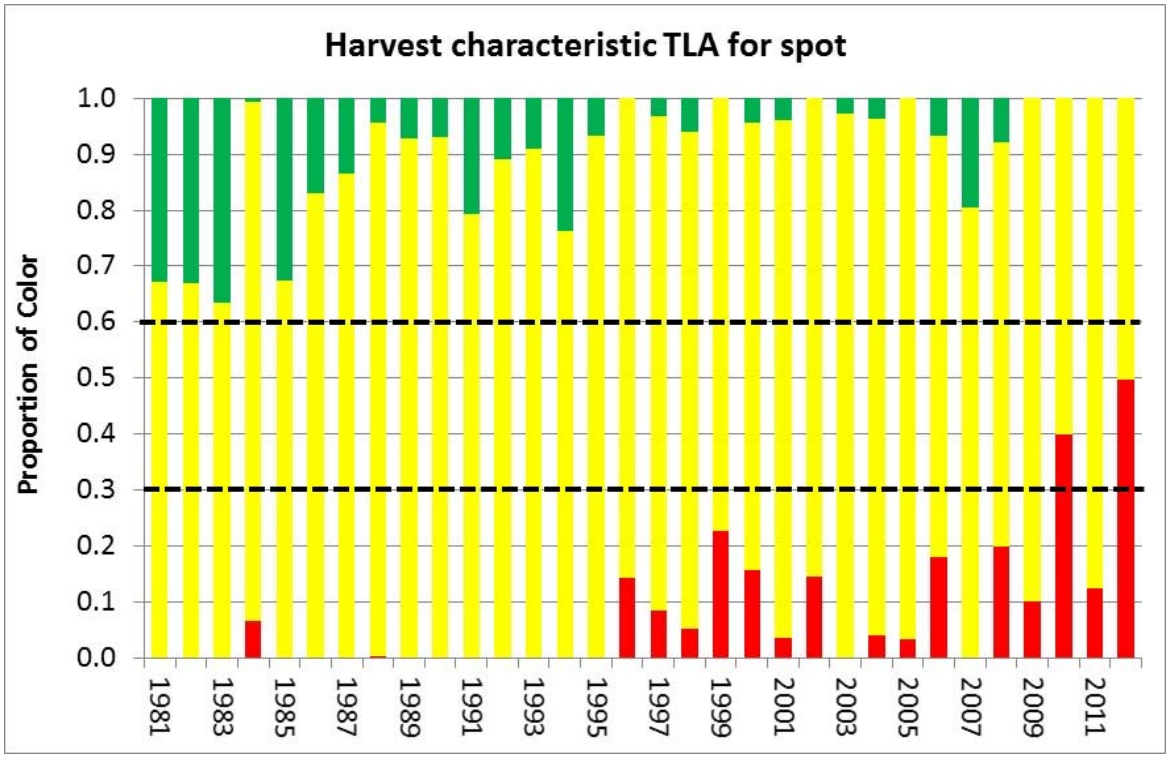


Figure 3. Composite TLA using Commercial Landings and Recreational Harvest for Spot with Management Thresholds of 30% and 60% Proportion Red (Base years 1989 – 2012).

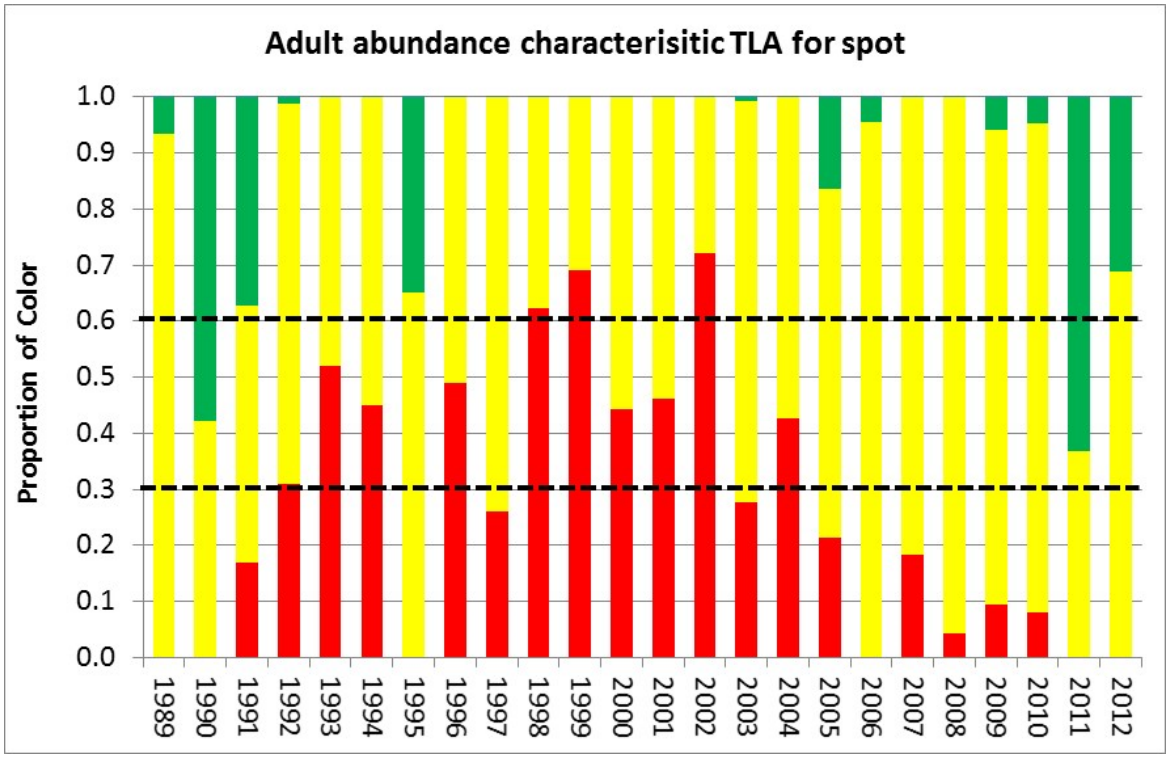


Figure 4. Composite TLA using Fishery-independent Surveys and Index for Spot with Management Thresholds of 30% and 60% Proportion Red (Base years 1989 – 2012).

Management Measures

The PRT would recommend the appropriate percent reduction in harvest needed and measures to achieve the harvest reduction on a coastwide basis to be approved by the Board.

Because the Omnibus Amendment does not have reference points for spot management it is difficult to determine the impact of proposed measures particularly in light of the observed natural cycles of abundance. Limited options are available to constrain effort in spot fisheries. Reduction of landings through seasonal closures and timed gear restrictions may provide some benefits for production of the stock. An example of how each of these measures may be implemented is provided in Table 3. Seasonal closures were determined from inspection of coastwide recreational harvest estimates during 2010-2012 and assessed based on when harvest is highest. Each level of management response could be enacted based on observed characteristics during two consecutive years and subsequently hold management measures in place for two years to provide consistent coastwide measures and allow for sufficient time to evaluate population response. A two year period rather than three was considered more appropriate given the short life span of spot. Implementation of these measures, while potentially improving abundance, may allow for an expansion of the age structure for spot, as current data indicate that few spot are observed beyond age three although this species may live four or more years.

Please note that the listed management tools under each sector (recreational and commercial) are considered as a set of measures to be implemented together. The Board will determine which set of measures, in consultation with the PRT, are most appropriate for the needed management action, if this management option is approved.

Table 3. Coastwide Fishery Management Measures for Spot Management Framework

Population Characteristic	**Moderate management level (30% red for 2 consecutive years)**		**Elevated management level (60% red for 2 consecutive years)**	
	Recreational	Commercial	Recreational	Commercial
Adult Abundance Or Harvest	Minimum Size Limit: 6” Bag Limit: X” Closures: May 1- June 15	Trip limit: X pounds/trip Closures: NA	Minimum Size Limit: 6” Bag Limit: X Closures: Sept 1- Oct 15	Trip limit: <X pounds/trip Closures: Sept 1- Oct 1 Gear Restrictions: (e.g., gillnets prohibited from Sept 1-30)

Option 3 – State-by-State Management Framework Based on Threshold

Under this option, thresholds for the proportion of red in either population characteristic would be as the same for initiating management action as under the Coastwide Management Framework (Table 3). These thresholds are listed below:

30%- this represents moderate concern to the fishery with moderate management response

60%- this represents significant concern to the fishery with elevated management response

Sub-Option 3A. Single Population Characteristic criteria for Management Action
This management option would require management action be enacted when either one of the population characteristics consecutively achieve or exceed a threshold during a two year period.

Sub-Option 3B. Multiple Population Characteristic criteria for Management Action
This management option would require that both population characteristics achieve or exceed the proportion of threshold (Adult abundance 'AND' Harvest) for the specified two year period.

Under sub-option 3A or B, management measures would remain in place for two years to promote consistent measures and allow for sufficient time to evaluate population response. Once management action has been taken, the thresholds will not be applied to the harvest characteristics in assessing the fishery for two years, as the fishery-dependent data may be influenced by management action.

Management Measures
The PRT would recommend the appropriate percent reduction in harvest needed and measures to achieve the harvest reduction on a state-by-state basis rather than be applied coastwide to be approved by the Board. This allows the states to meet the individual needs of their state's fisheries. The application of an overall harvest percentage reduction would be proportional to the magnitude of exceeding the trigger, using a combination of management tools that include size limits, bag/trip limits, seasonal closures, and gear restrictions.

4.0 Compliance: To be determined by the Board
4.1 Atlantic Croaker
4.2 Spot

5.0 References

ASMFC, 2005. Amendment 1 to the Interstate Fishery Management Plan for Atlantic Croaker. Approved 2005. 92pp.

ASMFC, 2010. Atlantic Croaker 2010 Benchmark Stock Assessment. 366pp.

ASMFC, 2011. Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout. Approved 2011. 131pp.

Caddy, J.F. 1998. A short review of precautionary reference points and some proposals for their use in data-poor situations. FAO Fisheries Technical Paper No. 379, 30pp.

Caddy, J.F. 1999. Deciding on precautionary management measures for a stock based on a suite of Limit Reference Points (LRPs) as a basis for a multi-LRP harvest law. NAFO Sci. Council Studies, 32:55-68.

Caddy, J.F. 2002. Limit reference points, traffic lights, and holistic approaches to fisheries management with minimal stock assessment input. Fisheries Research 56:133-137.

Halliday, R.G., L.P. Fanning, and R.K. Mohn. 2001. Use of the Traffic Light Method in Fishery Management Planning. Canadian Science Advisory Secretariat, Research Document No. 108, 41pp.

Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate Fishery Management Plan for Atlantic Croaker

WRITTEN COMMENT SUMMARIES

Prepared for Consideration of the South Atlantic State-Federal Management Board

August 7, 2014

Written Comment Summary on Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate Fishery Management Plan for Atlantic Croaker

In total 117 written comments were received, with 1 comment provided on behalf of an association.

Individual Comments

Individual comments submitted were predominately form letters from North Carolina residents. Three types of form letters were submitted (form A, B, and C), with slight variations for two of them (A1 & A2; C1 & C2). All form letters were in support of Option 1, status quo. A tally of form letters is listed below. A complete list of people who submitted form letters can be found in the Written Public Comment Section.

Form Letters stated position regarding Spot & Atlantic Croaker Draft Addenda Options				
Form Letter	**Text**	**Support for**	**Opposition to**	**Count**
"A(1)"	My name is ___ I'm a recreational Fishermen in the State of NC….'	Option 1 (Status Quo) for both Spot & Atlantic Croaker	Options 2 & 3	69
"A(2)"	My name is ___ I'm a commercial Fishermen in the State of NC….'	Option 1 (Status Quo) for both Spot & Atlantic Croaker	Options 2 & 3	7
"B"	Evidence from the 2010 Atlantic Croaker stock assessment indicate that overfishing is not occuring, and it's my belief that Spots and Atlantic Croaker are not in need of any additional regulations	Option 1 (Status Quo) for both Spot & Atlantic Croaker	Options 2 & 3	20
"C(1)"	My name is ___. I fish in NC. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan	Option 1 (Status Quo) for both Spot & Atlantic Croaker	Options 2 & 3	12
"C(2)"	My name is ___. I fish in ____ River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan	Option 1 (Status Quo) for both Spot & Atlantic Croaker	Options 2 & 3	8
Total				**116**

Form letter A simply stated a preference for option 1 (status quo). Two variations of the form letter were submitted- indicating whether they were a commercial or recreational fisherman. 60 recreational fisherman submitted letters; 4 commercial fisherman submitted letters.

Form letter B stated a preference for option 1 (status quo), with several reasons cited. Reasons included a belief that neither spot or Atlantic croaker are experiencing overfishing; that additional regulations prior to completion of the scheduled 2016 stock assessment are not necessary; concern with the absence of the NEAMAP survey in the Traffic Light Approach; and that fishermen's knowledge and experience were not taken into consideration in management plans.

Form letter C stated an opposition to the Traffic Light Approach and a preference for option 1 (status quo), with three reasons cited. The reasons listed were that there hasn't been scientific research regarding 1) cycles of species abundance 2) size limitations, bag limits, gear restrictions, vs. Regulatory Discards (By-catch); and 3) Consideration of Harvest Effort. Additionally, the 2010 Atlantic Croaker stock assessment was cited as indicating that overfishing is not occurring. Two variations of the letter were submitted; the one specifying that a particular river or sound that the signee fishes from, the other indicating that they fish in North Carolina.

Group Comments

The North Carolina Marine Fisheries Association (NCFA) submitted written comment on the Draft Addenda for Spot and Atlantic Croaker, in favor of option 1 status quo. Reasons cited were the need to incorporate the NEAMAP and CHESMMAP surveys, concern for bias regarding the role of shrimp trawl bycatch in affecting the abundance of both species, and the need to consider environmental factors in evaluating both species including water quality in estuarine waters, warmer water temperatures, and/or predation by other species.

Summary Table of Public Comments on Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate Fishery Management Plan for Atlantic Croaker			Public Hearings		Written Individual Comments		Written Group Comments		Total Support	Total Oppose
			Support	Oppose	Support	Oppose	Support	Oppose		
Spot Fisheries Management Options										
Option 1	**Status Quo**		53		116		1		170	0
Option 2	**Utilization of the TLA: Coastwide Measures**					116			0	116
sub options	2A	Single Population Characteristic criteria for management action								
	2B	Multiple Population Characteristic criteria for management action								
Option 3	**Utilization of the TLA: State-by-State Measures**		6			116			6	116
sub options	3A	Single Population Characteristic criteria for management action	1							
	3B	Multiple Population Characteristic criteria for management action	4							
Atlantic Croaker Fisheries Management Options										
Option 1	**Status Quo**		53		116		1		170	0
Option 2	**Utilization of the TLA: Coastwide Measures**					116			0	116
sub options	2A	Single Population Characteristic criteria for management action								
	2B	Multiple Population Characteristic criteria for management action								
Option 3	**Utilization of the TLA: State-by-State Measures**		6			116			6	116
sub options	3A	Single Population Characteristic criteria for management action	1							
	3B	Multiple Population Characteristic criteria for management action	4							

North Carolina Marine Fisheries Association Comments

On

DRAFT ADDENDUM I TO THE OMNIBUS AMENDMENT FOR SPOT AND DRAFT ADDENDUM II TO AMENDMENT I TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC CROAKER

June 17, 2014

Brent Fulcher, Chairman

In review of your draft addenda for public comment I would like to know why the best available data is not presently being used in your stock assessments. It is apparent to industry that NEAMAP and CHESMMAP data along with NOAA's data from Woods Hole would be the best science available. I would also like on the record my disgust of your comment of significant bycatch and discards that may be occurring through the shrimp trawl fishery for both spot and Atlantic croaker. I do not see anything listed here that say's water quality in estuarine waters, warmer water temperatures, or increased predation due to huge populations of dog sharks, striped bass, tunas, etc. may these items not need to be looked at. It seems to be a very biased statement to speak on shrimp trawl bycatch and not even mention these other factors, since the introduction of the Turtle Excluder Device (TED) and the Fish Excluder Device (FED), it has been documented that there has been greater than a 50% reduction in bycatch. Please find attached a copy read into public record at the last NCMFC meeting in Pine Knoll Shores in May 22, 2014. I have highlighted some of the document for you. "North Carolina has been one of the leading states in bycatch reduction in the shrimp trawl industry. The Division of Marine Fisheries began development work on bycatch reduction in 1990, the same year that the Magnuson Fishery Conservation and Management Act (Magnum Act) was amended to include bycatch research. ASMFC Report on Gear Technology, 2008. On October 20, 1994 Amendment 2 of the weakfish FMP was passed. This amendment required all South Atlantic states (NC, SC, GA, & FL) to implement management measures to achieve the 40% reduction in bycatch of weakfish in the shrimp trawl fisheries

by the start of the 1996 shrimping season. ASMFC Report on Gear Technology, 2008. This amendment required all South Atlantic states (NC, SC, GA, & FL) to implement management measures to achieve the 40% reduction in bycatch of weakfish in the shrimp trawl fisheries by the start of the 1996 shrimping season. ASMFC Report on Gear Technology, 2008. From 1993 through 1996 NOAA and the Gulf and South Atlantic Fisheries Development Foundation observers logged 2,320 days in southeastern U.S. water aboard voluntarily participating shrimp trawlers testing bycatch reduction devices (BRD's). The total bycatch to catch ratios produced from this new study were in the stark contract to on often quoted bycatch to shrimp ratio of 10:1. For the Gulf of Mexico the total bycatch to shrimp ratio was 5.25:1 and for the South Atlantic, including NC it was 4.5:1. More importantly, in the Gulf of Mexico the finfish to shrimp ratio was 4.2:1, and in the South Atlantic the ratio was 2.8:1. In the South Atlantic shrimp was 18% of the catch with spot being 9% of the catch, Atlantic croaker being 6% of the catch. Bycatch and its reduction in the Gulf of Mexico and South Atlantic Shrimp Fisheries, July 1997. In 2009 the North Carolina Department of Marine Fisheries conducted another study characterizing bycatch in the inshore commercial shrimp trawl fishery in the Pamlico Sound and its tributaries (Brown 2010b). Using the relative biomass tables in Brown's (2010b) study characterizing the inshore commercial shrimp trawl fishery in the Pamlico Sound and its tributaries, the calculated finfish to shrimp ratio was 2.7:1 for all gear types. N.C. Fishery Management Plant for Shrimp, Draft Amendment 1, 2014. During the period from August 1, 2012 through June 30, 2013, NCDMF conducted onboard observation of the commercial shrimp trawl fishery, sampling 305 tows on 111 trips, to collect catch, effort, bycatch, and discard and mortality data. During this study shrimp represented 21.52% of the catch by weight. Atlantic croaker accounted for 21.52% of the catch by weight of which 82.00% were alive. Spot represented 15.57% of the catch by weight of which 54.72% were alive. Weakfish represented 1.73% by weight of which 44.95% were alive. Flounder represented 0.82% by weight of which 75.54% were alive. It is also

important to note that no red drum or striped bass were caught. Characterization of the commercial shrimp trawl fishery in near-shore and inshore waters of North Carolina, Brown, March 2014."

The North Carolina Fisheries Association feels that Option 1, status quo should be recommended by this committee along with a request to include NEAMAP and CHESMMAP surveys before any decisions are made by Atlantic States Marine Fishery Commission. I would like to thank you all for coming to North Carolina and allowing us the opportunity to speak.

Bycatch in the Shrimp Trawl Fisheries in the South Atlantic and North Carolina

Bycatch is defined by the Atlantic States Marine Fisheries Commission (ASMFC) as "the portion of the catch taken incidentally to the targeted catch because of non-selectivity of fishing gear to either species or size differences" (ASMFC 1994) Total bycatch can be divided into two components: incidental catch and discarded catch. Incidental catch refers to retained catch of non-targeted species usually for commercial value as personal consumption. Discarded catch is that portion of the catch that is returned to the sea as a result of economic, legal or personal considerations. N.C. Fishery Management Plan for Shrimp 2006, p. 144. Discarded catch can be further divided into two components: 1) Alive discards, bycatch that is alive when it returned to the sea and, 2) dead discards, bycatch that is dead when returned to the sea. Characterization Study of the commercial shrimp trawl fishery in near-shore and inshore waters of North Carolina (Preliminary Report) NCMF- Brown March 2014

Bycatch can be further quantified by separating finfish bycatch from other bycatch such as jelly fish, jelly balls, crabs, crustaceans, horseshoe crabs, etc. Finfish bycatch, like other bycatch can be divided into 1) incidental catch, non-targeted finfish which are retained for sale or personal consumption 2) alive discards, finfish bycatch that is alive when discarded and 3) dead discards, finfish bycatch which is dead when discarded.

North Carolina has been one of the leading states in bycatch reduction in the shrimp trawl industry. The Division of Marine Fisheries began development work on bycatch reduction in 1990, the same year that the Magnuson Fishery Conservation and Management Act (Magnum Act) was amended to include bycatch research. ASMFC Report on Gear Technology, 2008

Based on results obtained during North Carolina development work in 1990 and 1991 on NCDMF research vessels and operational testing conducted aboard a commercial trawler in 1992, the DMF required all shrimp trawlers working in state waters to equip their nets with functional fish excluders in October 1992. However, North Carolina was the only state that required finfish excluders; On October 20, 1994 Amendment 2 of the weakfish FMP was passed. This amendment required all South Atlantic states (NC, SC, GA, & FL) to implement management measures to achieve the 40% reduction in bycatch of weakfish in the shrimp trawl fisheries by the start of the 1996 shrimping season. ASMFC Report on Gear Technology, 2008.

Beginning in 1992 observers began observing aboard commercial fishing vessels in the South Atlantic and the Gulf of Mexico that were trained by the National Marine Fisheries Service

(NMFS) to use a standardized sampling protocol. (NMFS Shrimp trawl bycatch characterization. Sampling Protocol Manual for Data Collection, 1992)

In April of 1995, National Marine Fisheries Service provided its report to Congress addressing finfish bycatch in the Gulf of Mexico and South Atlantic shrimp fisheries. In its report NMFS stated that analysis of data for the South Atlantic shrimp fisheries revealed the ratio of finfish to shrimp caught for each hour of trawling is 1.6:1 by number, or 2.3:1 by weight. Cooperative Research Program Addressing Finfish Bycatch in the Gulf of Mexico and South Atlantic Shrimp Fisheries, A Report to Congress, April 1995, U.S. Dept. of Commerce, National Oceanic and Atmospheric Administrative, National Marine Fisheries Service.

From 1993 through 1996 NOAA and the Gulf and South Atlantic Fisheries Development Foundation observers logged 2,320 days in southeastern U.S. water aboard voluntarily participating shrimp trawlers testing bycatch reduction devices (BRD's). The total bycatch to catch ratios produced from this new study were in the stark contract to on often quoted bycatch to shrimp ratio of 10:1. For the Gulf of Mexico the total bycatch to shrimp ratio was 5.25:1 and for the South Atlantic, including NC it was 4.5:1. More importantly, in the Gulf of Mexico the finfish to shrimp ratio was 4.2:1, and in the South Atlantic the ratio was 2.8:1. In the South Atlantic shrimp was 18% of the catch with spot being 9% of the catch, Atlantic croaker being 6% of the catch. Bycatch and its reduction in the Gulf of Mexico and South Atlantic Shrimp Fisheries, July 1997

Various studies have been done on finfish to bycatch ratio in North Carolina. Reported finfish to bycatch ratios for North Carolina are 1.5:1 (Roelofs 1950), 1.6:1 (Diamond-Tissue 1999) and 1.2 to 1 (Johnson 2003). The Diamond-Tissue (1999) characterization study is the most extensive evaluation of bycatch in a North Carolina Fishery. (NC Fishery Management Plan for Shrimp, 2006 p. 148)

The Diamond-Tissue study, for all areas combined (Pamlico Sound, Core Sound, Cape Fear River and off Carolina Beach) found market-sized penaeid shrimp made up 44.3% of all organisms by number and 30.8% by weight (total bycatch to shrimp). Market-size penaeid shrimp were the top species in terms of both numbers and weight for all areas combined. N.C. Fishery Management Plan for Shrimp, Draft Amendment 1, 2014.

In 2009 the North Carolina Department of Marine Fisheries conducted another study characterizing bycatch in the inshore commercial shrimp trawl fishery in the Pamlico Sound and its tributaries (Brown 2010b). Using the relative biomass tables in Brown's (2010b) study characterizing the inshore commercial shrimp trawl fishery in the Pamlico Sound and its tributaries, the calculated finfish to shrimp ratio was 2.7:1 for all gear types. N.C. Fishery Management Plant for Shrimp, Draft Amendment 1, 2014

During the period from August 1, 2012 through June 30, 2013, NCDMF conducted onboard observation of the commercial shrimp trawl fishery, sampling 305 tows on 111 trips, to collect

catch, effort, bycatch, discard and mortality data. During this study shrimp represented 21.52% of the catch by weight. Atlantic croaker accounted for 21.52% of the catch by weight of which 82.00% were alive. Spot represented 15.57% of the catch by weight of which 54.72% were alive. Weakfish represented 1.73% by weight of which 44.95% were alive. Flounder represented 0.82% by weight of which 75.54% were alive. It is also important to note that no red drum or striped bass were caught. Characterization of the commercial shrimp trawl fishery in near-shore and inshore waters of North Carolina, Brown, March 2014.

Spot

Sampling Priority: A

Figure 120. Spot biomass (kg) at each sampling site for 2011 NEAMAP cruises.

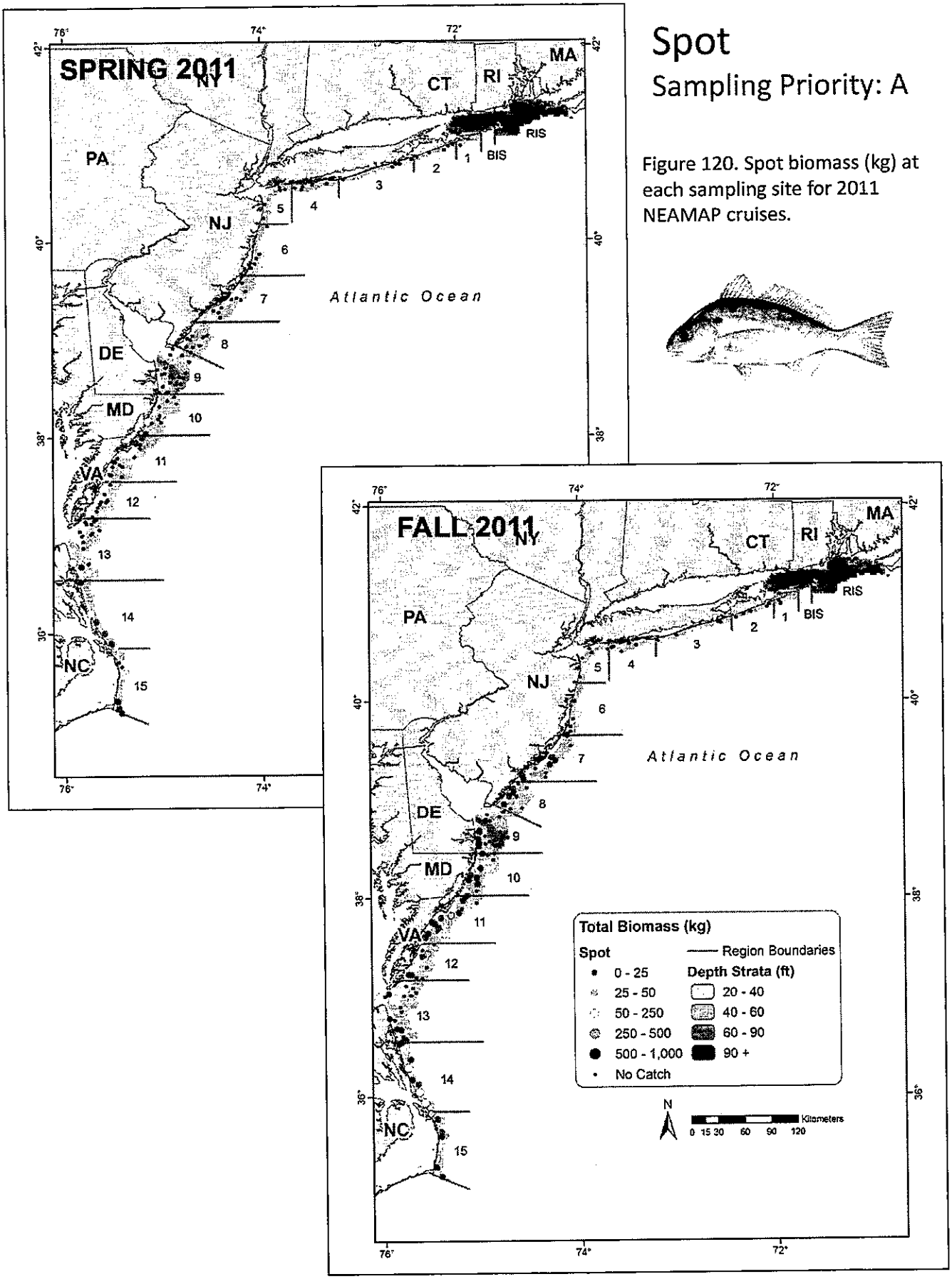


Table 71. Spot sampling rates and preserved specimen analysis status for each NEAMAP cruise.

Season	Year	Number Caught	Biomass Caught (kg)	Number Measured	Age Specimens	Ages Read	Stomach Specimens	Stomachs Analyzed
Spring	2008	28,561	1059.2	1,220	61	0	N/A	N/A
	2009	29,643	824.9	3,454	59	0	N/A	N/A
	2010	19,664	822.1	894	44	0	N/A	N/A
	2011	15,390	557.0	2,416	52	0	N/A	N/A
Fall	2007	44,437	3942.0	2,507	160	0	N/A	N/A
	2008	56,878	3872.0	3,435	213	0	N/A	N/A
	2009	8,428	593.0	2,699	169	0	N/A	N/A
	2010	95,990	5060.0	6,861	181	0	N/A	N/A
	2011	6,407	538.3	1,394	147	0	N/A	N/A

Table 72. Strata used for calculation of abundance indices for spot.

State (Nominal)	Region	Depth Stratum	Spring Index	Fall Index
RI	RIS	60-90		
		90+		
	BIS	60-90		
		90+		
NY	01	40-60		
	02	20-40		
		40-60		
	03	20-40		
		40-60		
	04	20-40		
		40-60		
	05	20-40		
		40-60		
NJ	06	20-40		
		40-60		
	07	20-40		
		40-60		
	08	20-40		
		40-60		
DE	09	20-40		
		40-60		
		60-90		
MD	10	20-40		
		40-60		
VA	11	20-40		
		40-60		
	12	20-40		
		40-60		
	13	20-40		
		40-60		
NC	14	20-40		
		40-60		
	15	20-40		
		40-60		

= used for abundance indices
= not used for abundance indices

Table 73. Spot preliminary geometric mean indices of abundance, by number and biomass, for spring and fall NEAMAP surveys, for all specimens captured.

Season	Year	Age	Numerical Index					Biomass Index				
			n	LCI	Index	UCI	CV (%)	n	LCI	Index	UCI	CV (%)
Spring	2008	All	31	8.25	**19.62**	44.98	13.2	31	1.59	**3.06**	5.35	16.0
	2009		31	7.43	**25.09**	79.79	17.3	31	1.27	**3.39**	7.51	22.4
	2010		29	1.14	**3.98**	10.56	26.2	29	0.13	**0.99**	2.50	41.1
	2011		29	2.67	**7.56**	18.97	19.7	29	0.59	**1.57**	3.14	25.3
Fall	2007	All	87	8.19	**14.66**	25.68	9.7	87	2.42	**3.92**	6.09	11.4
	2008		87	26.14	**49.17**	91.74	7.8	87	5.09	**8.09**	12.56	9.1
	2009		91	4.06	**5.93**	8.49	8.1	91	0.77	**1.13**	1.57	12.4
	2010		87	9.05	**17.07**	31.49	10.1	87	2.08	**3.44**	5.38	12.2
	2011		87	3.09	**4.70**	6.95	9.5	87	0.80	**1.17**	1.61	12.1

Figure 121. Spot preliminary geometric mean indices of abundance, by number and biomass, for spring and fall NEAMAP surveys, for all specimens captured.

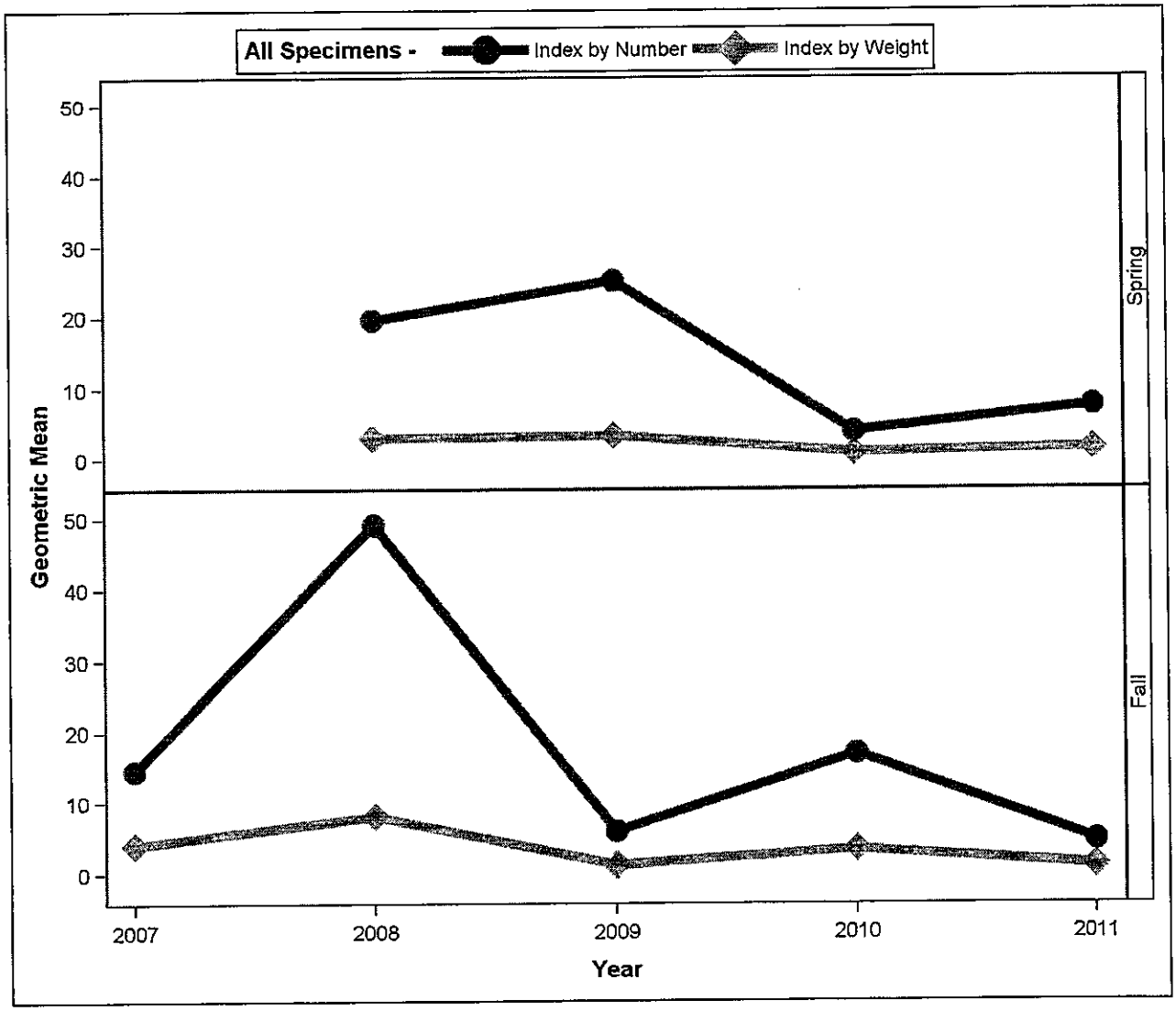


Figure 122. Spot length-frequency distributions, by cruise.

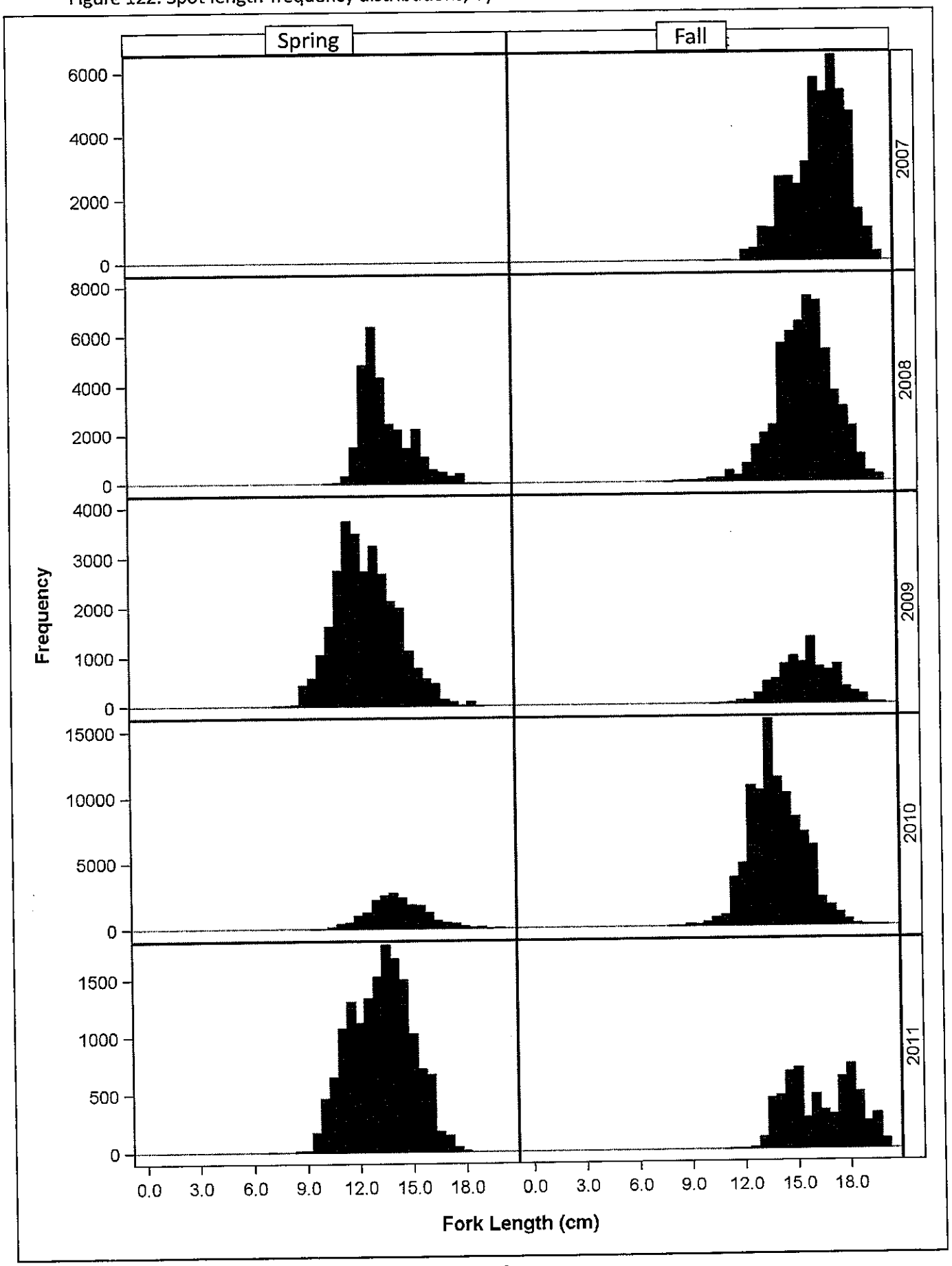


Figure 123. Spot length-frequency distributions, by cruise and sex.

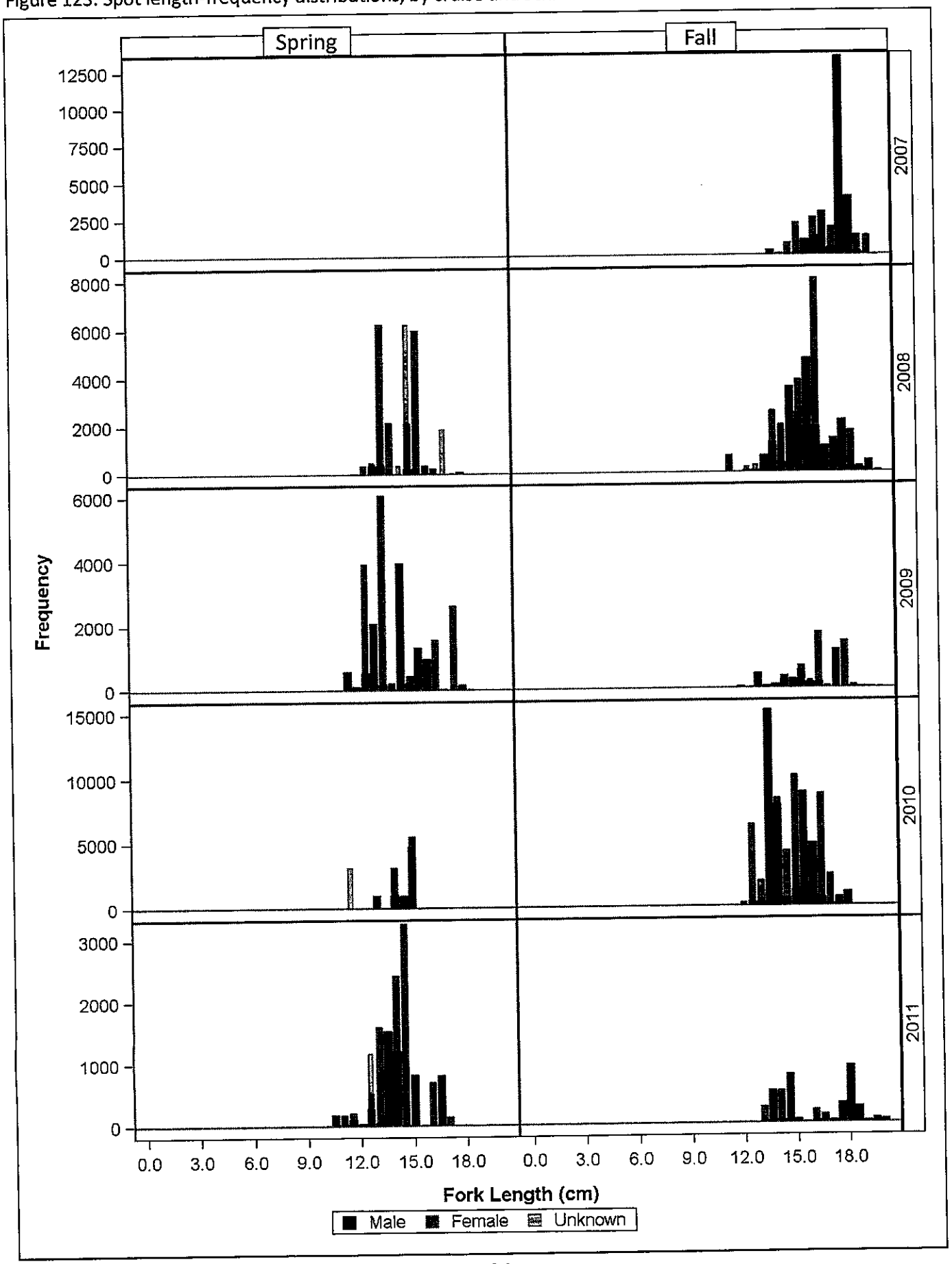
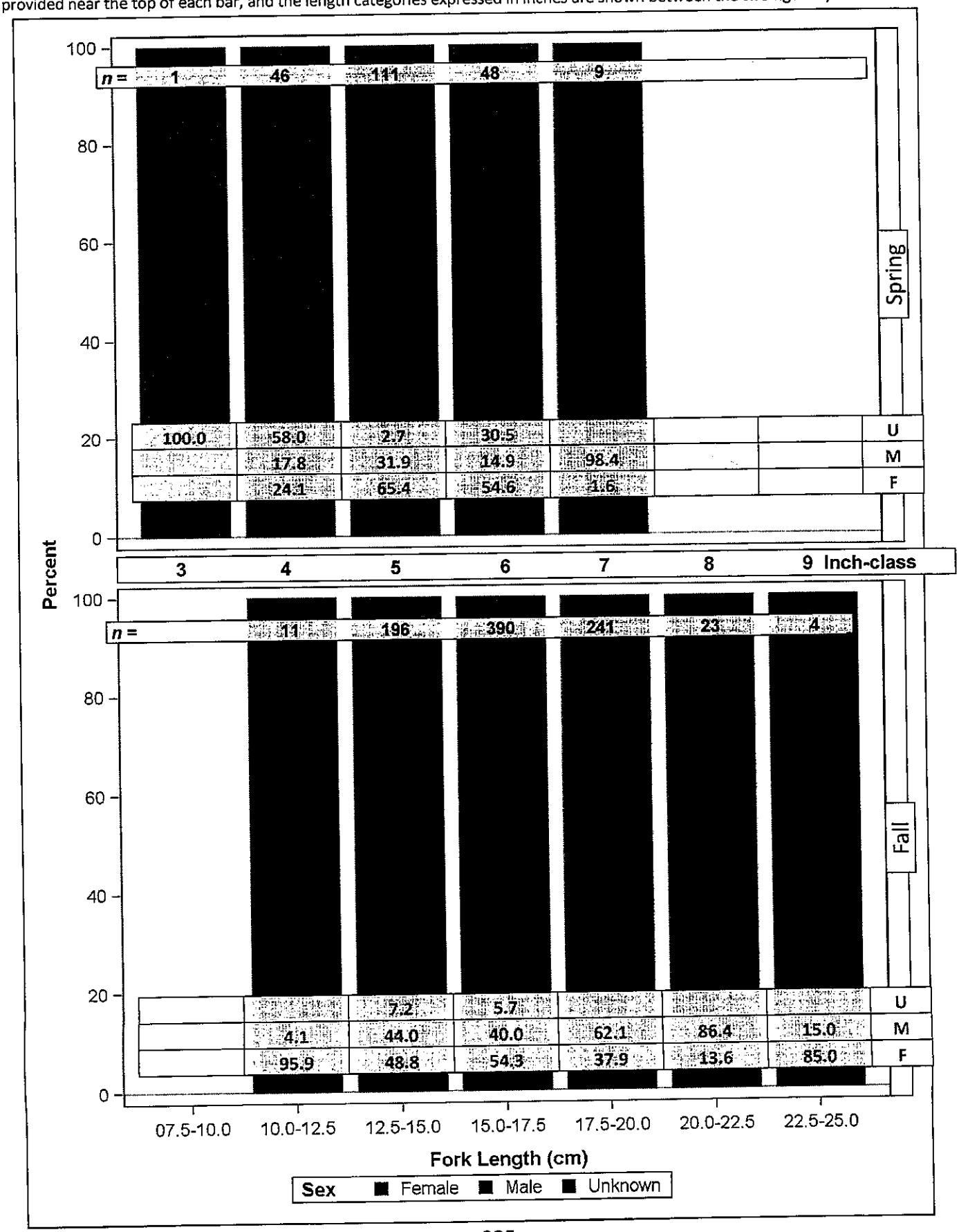
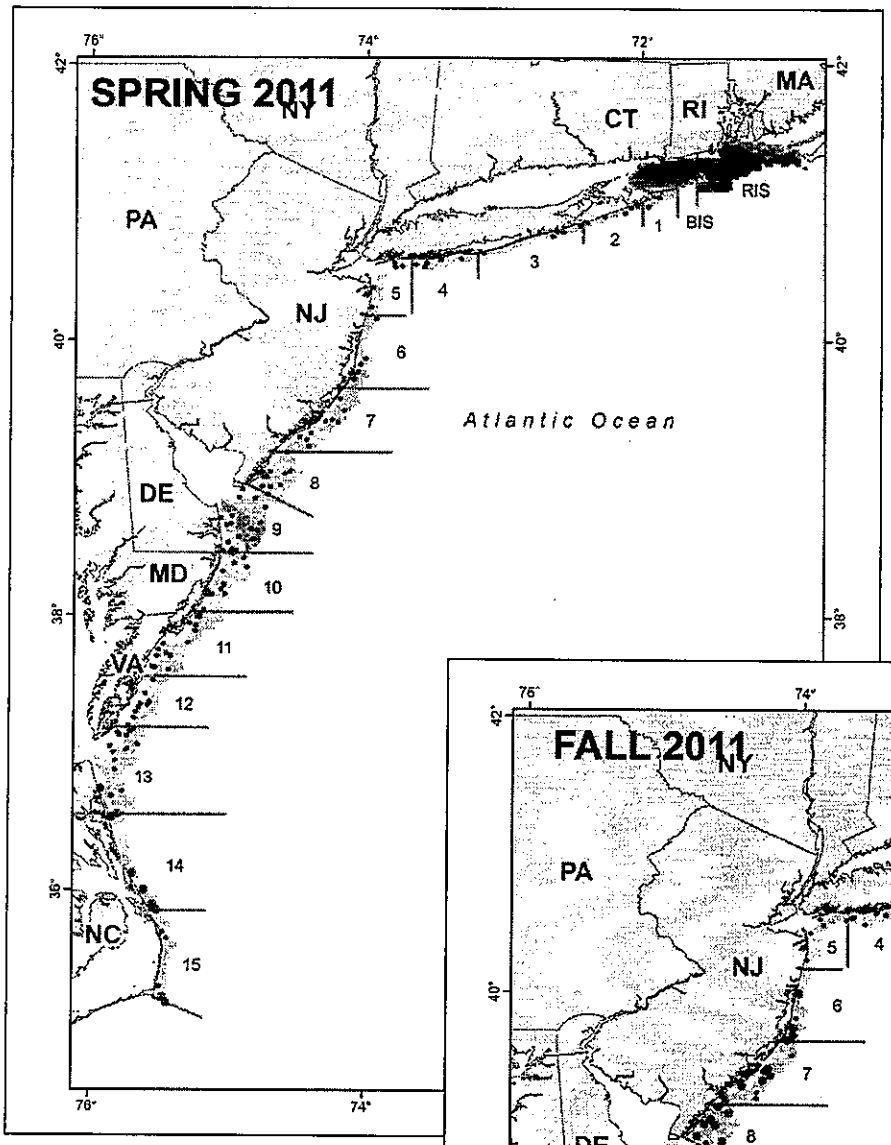


Figure 124. Spot sex ratio, by length group, for NEAMAP Spring and Fall cruises 2007-2011.
(The percentages for each category are given near the bottom of each bar. The number sampled for sex determination is provided near the top of each bar, and the length categories expressed in inches are shown between the two figures.).



Atlantic Croaker

Sampling Priority: A



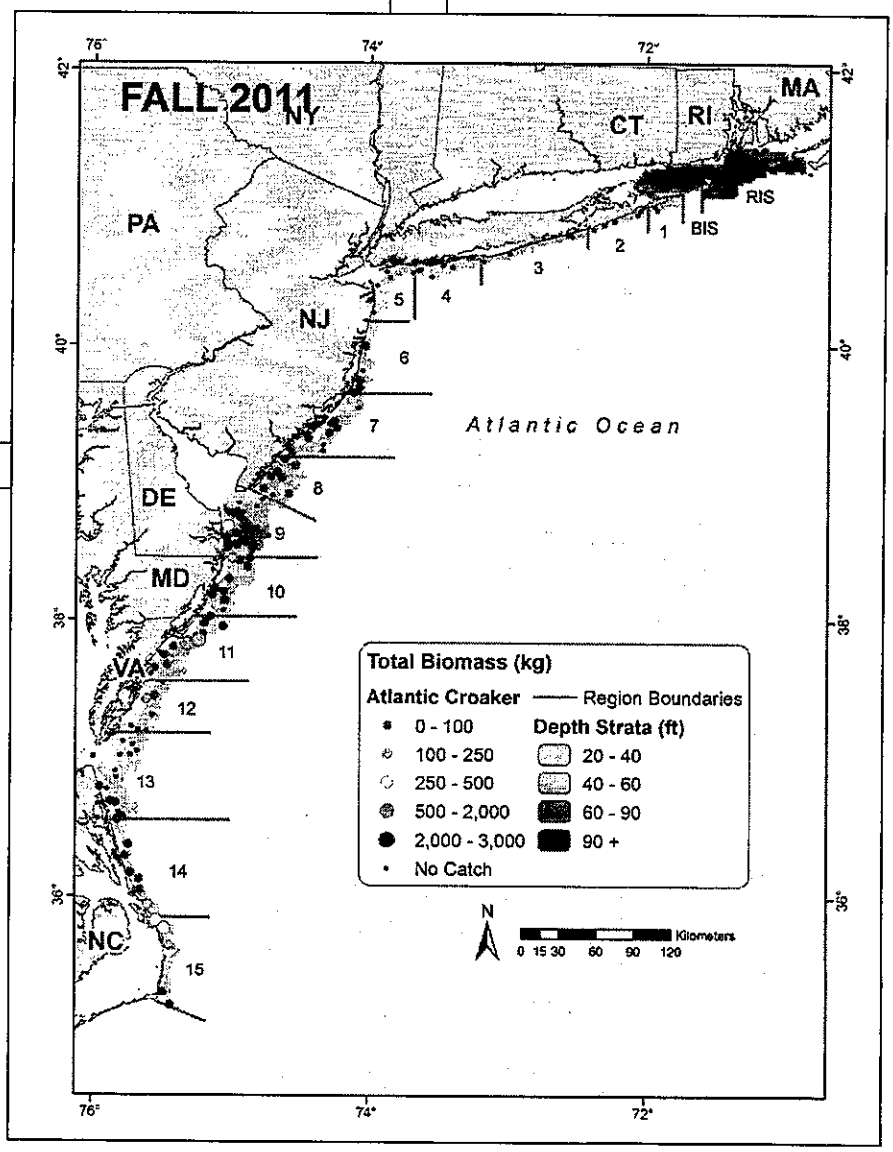


Figure 24. Atlantic croaker biomass (kg) at each sampling site for 2011 NEAMAP cruises.

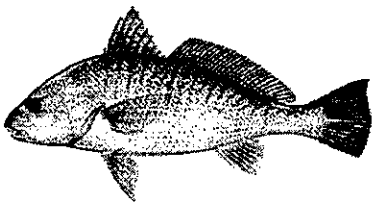


Table 15. Atlantic croaker sampling rates and preserved specimen analysis status for each NEAMAP cruise.

Season	Year	Number Caught	Biomass Caught (kg)	Number Measured	Age Specimens	Ages Read	Stomach Specimens	Stomachs Analyzed
Spring	2008	467	25.0	212	41	41	38	38
	2009	17,040	1004.3	1,225	80	78	66	60
	2010	29,365	1656.2	929	49	49	48	13
	2011	10,576	349.2	890	71	70	62	62
Fall	2007	58,763	7616.5	2,843	211	211	194	188
	2008	66,823	5123.2	3,591	307	307	283	280
	2009	45,730	5685.3	5,277	415	414	341	291
	2010	73,685	5715.1	4,095	275	271	217	213
	2011	58,671	6148.1	5,561	324	323	294	0

Table 16. Strata used for calculation of abundance indices for Atlantic croaker.

State (Nominal)	Region	Depth Stratum	Spring Index	Fall Index
RI	RIS	60-90		
		90+		
	BIS	60-90		
		90+		
NY	01	40-60		
	02	20-40		
		40-60		
	03	20-40		
		40-60		
	04	20-40		
		40-60		
	05	20-40		
		40-60		
NJ	06	20-40		
		40-60		
	07	20-40		
		40-60		
	08	20-40		
		40-60		
DE	09	20-40		
		40-60		
		60-90		
MD	10	20-40		
		40-60		
VA	11	20-40		
		40-60		
	12	20-40		
		40-60		
	13	20-40		
		40-60		
NC	14	20-40		
		40-60		
	15	20-40		
		40-60		

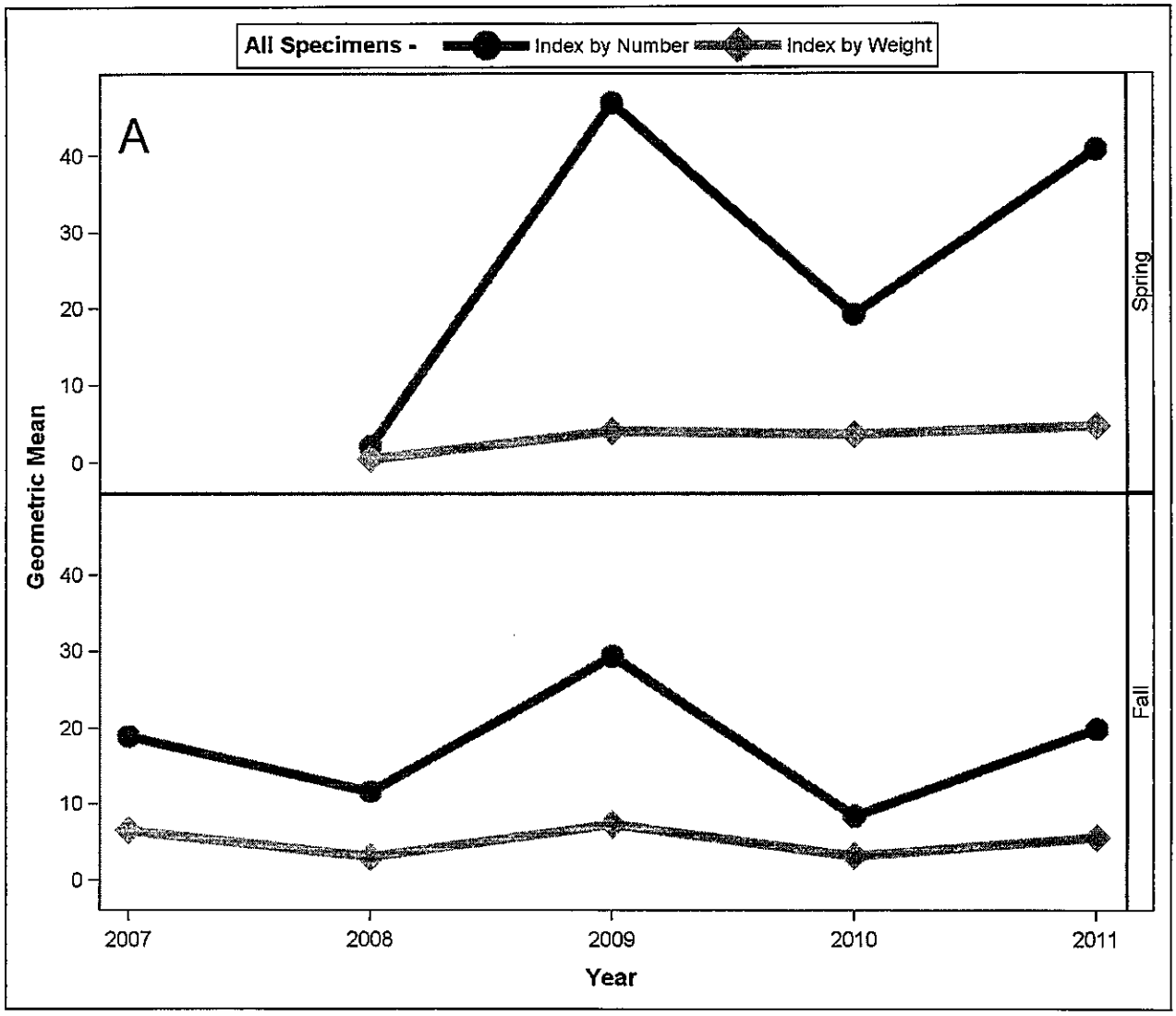
= used for abundance indices

= not used for abundance indices

Table 17. Atlantic croaker preliminary geometric mean indices of abundance, for all specimens captured and by age-class for spring and fall NEAMAP surveys (age-specific indices for age-2 and older calculated for fall surveys only).

Season	Year	Age	Numerical Index					Biomass Index				
			n	LCI	**Index**	UCI	CV (%)	n	LCI	**Index**	UCI	CV (%)
Spring	2008	All	13	0.00	**2.19**	9.81	52.5	13	0.00	**0.53**	1.72	67.8
	2009		15	10.76	**46.78**	193.10	18.1	15	1.30	**4.13**	10.44	24.5
	2010		13	1.70	**19.25**	150.71	33.5	13	0.12	**3.77**	19.27	46.3
	2011		13	6.82	**40.80**	222.45	22.5	13	1.18	**4.74**	14.12	27.7
Fall	2007	All	102	11.28	**18.94**	31.38	8.1	102	4.18	**6.50**	9.85	9.2
	2008		102	6.23	**11.55**	20.78	10.9	102	1.79	**3.10**	5.03	13.6
	2009		107	17.26	**29.44**	49.73	7.5	107	4.67	**7.32**	11.21	9.1
	2010		102	4.72	**8.42**	14.52	11.1	102	1.93	**3.20**	5.01	12.5
	2011		102	11.79	**19.88**	33.08	8.1	102	3.57	**5.55**	8.37	9.5
Fall	2007	0	102	0.93	**1.74**	2.89	17.4	102	0.32	**0.67**	1.10	22.6
	2008		102	3.62	**6.76**	12.04	12.7	102	1.03	**1.84**	2.98	16.0
	2009		107	3.73	**6.04**	9.50	10.2	107	1.02	**1.61**	2.38	13.3
	2010		102	1.32	**2.49**	4.25	16.3	102	0.53	**1.00**	1.62	19.2
	2011		102	3.57	**5.98**	9.65	10.9	102	1.18	**1.89**	2.83	13.2
Spring	2008	1	13	0.00	**1.68**	6.95	55.2	13	0.00	**0.37**	1.16	73.1
	2009		15	9.75	**39.68**	152.97	18.0	15	1.18	**3.53**	8.42	24.2
	2010		13	1.28	**15.63**	120.16	35.3	13	0.05	**3.27**	16.40	48.4
	2011		13	6.14	**36.46**	195.57	22.9	13	1.05	**4.26**	12.52	28.4
Fall	2007	1	102	4.51	**7.59**	12.41	10.3	102	1.69	**2.71**	4.12	12.3
	2008		102	4.05	**7.46**	13.19	12.1	102	1.15	**2.02**	3.24	15.4
	2009		107	10.49	**17.63**	29.22	8.3	107	2.90	**4.52**	6.80	10.2
	2010		102	3.04	**5.46**	9.33	12.6	102	1.25	**2.11**	3.32	14.4
	2011		102	7.73	**12.86**	20.99	8.8	102	2.41	**3.73**	5.56	10.5
Fall	2007	2	102	4.34	**6.87**	10.59	9.4	102	1.72	**2.56**	3.67	10.6
	2008		102	1.26	**2.27**	3.73	15.6	102	0.42	**0.76**	1.19	19.2
	2009		107	5.24	**8.32**	12.92	9.0	107	1.68	**2.51**	3.59	10.7
	2010		102	1.98	**3.23**	4.99	12.1	102	0.78	**1.21**	1.73	13.5
	2011		102	4.00	**6.19**	9.33	9.2	102	1.23	**1.80**	2.53	11.2
Fall	2007	3	102	3.10	**4.59**	6.62	9.0	102	1.26	**1.78**	2.43	10.2
	2008		102	0.58	**1.02**	1.60	17.7	102	0.19	**0.37**	0.59	22.5
	2009		107	2.58	**3.88**	5.65	9.8	107	0.84	**1.22**	1.68	11.7
	2010		102	1.11	**1.69**	2.44	12.3	102	0.40	**0.60**	0.82	14.0
	2011		102	1.67	**2.46**	3.48	10.4	102	0.47	**0.69**	0.94	13.0
Fall	2007	4+	102	2.23	**3.18**	4.42	9.0	102	0.96	**1.33**	1.77	10.3
	2008		102	0.37	**0.64**	0.98	18.7	102	0.14	**0.27**	0.41	22.5
	2009		107	1.41	**2.05**	2.87	10.6	107	0.46	**0.67**	0.91	13.1
	2010		102	0.67	**0.99**	1.38	13.0	102	0.23	**0.35**	0.49	15.9
	2011		102	0.74	**1.08**	1.49	12.2	102	0.19	**0.29**	0.39	15.5

Figure 25. Atlantic croaker preliminary geometric mean indices of abundance, for all specimens captured (A - by number and biomass) and by age-class (B – numbers only) for spring and fall NEAMAP surveys (age-specific indices for age-2 and older calculated for fall surveys only).



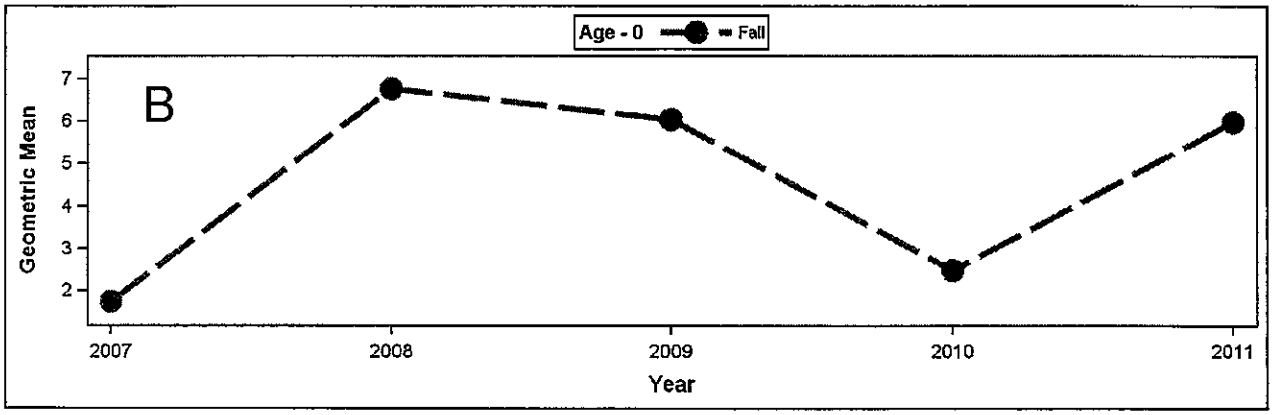


Figure 25. cont.

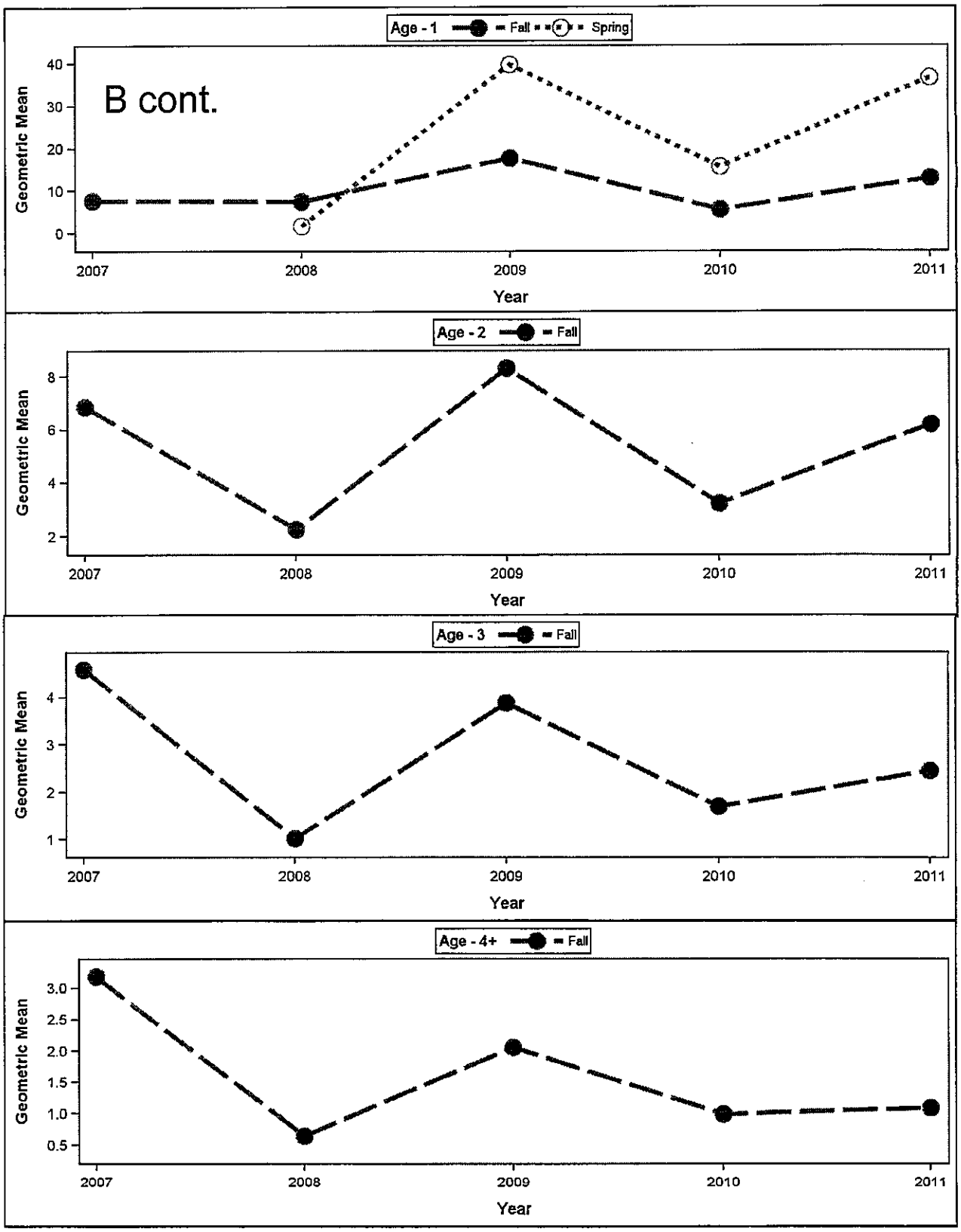


Figure 26. Atlantic croaker length-frequency distributions, by cruise.

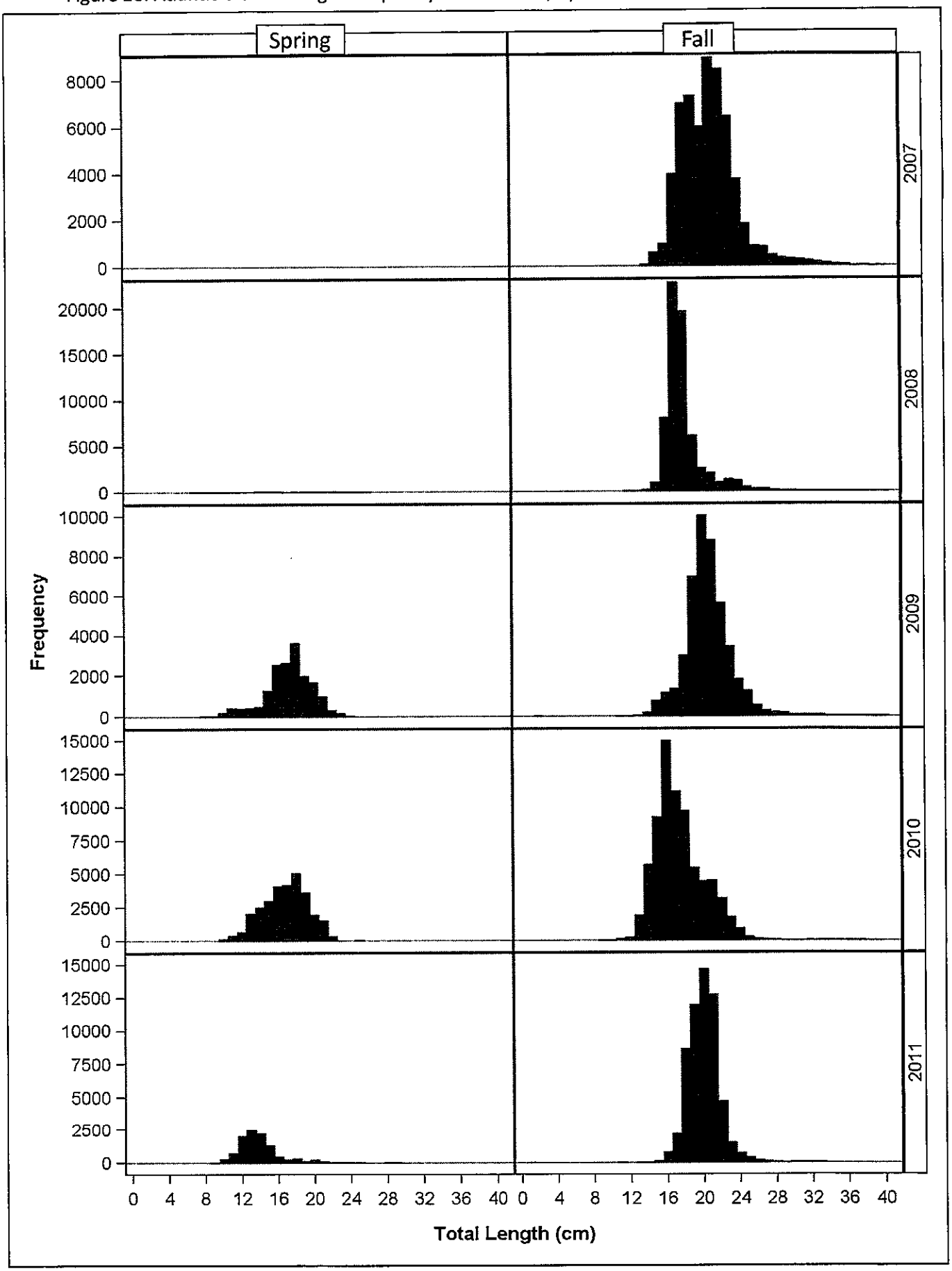


Figure 27. Atlantic croaker length-frequency distributions, by cruise and sex.

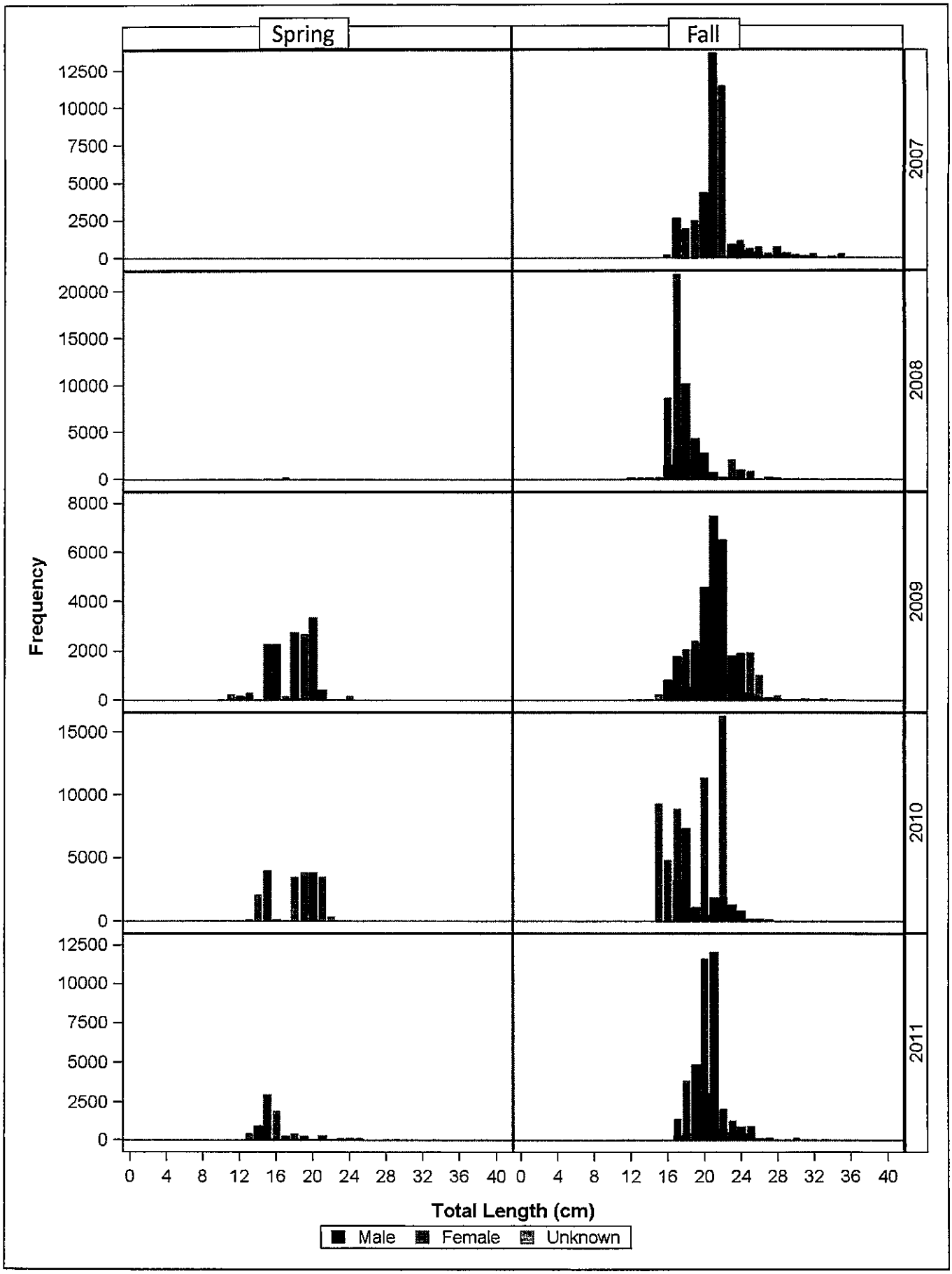


Figure 28. Atlantic croaker age-frequency distribution, by cruise. The estimated total number collected at a given age is provided above each corresponding bar.

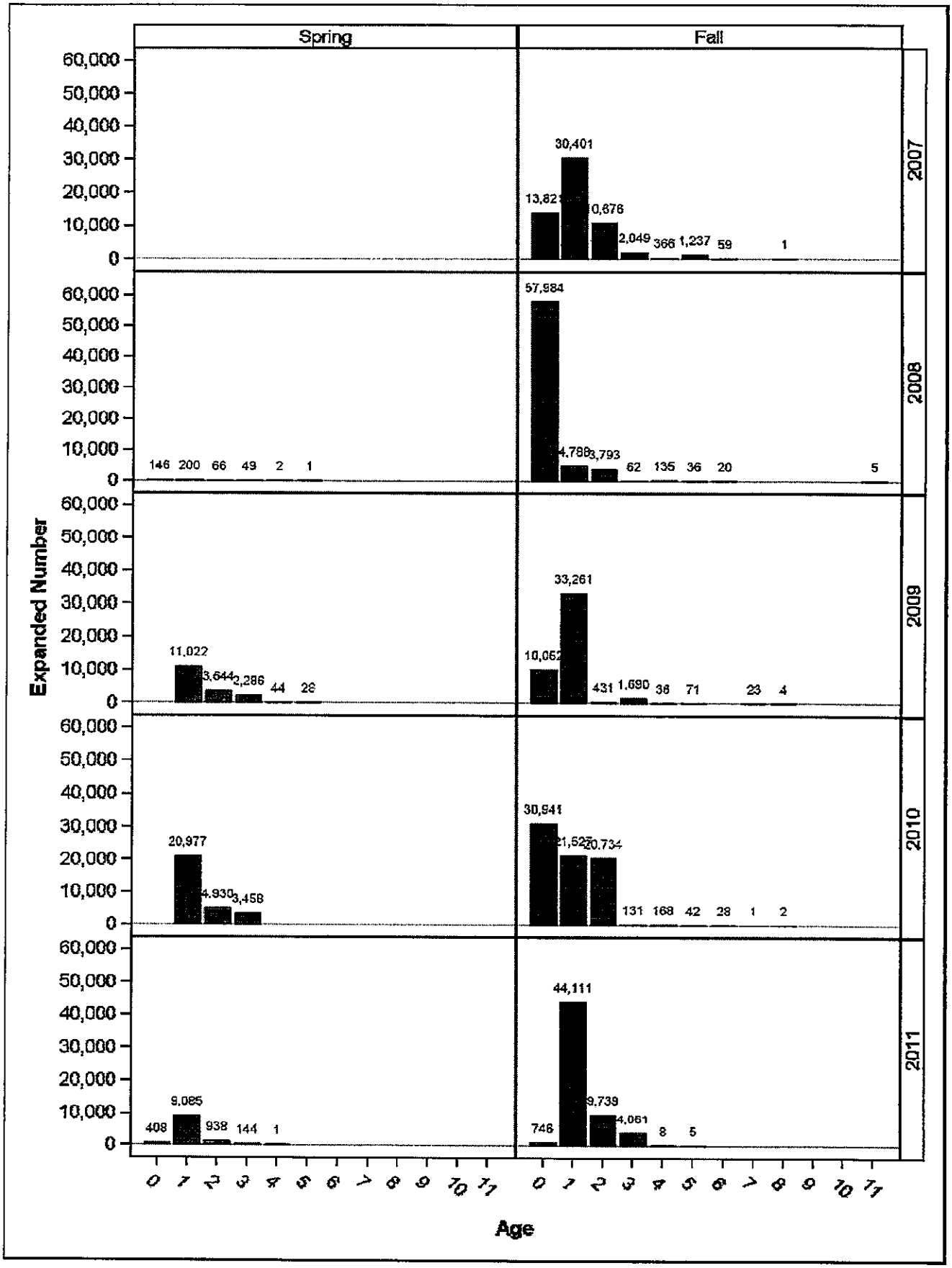


Figure 29. Atlantic croaker age-at-length proportions for all spring vs. all fall cruises combined, showing actual and loess smoothed proportions at each 1cm length bin.

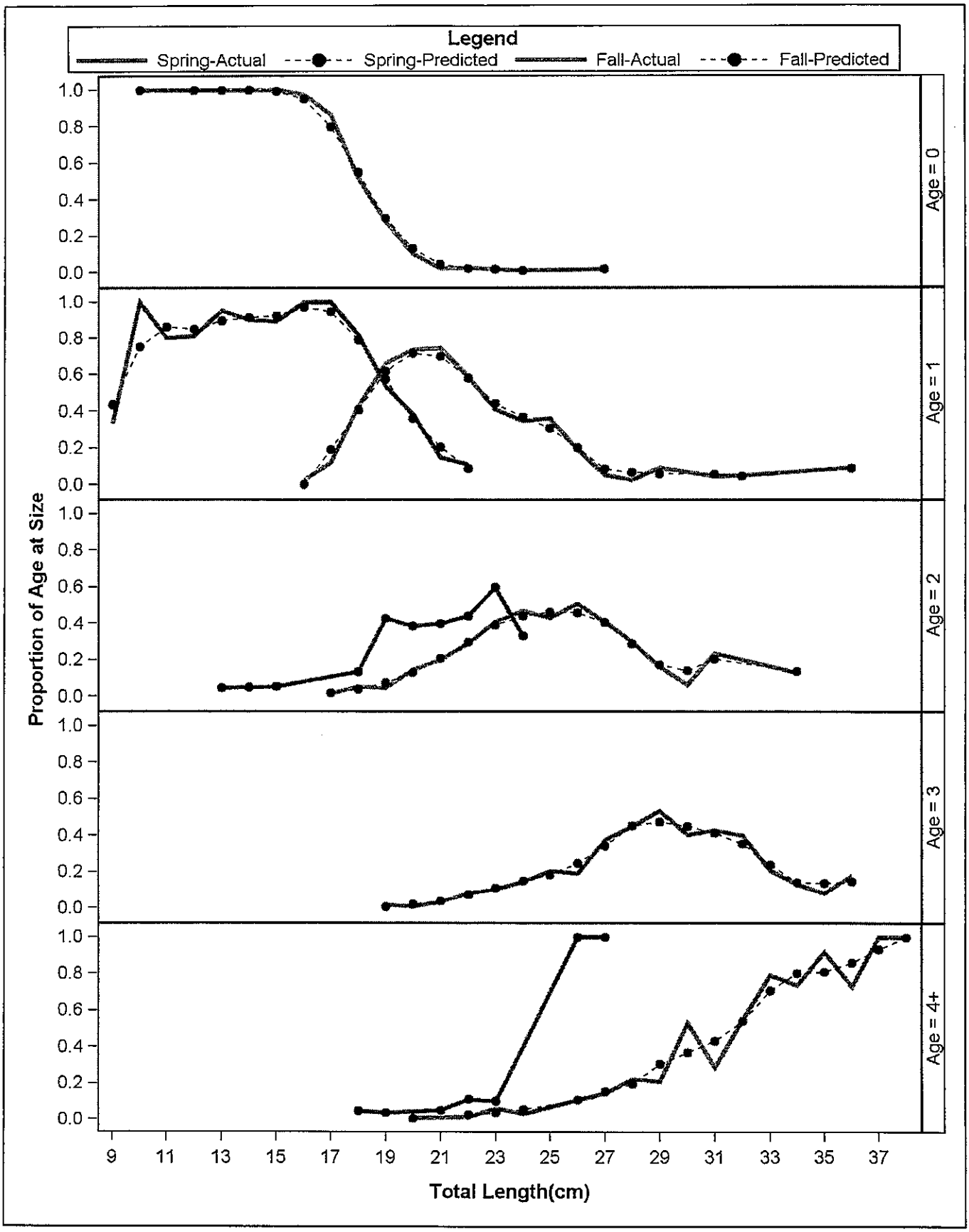


Table 18. Atlantic croaker loess smoothed age-at-length proportions for all fall cruises combined.
(Greyed values assigned rather than calculated due to lack of data in particular cells. Arrows indicate the same value used for all length bins covered. Struck-through values are from actual data but are not used. Note that within a Season and a Length bin proportions may not add to exactly 1.0 due to the smoothing algorithm. Smoothing is done within an age-class rather than across all age-classes at any given length.)

	Spring					Fall				
Total Length(cm)	Age-0	Age-1	Age-2	Age-3	Age-4+	Age-0	Age-1	Age-2	Age-3	Age-4+
9		0.437				↑	↑	↑	↑	↑
10		0.752								
11		0.861								
12		0.850								
13		0.899								
14		0.914				1.000				
15		0.926				0.993				
16		0.970				0.951	0.000	0.000		
17		0.948				0.798	0.193	0.019		
18		0.789				0.549	0.407	0.039	0.000	
19		0.574				0.297	0.615	0.076	0.008	0.000
20		0.361				0.130	0.717	0.132	0.022	0.005
21		0.206				0.046	0.698	0.211	0.040	0.010
22		0.088				0.022	0.582	0.300	0.074	0.025
23		0.000				0.017	0.443	0.394	0.108	0.035
24						0.010	0.369	0.443	0.150	0.053
25						0.000	0.309	0.466	0.184	0.041
26							0.201	0.459	0.249	0.108
27						~~0.018~~	0.085	0.407	0.344	0.153
28							0.068	0.293	0.453	0.197
29							0.061	0.174	0.474	0.306
30							0.057	0.142	0.450	0.369
31							0.055	0.140	0.414	0.432
32							0.045	0.140	0.354	0.543
33							0.000	0.139	0.243	0.705
34								0.139	0.141	0.802
35								0.000	0.139	0.810
36							~~0.089~~		0.147	0.860
37									0.069	0.931
38						↓	↓	↓	0.000	1.000

Figure 30. Atlantic croaker sex ratio, by length group, for NEAMAP Spring and Fall cruises 2007-2011.
(The percentages for each category are given near the bottom of each bar. The number sampled for sex determination is provided near the top of each bar, and the length categories expressed in inches are shown between the two figures.).

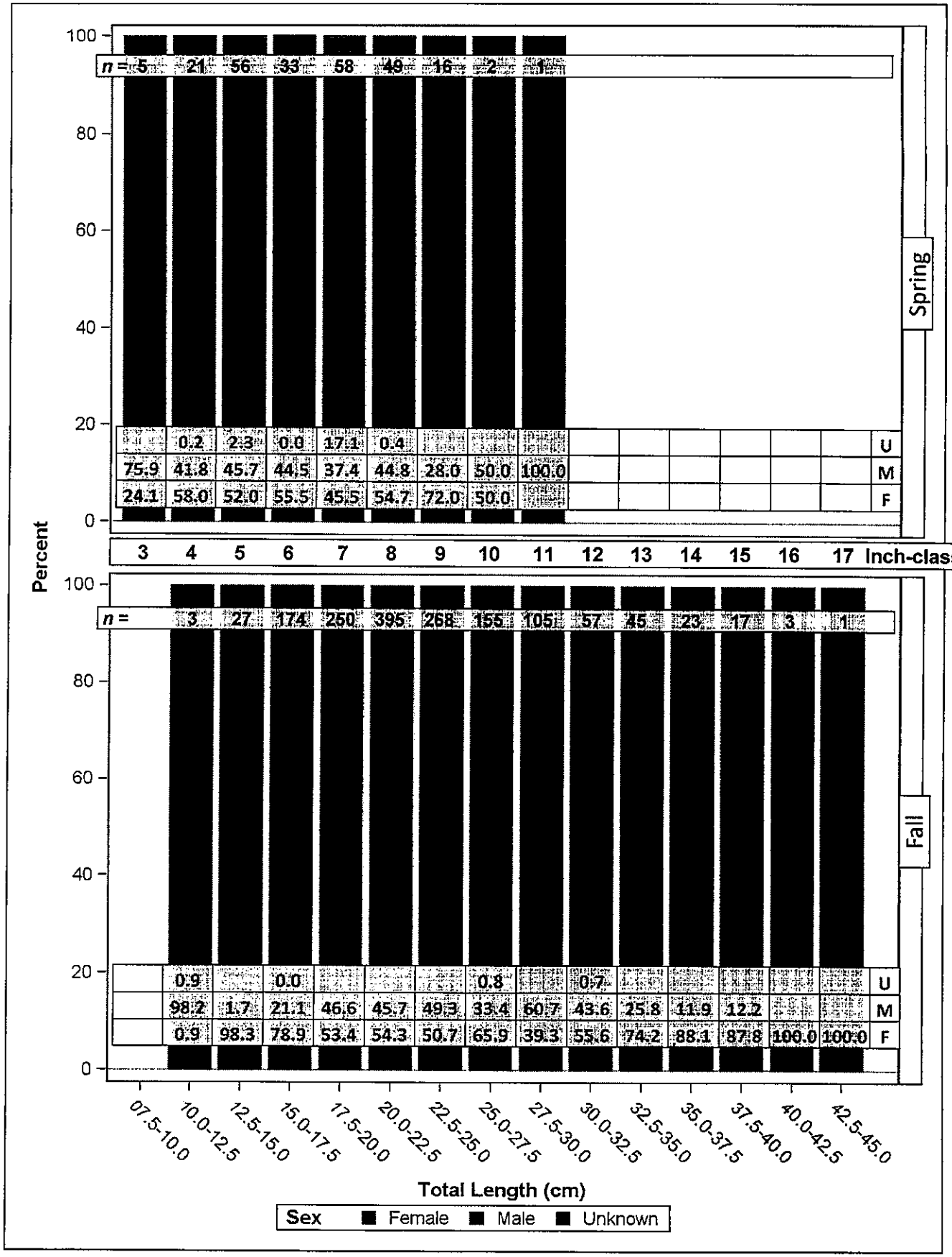
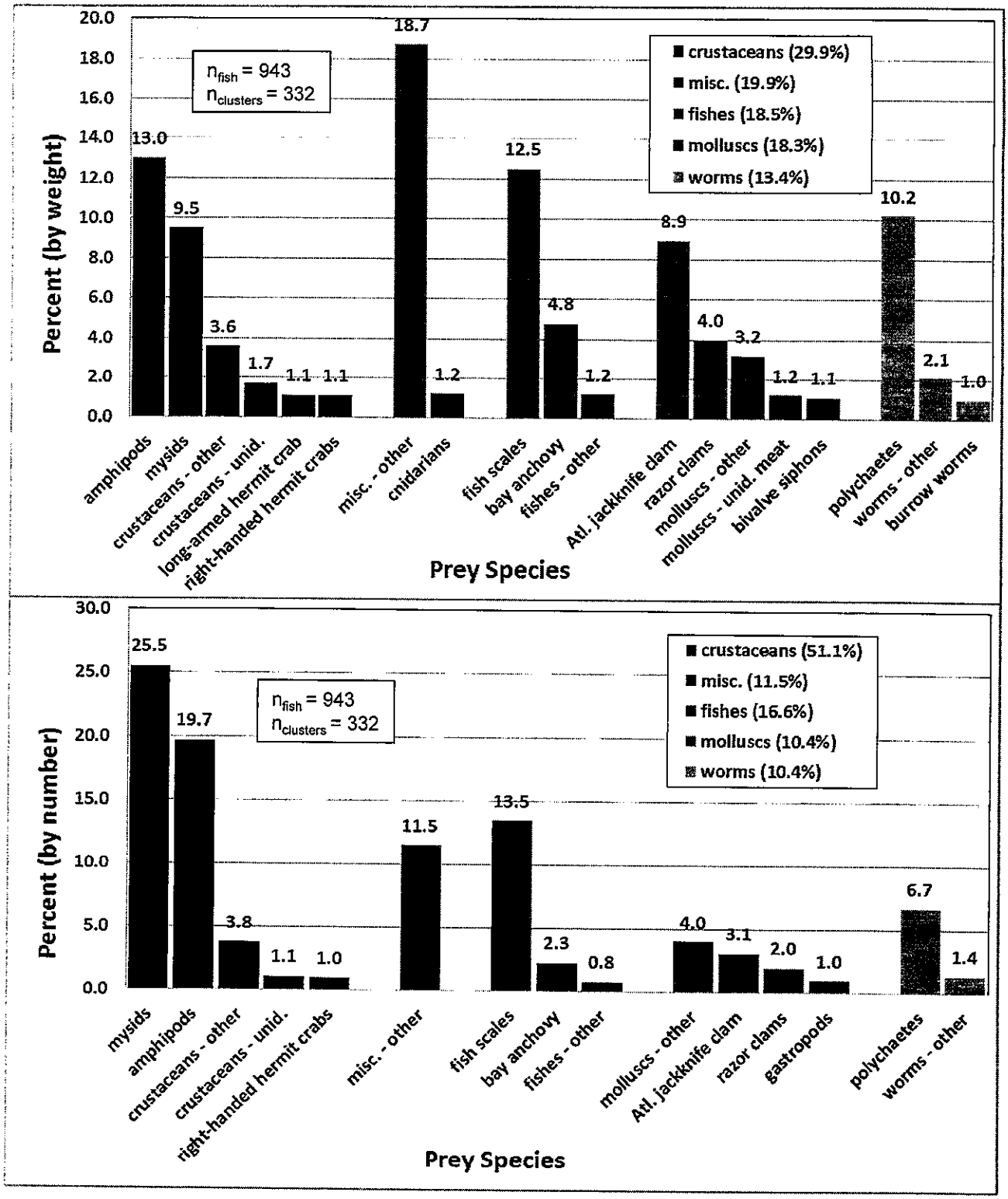


Figure 31. Atlantic croaker diet composition, expressed as percent by weight and number collected during NEAMAP cruises in 2007 through Spring 2011. (The number of fish sampled for diet is given by n_{fish}, while $n_{clusters}$ indicates the number of clusters of this species sampled.



Example "A (1)"

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Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date_____

RE: Croaker/Spot Draft Addendum

My name is Don ADAMS I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

Don Adams

Kirby Rootes-Murdy
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Date_____

RE: Croaker/Spot Draft Addendum

My name is Ernest D Allen III I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

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Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Vernon Avery. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Vernon Avery

Date 6-26-14

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RE: Croaker/Spot Draft Addendum

My name is Jenny Baker. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Jenny Baker

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Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is Parker Baker. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Parker Baker

Date 6-27-14

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RE: Croaker/Spot Draft Addendum

My name is Camden Ballou. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Camden Ballou

Kirby Rootes-Murdy
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Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is John Ballew. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

John Ballew

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Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Worth Ballou. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Worth Ballou

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Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is Faith D. Barbour. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Faith D. Barbour

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Date 6/28/14

RE: Croaker/Spot Draft Addendum

My name is Terry K Barbour. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

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JUN 3 0 2014
Atlantic States Marine Fisheries Commission

Date 6-29-14

RE: Croaker/Spot Draft Addendum

My name is Justin Barefoot. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Justin Barefoot

Kirby Rootes-Murdy
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Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Luke Barefoot. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
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Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-29-14

RE: Croaker/Spot Draft Addendum

My name is Phil Barefoot. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

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Arlington Va, 22201
Krootes-murdy@asmfc.org

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Fax (703)-842-0741

Date_____

RE: Croaker/Spot Draft Addendum

My name is JOHN THOMAS BARNES am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

John Thomas Barnes

Kirby Rootes-Murdy
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Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date_____

RE: Croaker/Spot Draft Addendum

My name is Roy P. Barnes, Jr. I am a Recreational Fishermen in the State of NC. I am in favor of Option I (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

Roy P. Barnes Jr.

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Krootes-murdy@asmfc.org

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Fax (703)-842-0741

Date_____

RE: Croaker/Spot Draft Addendum

My name is ROY R BARNES. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

Roy R. Barnes

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Date 6/27/14

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RE: Croaker/Spot Draft Addendum

My name is Will Bartholomew. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

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Date 6-27-14

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RE: Croaker/Spot Draft Addendum

My name is Michael Beasley. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Michael Beasley SR

Kirby Rootes-Murdy
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Atlantic States Marine Fisheries Commission

Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is Barbara Bowen. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Barbara Bowen

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Fax (703)-842-0741

Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is Charles W Bowen. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Charles W Bowen

June 27, 2014

Kirby Rootes-Murdy
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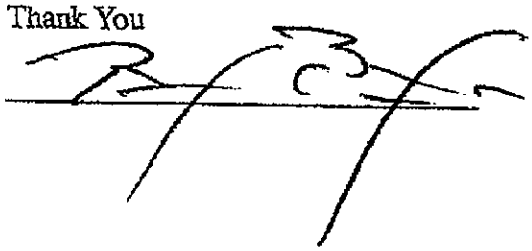
Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Ronny Brown. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You



Date 6-28-14

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RE: Croaker/Spot Draft Addendum

My name is Clarence E Clark. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Clarence E Clark

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Date 6-27-13

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RE: Croaker/Spot Draft Addendum

My name is HARVEY C. DAVIS I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Harvey C Davis

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Fax (703)-842-0741

Date 6/29/14

RE: Croaker/Spot Draft Addendum

My name is Joe Davis. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

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Fax (703)-842-0741

Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is LeslieM Davis III. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

LeslieM Davis III

Kirby Rootes-Murdy
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Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is Diane Deaton. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Diane D

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Date_____

RE: Croaker/Spot Draft Addendum

My name is Jo Ann Deeran. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Jo Ann Deeran

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RE: Croaker/Spot Draft Addendum

My name is Phillip Dewan. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Phillip Dewan

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RE: Croaker/Spot Draft Addendum

My name is Tonja Dewar. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Tonja Dewar

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Date 6/27/14

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RE: Croaker/Spot Draft Addendum

My name is Wayne Deuter I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Wayne Deuter

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Date 6-28-14

RE: Croaker/Spot Draft Addendum

My name is Mike Dorman. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

Mike Dorman

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Date 6 28 14

RE: Croaker/Spot Draft Addendum

My name is Bobby Edwards. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Bobby Edwards

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RE: Croaker/Spot Draft Addendum

My name is DOUG FLETCHER. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Doug Fletcher

Date 6-28-2014

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RE: Croaker/Spot Draft Addendum

My name is Linda C. Stalfer I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Linda C. Stalfer

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Date 6/27

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RE: Croaker/Spot Draft Addendum

My name is Jack Gorrell. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Jack Gorrell

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Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is CoREy CoRiFFin. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

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Date 06/27/2014

RE: Croaker/Spot Draft Addendum

My name is David R - Gurganus, Jr. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

David R Gurganus

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Fax (703)-842-0741

Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is FRED HAMPTON. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

F D Hampton

Date 6-27-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Grant Hampton. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Grant Hampton

Kirby Rootes-Murdy
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Arlington Va, 22201
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Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is Rocky Hardison I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Rocky Hardison

Kirby Rootes-Murdy
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Fax (703)-842-0741

Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is Toye Jackson. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Toye Jackson

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Date 7-1-14

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RE: Croaker/Spot Draft Addendum

My name is Timmy Jarman. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

Timmy Jarman

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Date 7-1-14

RE: Croaker/Spot Draft Addendum

My name is DANIEL S. KEPLER. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Kirby Rootes-Murdy
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Date 6/26/14

RE: Croaker/Spot Draft Addendum

My name is Randy B. Lassiter. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Randy B Lassiter

Date 6/24/14

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RE: Croaker/Spot Draft Addendum

My name is Charles McClay I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Charles E McClay

Kirby Rootes-Murdy
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Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is Joseph M. Miller. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Joseph M. Miller

Date 6/28/14

Kirby Rootes-Murdy
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RE: Croaker/Spot Draft Addendum

My name is PAUL H. MINOR. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Paul H. Minor

Date 6-28-14

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RE: Croaker/Spot Draft Addendum

My name is TAYLOR MINOR. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Taylor Minor

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Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Jeff Mitchell. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Jeff Mitchell

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Atlantic States Marine Fisheries Commission

Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Clifton Moss. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Clifton J. Moss

Kirby Rootes-Murdy
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Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Steve Nichols. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Steve Nichols

Kirby Rootes-Murdy
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Date 7-1-14

RE: Croaker/Spot Draft Addendum

My name is Jeff Paul. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Jeff Paul

1598 Pamlico Rd
Oriental 28571

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Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is BARRY R PEARCE I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

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Date 6/27/14

RE: Croaker/Spot Draft Addendum

My name is Teresa Pierce. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Teresa Pierce

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Date 6/27

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RE: Croaker/Spot Draft Addendum

My name is Joe Powell. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Joe Powell

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Date 6/27

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RE: Croaker/Spot Draft Addendum

My name is Ralph Powell. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Ralph Powell

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Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Sandra D Rearden. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Sandra D Rearden

Kirby Rootes-Murdy
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Date 6-28-14

RE: Croaker/Spot Draft Addendum

My name is William Ritenour. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

William Ritenour

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Date 7-1-14

RE: Croaker/Spot Draft Addendum

My name is Justin Rodgers. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Justin Rodgers

1119 Straight Rd Oriental NC

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Date 6/27/14

Kirby Rootes-Murdy
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RE: Croaker/Spot Draft Addendum

My name is Susan Rollins. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Susan Rollins

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Date 6-27-14

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Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Kelly D. Seymour. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum I for the Spot/Atlantic Croaker Management Plan.

Thank You

KELLY D. SEYMOUR

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-27-2014

RE: Croaker/Spot Draft Addendum

My name is LEN SMITH. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Len Smith

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-27-14

RE: Croaker/Spot Draft Addendum

My name is Pat Smith. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Pat Smith

Date 6-26-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Patrick Spickett. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Patrick Spickett

Date 6-27-14

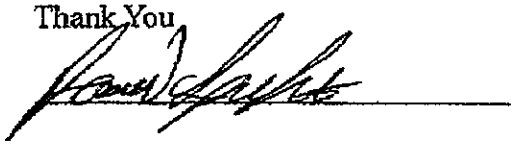
Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is DAVID SPICUTT. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You



Date 6-26-14

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Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Josh Stafford. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is Jonathan Tedder. I am a Recreational Fishermen in the State of NC. I am in favor of Option I (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Jonathan Tedder

Date 6-28-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Terry K. Willis. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Terry K Willis

RECEIVED JUN 27 2014

Date 6/27/14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Kelly Young. I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Kelly Young

Example "A (2)"

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is DON Acree. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Don Acree

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is Loretta Acree. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Loretta Acree

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-1-14

RE: Croaker/Spot Draft Addendum

My name is [signature]. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Carl Blackman

RECEIVED JUN 20 2014

Date 6-19-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Thomas C. McArthur III. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Thomas C. McArthur III

RECEIVED JUN 20 2014

Date 6-19-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Monie Norman. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Monie Norman

Kootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6-19-14

RE: Croaker/Spot Draft Addendum

My name is PERRI JAYE TOSTO II. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Perri J. Tosto II
185 TOSTO Rd
BEAUFORT NC 28516

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

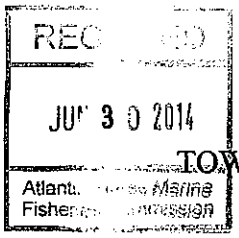
Date 7-1-14

RE: Croaker/Spot Draft Addendum

My name is BRANNON WILLIS. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Brannon Willis

Example "B"



NAME Don Acree
STREET P.O. Box 508
TOWN/CITY Atlantic Beach STATE NC
EMAIL dacree54@gmail

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

RE: **Croaker/Spot Draft Addendum**

Mr. Kirby Rootes-Murdy,

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Sincerely

Don Acree

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6.26.14

RE: Croaker/Spot Draft Addendum

My name is DON Acree. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

Don Acree

NAME Loretta Acree
STREET P.O. Box 3013
TOWN/CITY Atlantic Beach STATE NC
EMAIL tdacree228@gmail

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely,
Loretta Acree

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

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Fax (703)-842-0741

RECEIVED
JUN 30 2014
Atlantic States Marine Fisheries Commission

Date 6-26-14

RE: Croaker/Spot Draft Addendum

My name is Loretta Acree. I am a Commercial Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You
Loretta Acree

NAME Jamie Armstrong
STREET 2736 NC Hwy 304 N
TOWN/CITY Grantsboro STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

RE: **Croaker/Spot Draft Addendum**

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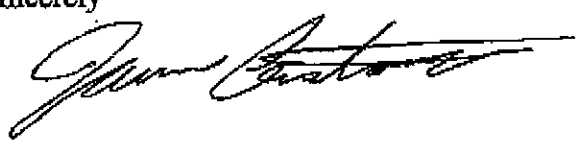

NAME Hunter Barta
STREET 264 Chadwick Rd
TOWN/CITY Bft STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

RE: **Croaker/Spot Draft Addendum**

Mr. Kirby Rootes-Murdy,

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Sincerely Hunter Barta

Donald E. Cannon

NAME PAUL BIERMANN
STREET 140 CLAUDIA CT
TOWN/CITY ATLANTIC STATE NC
EMAIL pbiermann@centurylink.net

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely

Paul Biermann

NAME Jeffrey caton
STREET 399 Mack Scott Ave
TOWN/CITY New Bern STATE N.C
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely

NAME SHELDON DANIELS
STREET 184 RIVER ROAD
TOWN/CITY BEAUFORT STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

RE: **Croaker/Spot Draft Addendum**

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Sincerely

NAME Leslie D. Sonny Davis
STREET 2016 Atlantic Blvd.
TOWN/CITY Atlantic B. STATE N.C
EMAIL Capt Stacy.com)

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely Leslie D. Sonny Davis

NAME Brennen Guthrie
STREET 1260 Salter Path Rd
TOWN/CITY Salter Path STATE NC
EMAIL Brennen Guthrie @ ymail . com

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
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Sincerely

NAME Sherman Guthrie
STREET 191 Shore Dr.
TOWN/CITY Salter Path STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
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Sincerely

NAME Mike Guthrie
STREET 1200 Salter Path Rd.
TOWN/CITY Salter Path STATE N.C.
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

RE: **Croaker/Spot Draft Addendum**

Mr. Kirby Rootes-Murdy,

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Sincerely

NAME Darrell Haggett
STREET Town Rd
TOWN/CITY Oriental STATE N.C
EMAIL NO

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely Darrell Haggett

RECEIVED
JUL 01 2014
Atlantic States Marine Fisheries Commission

NAME Donald Spock Sr
STREET 771 Station House Rd
TOWN/CITY New Bern STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely

RECEIVED JUN 20 2014

NAME Bruce Koonce
STREET 415 Holly St.
TOWN/CITY Emerald Isle STATE N.C.
EMAIL Billfin25789@mail.com

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely

NAME Mark Nobles
STREET 328 Smokey Drive
TOWN/CITY New Bern STATE N.C.
EMAIL 28560

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
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Krootes-murdy@asmfc.org

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Sincerely Mark Nobles

NAME Joshua Dave Salter
STREET 133 River Side Drive
TOWN/CITY Beaufort STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
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Sincerely Joshua D Salter

NAME William Scott Smith
STREET Box 409
TOWN/CITY Aurora STATE NC
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
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Sincerely William Scott Smith
William Smith

NAME Christopher M Healey
STREET 520 Sandridge Rd.
TOWN/CITY Hubert STATE N.C
EMAIL bridgebuilder5292@yahoo.com

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
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Sincerely

Christopher M Healey

RECEIVED JUN 20 2014

NAME JOHN C. WILLIS
STREET 731 CROCHILL RD.
TOWN/CITY BEAUFORT STATE N.C.
EMAIL

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
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Sincerely
pr. John C. Willis

RECEIVED JUN 27 2014

NAME Stafford M Will
STREET 2005 Melodie Ln
TOWN/CITY MHC STATE NC
EMAIL MWill@EC.RR.com

Atlantic States Marine Fisheries Commission
Management Plan Coordinator
1050 N. Highland St., Suite 200A-N
Arlington Va, 22201
Telephone (703)-842-0740
Fax (703)-842-0741
Krootes-murdy@asmfc.org

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Sincerely

Example " C (1) "

Date 7-2-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Matthew David Brown I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

Management Plan.

There has been no proven scientific research for the following:

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2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

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Thank you for the opportunity to voice my opinion.

Sincerely,

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Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-2-14

RE: Croaker/Spot Draft Addendum

My name is Sammie Dorham I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

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Sincerely,

Sammie Dorham

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-2-14

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I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

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Jimmy M. Eady III

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-2-14

RE: Croaker/Spot Draft Addendum

My name is Connie Forrest. I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

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Connie Ray Forrest

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-2-14

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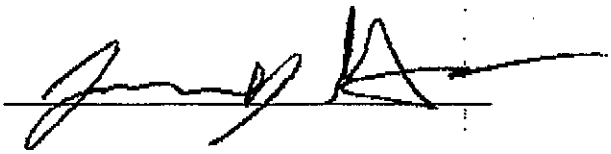
Sincerely,



Kirby Rootes-Murdy
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Krootes-murdy@asmfc.org

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Date 7-2-14

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My name is NMC Homer. I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

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Krootes-murdy@asmfc.org

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Date 7-2-14

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Krootes-murdy@asmfc.org

Telephone (703)-842-0740
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Date 7-2-14

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My name is JUSTIN SALTER. I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

Management Plan.

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1050 N. Highland St.
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Krootes-murdy@asmfc.org

Telephone (703)-842-0740
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Date 7-2-14

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My name is Jerry T. Smith I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

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JERRY T. SMITH

Kirby Rootes-Murdy
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Krootes-murdy@asmfc.org

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Date 7-2-14

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Ed Smith

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1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-2-14

RE: Croaker/Spot Draft Addendum

My name is Gordon Warren. I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Gordon Warren

Date 7-2-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is CALVIN WILSON I fish in NC.

I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum

Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Calvin Wilson

Example " C (2)"

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date_____

RE: Croaker/Spot Draft Addendum

My name is Ernest D. Atlantic Co. I fish in the Bogue / Pamlico / _____River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RECEIVED
JUN 3 0 2014
Atlantic States Marine Fisheries Commission

Date_____

RE: Croaker/Spot Draft Addendum

My name is Ernest D Allen III I am a Recreational Fishermen in the State of NC. I am in favor of Option 1 (Status Quo) for the Draft Addendum 1 for the Spot/Atlantic Croaker Management Plan.

Thank You

RECEIVED JUN 20 2014

Date 6/19/14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Aubrey Collins. I fish in the Adam Creek N.C River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Aubrey Collins

374 Silver Dollar. RD
Beaufort N.C 28516

Date 6-25-14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is JOSEPH J. DEGUARDIA fish in the BOGUE SOUND River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 6/20/14

RECEIVED JUN 20 2014

RE: Croaker/Spot Draft Addendum

My name is Marvin Newman I fish in the Neuse River

River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Marvin Newman

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 7-1-14

RE: Croaker/Spot Draft Addendum

My name is DANNY RAINE. I fish in the NEW PORT River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Danny Raine

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

Date 06-24-14

RE: Croaker/Spot Draft Addendum

My name is Stevenson Lee Weeks Sr. I fish in the North Carolina Oceans and Inland Waters River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

252-732-0051
Beaufort N.C. 28516
616 Russell Creek Rd.

Date 6/29/14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is Capt David Williams. I fish in the Ocean Sound River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring. A Yell are crazy DGW

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

RECEIVED JUN 27 2014

Date 6/27/14

Kirby Rootes-Murdy
Fishery Management Plan Coordinator
1050 N. Highland St.
Suite 200A-N
Arlington Va, 22201
Krootes-murdy@asmfc.org

Telephone (703)-842-0740
Fax (703)-842-0741

RE: Croaker/Spot Draft Addendum

My name is STAFFORD M WITT. I fish in the Soand River/Sound. I am in opposition of the Traffic Light Approach for the Spot/Atlantic Croaker Addendum Management Plan.

There has been no proven scientific research for the following:

1. Fish Cycles vs. Trends
2. Size Limitations, Bag Limits, Gear Restrictions, etc. vs. Regulatory Discards(By-catch)
3. Consideration of Harvest Effort

Evidence from the 2010 Atlantic Croaker stock assessment indicate that Over fishing is not occurring.

Until the best available science is used, I think that Status Quo is the only available option at this time.

Thank you for the opportunity to voice my opinion.

Sincerely,

Stafford M. Witt

DRAFT ADDENDUM I TO THE OMNIBUS AMENDMENT FOR SPOT AND DRAFT ADDENDUM II TO AMENDMENT I TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC CROAKER

PUBLIC HEARINGS SUMMARIES

Date	Location
June 12, 2014	Annapolis, MD
June 16, 2014	Newport News, VA
June 17, 2014	Morehead City, NC
June 18, 2014	Brunswick, GA

July 2014

PUBLIC HEARING SUMMARY
Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate FMP For Atlantic Croaker

Maryland

Maryland Department of Natural Resources
Conference Room C-1
Annapolis, Maryland

6/12/2014

Public Attendance: see sign-in sheet (1 members of the public)

State and ASMFC Personnel:
Kirby Rootes-Murdy, ASMFC
Harry Rickabaugh, MD DNR

Summary:

One member of the public was in attendance. They stated their preference for option 3: State by State measures using the Traffic Light Approach with the precautionary management framework for both species. Reasons cited in support of this were the need to account for more regional-state level environmental factors that may affect the local population differently. In choosing between the sub-option listed, the attendee supported option 3B, the use of multiple population characteristics for applying the TLA to the precautionary management framework. Reason cited was the need to have more data to make an informed decision.

Draft Addenda to the Spot and Atlantic Croaker Fishery Management Plans for Public Comment

Atlantic States Marine Fisheries Commission
June 12, 2014
Maryland

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
Clifford Stoecker	—	Baltimore, MD
Kirby Rootes-Murdy	ASMFC	
Harry Rickabaugh	MD DNR	

PUBLIC HEARING SUMMARY
Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate FMP For Atlantic Croaker

Virginia

Virginia Marine Resources Commission
4th floor Conference Room
Newport News, Virginia 23607

6/16/2014

Public Attendance: see sign-in sheet (25 members of the public)

State and ASMFC Personnel:
Kirby Rootes-Murdy, ASMFC
Joe Grist, VMRC
Rob O'Reilly, VMRC
Lewes Grillingham, VMRC
Carrie Williams, VMRC
Rachel Maulirico, VMRC
Andre Ehler, VMRC

Summary:

14 attendees provided public comment, with mixed support for options 1 and 3. No one was in support of option 2

Option 1: Status Quo

9 attendees voiced their preference for option 1, status quo for both species. Reasons given in support of option 1, largely focus on concern over the data use in the Traffic Light Approach (TLA). Concerns regarding the data included the surveys selected; the ability of the surveys to effectively account for abundance; the surveys scope and lack of local area representation; a lack of effort data included in the commercial landings; and the role of market forces impacting commercial landings. Many voicing support for option 1 requested that NEAMAP data be included in the TLA and until done so, the TLA nor proposed management framework should be used. Other issues noted regarding the data were that the abundance of both species move in cycles, and to apply management measures would be naïve given the natural cycles the species abundance experiences. Lastly it was noted that if abundance has decreased it may be due to predation by spiny dogfish and red drum, with appropriate measures being increased harvest of both species.

Other issues cited in support of option 1 was concern over the proposed management framework and potential management measures. A few attendees noted that a size limit would be an ineffective and impractical management measure given the life history of both species. Other concerns regarding the management framework were the potential economic impacts management measures may cause fisherman and bait shop owners.

Option 3: State-by-State measures using the TLA with precautionary management framework

3 Attendees voiced their support for option 3, state by state measures. Reasons given in support of this option was the ability of the state to manage the fishery independently from other states, while addressing the issue in more localized context. Other reasons given in support of this option were the need to consider the resource before the fisherman. In choosing between the sub-options, opinions were split in support of either a single or multiple characteristics. Reasons given in support of the single harvest was mistrust in the currently used survey data, and preference for the harvest characteristic. Support in using both characteristics was listed as the need for more information in making management decisions.

Draft Addenda to the Spot and Atlantic Croaker Fishery Management Plans for Public Comment

Atlantic States Marine Fisheries Commission
June 16, 2014
Virginia

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
James Gartland	VIMS	Gloucester Point, VA
Scott MacDonald	Spot Fish Co.	Va. Beach, Va
Skip Feller	Rudee Tours	VA Beach, VA
James Fletcher	UNFA	Manns Harbor NC
Maude Amory	L. A. Amory	Hampton Va
Nathan Dryden	Waterman	Poquoson
Jimmy Ruhle	F/V Darana R	Wanchese, N.C
Pete Nixon	VSC	Norfolk Va.
Daniel Cope	PSWFA	
Robert L Weagley Jr.	A & B	York River
Robert L Holloway		
John Boudreau	IEFE	Suffolk
Jay Odell	TNC	Richmond, VA
Laura McKay	VA CZM	"
Lewis Gillingham	VMRC	
Joe Grist	VMRC	
Rob O'Reilly	VMRC	
Laurie Williams	VMRC	
Rachael Maulizio	VMRC	
Andie Ehlen	VMRC	

FOR ASMFC

VA Public Hearing 6/16/2014

Name	Company/Organization	City, State
DAVID AGEE	PSWSFA	NEWPORT NEWS
Beth Synowiec	FMAC	(VA Beach)
Meade Amory	FMAC	Hampton VA
Tom Powers	FMAC	Poquoson VA
Scott MacDonald	FMAC - SPOT Fish Co	Va. Beach, Va
Jeff Deem	FMAC/MAFMC	LORTON, VA
Ernest Bowden	FMAC	Chincoteague, VA.
Mark Huston	FMAC	Portsmouth, VA
WALTER ROGERS	FMAC	REEDVILLE VA
Skip Feller	FMAC	Virginia Beach, VA
ROBERT WEAGLEY	FMAC	PROVIDENCE FORGE, VA.
Rick Lockhart	FMAC/VCBA	Kilmarnock, VA

PUBLIC HEARING SUMMARY
Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate FMP For Atlantic Croaker

North Carolina

North Carolina Division of Marine Fisheries
Central District Office
Morehead City, North Carolina 28557

6/17/2014

Public Attendance: see sign-in sheet (45 members of the public)

State and ASMFC Personnel:
Kirby Rootes-Murdy, ASMFC
Michelle Duval, NC DMF
Kevin Brown, NC DMF
Jason Rock, NC DMF

Summary:

24 members of the public spoke in favor of option 1, status quo for both spot and Atlantic croaker. There was no evidence of any attendees in favor of either option 2 or 3. Many who spoke in favor of option 1- the majority- voiced concern for the data used in the Traffic Light Approach (TLA). Concerns regarding the data included the surveys selected; the ability of the surveys to effectively account for abundance; the surveys scope and lack of local area representation; inaccuracies with the recreational estimates; a lack of effort data included in the commercial landings; and the role of market forces impacting commercial landings. Many speaking in favor of option 1 also took issue with a perceived lack of attention to environmental factors such as water quality, salinity, temperature, and natural cycles of abundance. Many cited that neither fishery has been determined to be experiencing overfishing nor is overfished, and that overall abundance for both species is fine. Other noted that when abundance does change, it is less a result of human impact and more natural influences; as such, fishing pressure and management measures would have little impact. Lastly, some attendees noted that if abundance is decreasing for either species, predation from other species such as striped bass, spiny dogfish, and/or red drum many be to blame.

In speaking against the management framework proposed in options 2 and 3, many cited the proposed framework as containing inappropriate management tools for the fishery- such as size limits given the life history of both species. Other issues voiced regarding the proposed management framework were general sentiments of management measures not being needed; if management measures were implemented through the proposed management framework they would pose unnecessary restrictions on fishermen; management has created scenarios of less fish for fisherman, less revenue, and reduced livelihoods. Lastly, some attendees noted that when restrictions or management measures are put in place, such measures rarely if either go away- this was noted in relation to the proposed 2-3 year management measures period for evaluation in option 2 and 3.

Other comments made less directed at the proposed management framework and TLA, focused on the mischaracterization of shrimp trawl bycatch as impacting abundance. It was noted that North Carolina has been a leading state in reducing bycatch in the shrimp trawl fishery.

Draft Addenda to the Spot and Atlantic Croaker Fishery Management Plans for Public Comment

Atlantic States Marine Fisheries Commission
June 17, 2014
North Carolina

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
Allen Powell	MFC	Gloucester, NC
Katy West	NCDMF	Washington, NC
[illegible]		Harkers Island NC.
Charlie Dillikin		Harkers Island NC.
Cameron Dillikin		Gloucester, NC.
Kenneth M. [illegible]	Commercial	Hubert, NC. 28539
John Skinner	Commercial	Newport N.C. 28570
Michelle Duval	NCDMF	Morehead City NC
Kevin Brown	"	"
Jason Rock	"	Washington, NC
Dan Zapf	"	"
Tina Moore	"	Morehead City NC
Adam Tyler	Commercial	Smyrna
Charles Tyler	Commercial	Smyrna
Jeremy Braddy	Support Commercial	Morehead City, N.C.
Taylor Williams	Support Commercial	Morehead City NC
Leslie Asdenti	Support Commercial	Harkers Island
John Willis	Commercial Fisherman	731 Crosshill
Quindrea Oneal	NC Resident	Beaufort NC
Steve Weeks	Wheatly, Wheatly Weeks Massielyn [illegible]	Bft NC.
Tommy McArthur	Commercial	867 Hwy 101 BFT NC 28516
Alex McArthur	Commercial	" " " "
Mackenzie McArthur	Commercial	867 Hwy 101 BFT NC 28516
Arnold Asdenti	Commercial	Harkers Isl., NC
David Jarvis	Commercial	Swansboro, NC
Stanley M. Warlen	retired NMFS	Newport, NC
[illegible]	Commercial	Gloucester N.C
Bobby Kirkman Jr.	Bobby Kirkman JR commercial	Swansboro NC
Garney Lee Gillikin III	Beaufort Inlet Seafood	Beaufort, N.C. 28516
Henry Frost	Salter Path Fishing Crew	, NC, 28512
Gary Cannon	Cannon Seafood	South River 28516

NC Public Hearing 6/17/201

Name	Company/Organization	City, State
JAN WILLIS	—	MOREHEAD CITY, NC
Cedric Collins		Beaufort NC
Bucie Potter	R E Mayo Slfd.	Hobucken, N. C.
Penny Howers	R E Mayo Slfd.	Hobucken, NC
[illegible]		H [illegible]
[illegible]		Gloucester
Walter [illegible]	Ocean ST.	Harkers Island NC
[illegible]		Wilmington, NC
[illegible]		Carol's Bank NC.
[illegible]		W. I. N.C.
Monnie Norman	SOUTH River SEA.	South River NC
LARRY KELLUM	Fisherman	Betty, N.C.
Brent Fulcher	NCFA	New Bern NC
Alison Willis	Core Sound Seafood	Harkers Island, NC
Eddie Willis	Mr. Big Seafood	Harkers Island, NC
[illegible]	fisherman	Beaufort NC
[illegible]	Commercial	Beaufort
[illegible]	Comm. Fishm	Beaufort
Patrick M [illegible]	Com. Fish	Stella NC

PUBLIC HEARING SUMMARY
Draft Addendum I to the Omnibus Amendment for Spot and Draft Addendum II to Amendment I to the Interstate FMP For Atlantic Croaker

Georgia

Georgia Coastal Resources Division
Susan Shipman Environmental Education Building
Brunswick, Georgia

6/18/2014

Public Attendance: see sign-in sheet (2 members of the public)

State and ASMFC Personnel:
Kirby Rootes-Murdy, ASMFC
Carolyn Belcher, GA DNR-CRD
Dawn Franco, GA DNR-CRD
Kathy Nolte, GA DNR-CRD
Pat Geer, GA DNR-CRD

Summary:

Two member of the public was in attendance. Both attendee voiced their support for options 3: State-by-State measures using the TLA with precautionary management framework. Reasons cited was the need for states to have more control over setting measures regarding their state's fishery. In consider the sub options for option 3, both were in support of using multiple population characteristics. Reasons cited were the need to have more data to make a more informed decision.

Other comments focused on the need to understand the environmental factors possibly playing a role in the abundance of both species. Particularly noted was that both species seem to go through natural cycles, and that elements such was water temperature may play a role in the local abundance and presence.

Draft Addenda to the Spot and Atlantic Croaker Fishery Management Plans for Public Comment

Atlantic States Marine Fisheries Commission
June 18, 2014
Georgia

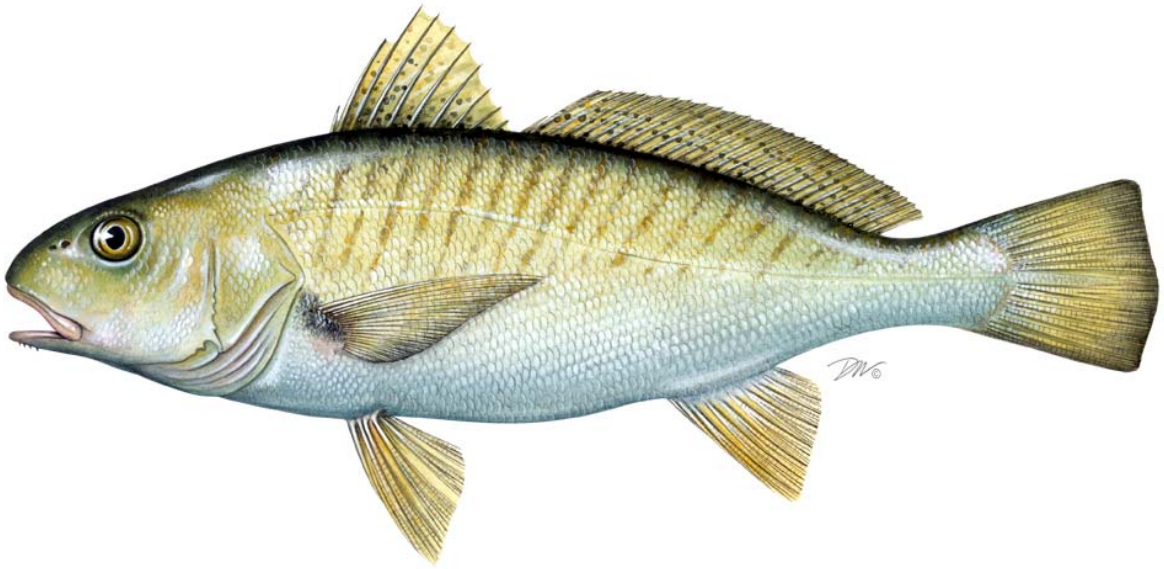
-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
CAROLYN BELCHER	GADNR-CRD	BRUNSWICK, GA
Dawn Franco	GA DNR CRD	Brunswick, GA
Trish DuBose	teacher	St Marys GA
Ronald DuBose	GA association manufactured	
Kirby Rooter Hurdy	ASMFC	
Pat Geer	GADNR-CRD	
Kathy Nolte	GADNR-CRD	

2014 REVIEW OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
FISHERY MANAGEMENT PLAN FOR

ATLANTIC CROAKER
(Micropogonias undulatus)

2013 FISHING YEAR



Atlantic Croaker Plan Review Team
Wilson Laney, Ph.D., United States Fish and Wildlife Service
Chris McDonough, South Carolina Department of Natural Resources
Jason Rock, North Carolina Department of Marine Fisheries
Kirby Rootes-Murdy, Atlantic States Marine Fisheries Commission, Chair

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I. Status of the Fishery Management Plan

Date of FMP Approval: Original FMP – October 1987

Amendments: Amendment 1 – November 2005 (implemented January 2006)
Addendum I – March 2011

Management Areas: The Atlantic coast distribution of the resource from New Jersey through Florida

Active Boards/Committees: South Atlantic State/Federal Fisheries Management Board; Atlantic Croaker Technical Committee, Stock Assessment Subcommittee, and Plan Review Team; South Atlantic Species Advisory Panel

The Fishery Management Plan (FMP) for Atlantic Croaker was adopted in 1987 and included the states from Maryland through Florida (ASMFC 1987). Subsequently, the South Atlantic State/Federal Fisheries Management Board (Board) reviewed the FMP and found its recommendations to be vague and recommended that an amendment be prepared to define management measures necessary to achieve the goals of the FMP. The Interstate Fisheries Management Program Policy Board also adopted the finding that the original FMP did not contain any management measures that states were required to implement.

In 2002, the Board directed the Atlantic Croaker Technical Committee to conduct the first coastwide stock assessment of the species in preparation of developing an amendment. The Atlantic Croaker Stock Assessment Subcommittee developed a stock assessment in 2003, which was approved by a Southeast Data Assessment Review (SEDAR) panel for use in management in June 2004 (ASMFC 2005a). The Board quickly initiated the development of an amendment. In November 2005, the Board approved Amendment 1 to the Atlantic Croaker FMP (ASMFC 2005b). The amendment was fully implemented by January 1, 2006.

The goal of Amendment 1 is to utilize interstate management to perpetuate the self-sustainable Atlantic croaker resource throughout its range and generate the greatest economic and social benefits from its commercial and recreational harvest and utilization over time. Amendment 1 contains four objectives:

1) Manage the fishing mortality rate for Atlantic croaker to provide adequate spawning potential to sustain long-term abundance of the Atlantic croaker population.
2) Manage the Atlantic croaker stock to maintain the spawning stock biomass above the target biomass levels and restrict fishing mortality to rates below the threshold.
3) Develop a management program for restoring and maintaining essential Atlantic croaker habitat.
4) Develop research priorities that will further refine the Atlantic croaker management program to maximize the biological, social, and economic benefits derived from the Atlantic croaker population.

Amendment 1 expanded the management area to include the states from New Jersey through Florida. Consistent with the stock assessment completed in 2004, the amendment defined two Atlantic coast management regions: the south-Atlantic region, including the states Florida

through South Carolina; and the mid-Atlantic region, including the states North Carolina through New Jersey.

Amendment 1 established biological reference points (BRPs) to define overfished and overfishing stock status for the mid-Atlantic region only. Reliable stock estimates and BRPs for the South Atlantic region could not be developed during the 2004 stock assessment due to a lack of data. The BRPs were based on maximum sustainable yield (MSY), and included threshold and target levels of fishing mortality (F) and spawning stock biomass (SSB): F threshold = F_{MSY} (estimated to be 0.39); F target = 0.75 X F_{MSY} (estimated to be 0.29); SSB threshold = 0.7 X SSB_{MSY} (estimated to be 44.65 million pounds); and SSB target = SSB_{MSY} (estimated to be 63.78 million pounds). An SSB estimate below the SSB threshold results is an overfished status determination, and an F estimate above the F threshold results is an overfishing status determination. The Amendment established that the Board would take action, including a stock rebuilding schedule if necessary, should the BRPs indicate an overfished stock or a stock subject to overfishing.

Amendment 1 did not require any specific measures restricting recreational or commercial harvest of Atlantic croaker. States with more conservative measures were encouraged to maintain those regulations (Table 1). Through adaptive management, the Management Board may revise Amendment 1, and regulatory and/or monitoring requirements could be included in the resulting addendum, along with procedures for determining de minimis status and implementing alternative management programs via conservation equivalency.

The Board initiated Addendum I to Amendment I at its August 2010 meeting, following the updated stock assessment, in order to address the proposed reference points and management unit. The stock assessment evaluated the stock based on a coastwide unit, rather than the two management units established within Amendment I. In approving the final Addendum I, the Management Board approved the consolidation of the stock into one management unit, as proposed by the stock assessment. In addition, Addendum I established a procedure, similar to other species, by which the Board may approve peer-reviewed BRPs without a full administrative process, such as an amendment or addendum.

Addendum I did not add or change any additional management measures or requirements. The only existing requirement is for states to submit an annual compliance report by July 1 of each year that contains commercial and recreational landings as well as results from any monitoring programs that intercept Atlantic croaker.

II. Status of the Stock

Stock status is based on the data and results of the 2010 stock assessment (ASMFC 2010). Results include revised biological reference points (below). These reference points are ratio-based and apply to the entire coastwide resource (unlike those in Amendment 1). Overfishing is occurring if F/F_{MSY} is greater than 1 and the stock is considered overfished if $SSB/(SSB_{MSY}(1-M))$ is less than 1.

	Overfishing Definition	Overfished Definition
Target	$F/(F_{MSY}*0.75) = 1$	$SSB/SSB_{MSY} = 1$
Threshold	$F/F_{MSY} = 1$	$SSB/(SSB_{MSY}(1-M)) = 1$

Atlantic croaker is not experiencing overfishing. Biomass has been increasing and fishing mortality decreasing since the late 1980s. Biomass conclusions are based on information from the data compiled for the assessment, namely increasing indices of relative abundance and expanding age structure in the catch and indices. Model estimated values of fishing mortality (F), spawning stock biomass (SSB), and biological reference points are too uncertain to be used to determine stock status. However, the ratio of F to F_{MSY} (the F needed to produce maximum sustainable yield) is reliable and can be used to determine that overfishing is not occurring. It is not possible to be confident with regard to stock status, particularly a biomass determination, until the discards of Atlantic croaker from the South Atlantic shrimp trawl fishery can be adequately estimated and incorporated into the stock assessment.

Absolute estimates of total F are unavailable because of model uncertainty; however, the general trend in total F from the model is considered reliable due to support from the data. The trend in total F decreases substantially during the first five years of the time series (1988-1992) and shows an overall decline over the remainder of the time series, except for occasional, brief spikes (Figure 1). Retrospective analysis of the model showed that estimates of F decreased as more years of data were used. A series of sensitivity runs conducted over a range of plausible values of shrimp-trawl fishing mortality found that the ratio of directed fishing mortality to F_{MSY} was less than one in all cases, indicating overfishing was not occurring.

Absolute estimates of SSB are unavailable because of model uncertainty; however, the general trend in SSB from the model is considered reliable due to support from the data. Spawning stock biomass shows a nearly consistent increasing trend since 1998 (Figure 2). Sensitivity runs of the model, including rough estimates of shrimp trawl discards, do not change the overall trend in SSB. Retrospective analysis of the model showed that estimates of SSB increased as more years of data were used.

Recruitment, estimated in the model as age-1 abundance, has been variable but generally increasing over the time series. Figure 2 shows the trend in recruitment; absolute values are omitted because of uncertainty in abundance estimates. The model estimated the production of strong year classes in 1997, 2001, and 2007.

III. Status of the Fishery

Total Atlantic croaker harvest from New Jersey through the east coast of Florida in 2013 is estimated at 13.9 million pounds (Tables 2 and 3, Figure 3). This represents a 66 percent decline in total harvest since the peak at 41.2 million pounds in 2001 (67% commercial decline, 66% recreational decline). The commercial and recreational fisheries harvested 71 and 29 percent of the total, respectively. The vast majority of landings are from the Mid-Atlantic region (98% in 2013), and the recent decline in total landings is a result of both commercial and recreational landings declines in that region, although some states showed increases in either or both sectors (Figure 4). Commercial and recreational landings in the South Atlantic region have been generally stable over the last decade; however, 2010 showed large decreases in the recreational

harvest of the South Atlantic states' fisheries, though nothing of the same magnitude as in the Mid-Atlantic states. Recreational and commercial harvests in the South Atlantic region fell to 2.3% of coastwide harvest in 2013 from 3.2% in 2012.

Atlantic coast commercial landings of Atlantic croaker exhibit a cyclical pattern, with low domains in the 1960s to early 1970s and the 1980s to early 1990s, and high domains in the mid-to-late 1970s and the mid-1990s to the present (Figure 3). Commercial landings increased from a low of 3.7 million pounds in 1991 to 30.1 million pounds in 2001 (Table 2); however, landings have declined consistently since 2003 to 9.9 million pounds in 2013, which registers below the 1960-2012 average of 13.6 million pounds. Within the management unit, the majority of 2012 commercial landings came from Virginia (66%) and North Carolina (19%). Maryland had the next highest level, with 9% of the coastwide landings.

From 1981-2013, recreational landings of Atlantic croaker from New Jersey through Florida have varied between 2.8 million fish (1.3 million pounds) and 13.2 million fish (11.1 million pounds; Tables 3 and 4, Figure 5). Landings general increased until 2001, held stable from 2001-2006 before exhibiting a declining trend from 2007 through 2013. The 2013 landings are estimated at 7.7 million fish and 3.9 million pounds, showing a slight increase from 2012. Virginia was responsible for 56% of the 2013 recreational landings, in numbers of fish, followed by Maryland (15%), and New Jersey (11%). The number of recreational releases has increased over the time series, with a short decline from 2009-2011 (Figure 5). In 2013, anglers released 14 million fish, which is higher than the ten-year (2003-2012) average of 11.8 million fish (Table 5). Anglers released an estimated 65% of the croaker catch in 2013 (Figure 5).

IV. Status of Assessment Advice

A statistical catch-at-age (SCA) model was used in the last Atlantic croaker stock assessment (ASMFC 2010). This model combines the catch-at-age data from the commercial and recreational fisheries with information from fishery-independent surveys and biological information such as growth rates and natural mortality rates to estimate the size of each age class and the exploitation rate of the population. The assessment was peer reviewed by a panel of experts in conjunction with the Southeast Data, Assessment, and Review (SEDAR) process.

The Review Panel was unable to support some of the assessment results due to uncertainty regarding the estimation of Atlantic croaker discards in the shrimp trawl fishery, and the application of estimates in modeling. Specifically, model-estimated values of stock size, fishing mortality, and biological reference points are too uncertain for use; however, the trends in model-estimated parameters and ratio-based fishing F reference points are considered reliable. Adequate discard estimates cannot be developed from currently available data, and assessments of Atlantic croaker will be unreliable until adequate estimates are properly incorporated into modeling. Despite the uncertainty in assessment results caused by shrimp trawl bycatch, the Review Panel concluded that it is unlikely that the stock is in trouble. The stock is not experiencing overfishing, biomass has been trending up, commercial catches are stable, and discards from the shrimp trawl fishery have been much reduced.

V. Status of Research and Monitoring

There are no research or monitoring programs required of the states except for the submission of an annual compliance report. The following fishery-dependent (other than catch and effort data) and fishery-independent monitoring programs were reported in the 2013 compliance reports.

Fishery-Dependent Monitoring

- New Jersey: no samples were collected in 2013 due to vacancy of positions within NJBMF
- Maryland: commercial pound net fishery biological sampling (2,320 length measurements, 247 samples aged in 2013); Maryland Charter Boat CPUE (1993-present; 2013 CPUE was 4.7 fish, slightly above time-series mean)
- Virginia: commercial fishery biological sampling (7,305 length and weight measurements, 450 otolith ages, and 714 sex determinations in 2013)
- North Carolina: commercial fishery biological sampling since 1982 for length (2011 n = 7,098), weight (2011 n = 14,829), otolith, sex determination, and reproductive condition
- South Carolina: recreational fishery biological sampling via state finfish survey (137 length measurements in 2012)
- Georgia: recreational fishery biological sampling via carcass collections (1 fish in 2012)
- Florida: commercial fishery biological sampling (43 length measurements in 2012)

Fishery-Independent Monitoring

- New Jersey: 3 nearshore ocean (within 12 nm) juvenile trawl surveys (New Jersey Ocean Trawl Survey1988-present; 2013 CPUE well above time-series average; nearshore Delaware Bay juvenile trawl survey (1991-present; 2013 survey index was below time series average); Delaware River juvenile seine survey (1980-present; 2013 survey index was below time series average)
- Delaware: offshore Delaware Bay adult finfish trawl survey (1990-present; 2013 #/tow = 14.08; 86% decrease in catch per nm towed over 2012 and dropped below the mean for the time series); nearshore Delaware Bay juvenile finfish trawl survey (1980-present; 2013 index (geometric mean) declined 73% from 2012 and remained below time-series mean; Inland Bays index increased to 1.83, highest index since 2009)
- Maryland: Atlantic coast bays juvenile otter trawl survey (standardized from 1989-present); Chesapeake Bay juvenile trawl survey (standardized from 1989-present; 2013 CPUE decreased from 2012 (3.76 to 2.24); incidental catches in Maryland coastal bays juvenile seine survey (1972-present) and Chesapeake Bay juvenile seine survey (1959-present; 2013 indices decreased from 2012 (.93 to .30)
- Virginia: VIMS Juvenile Finfish and Blue Crab Trawl Survey (1988-present; 2013 index representing the 2012 year class is down 70% from 2011, for both the 'mean all' and 'mean rivers' indices.)
- North Carolina: Pamlico Sound juvenile trawl survey (1987-present; 2013 juvenile abundance index (mean number of individuals/tow) was 571, above the time series average, but less than half of the 2012 index- which was the second highest recorded in NC)
- South Carolina: estuarine electroshock survey for juveniles (1991-present; 2013 CPUE increased 71.1% from 2012, but continued the trend of the CPUE being below the long term mean); SEAMAP shallow water (15-30 ft) trawl survey from Cape Hatteras to Cape Canaveral (1989-present; 2013 CPUE decreased 33.5% from 2012 but remained above time-series mean); inshore estuarine trammel net survey for adults (May-September, 1991-

present; 2013 CPUE increased 57.5 % from 2012 and catch effort in 2013 was just above the long term mean)
- Georgia: Marine Sportfish Population Health Survey (trammel and gill net, 2002-present; 2013 n = 174); Ecological Monitoring Survey (trawl, 2003-present; 2013 n = 41,122; CPUE increased by 400% from 2012)
- Florida: juvenile seine survey (1996-present; 2013 index continued variable trend with a decrease from 2012); juvenile trawl survey (2002-present; 2013 index continued variable trend with a decrease from 2012); adult haul seine survey (2001-present; 2013 index value decreased from 2012)

The Northeast Fishery Science Center's groundfish trawl survey also samples croaker from New Jersey to Cape Hatteras. Researchers from various agencies and institutions have conducted numerous studies on Atlantic croaker. Research topics include, but are not limited to: environmental effects on recruitment, population modeling, genetic stock identification, geographic variation in life history/populations dynamics, scale-otolith age comparisons, habitat preference, and bycatch reduction gear research.

VI. Status of Management Measures and Issues

Fishery Management Plan

Amendment 1 was fully implemented by January 1, 2006, and provided the management plan for the 2009 fishing year. There are no interstate regulatory requirements for Atlantic croaker. Should regulatory requirements be implemented in the future, all state programs must include law enforcement capabilities adequate for successfully implementing the regulations. Addendum I to Amendment 1 was initiated in August 2010 and approved in March 2011, in order to 1) revise the biological reference points to be ratio-based, and 2) remove the distinction of two regions within the management unit, based on the results of the 2010 stock assessment.

De Minimis Requests

States are permitted to request *de minimis* status if, for the preceding three years for which data are available, their average commercial landings or recreational landings (by weight) constitute less than 1% of the coastwide commercial or recreational landings for the same three year period. A state may qualify for *de minimis* in either its recreational or commercial sector, or both, but will only qualify for exemptions in the sector(s) that they qualify for as *de minimis*. Amendment 1 does not include any compliance requirements other than annual state reporting, which is still required of *de minimis* states, thus *de minimis* status does not exempt states from any measures.

In the annual compliance reports, the following states requested *de minimis* status: Delaware (commercial fishery), South Carolina (commercial fishery), Georgia (commercial and recreational fisheries), and Florida (commercial fishery). The commercial and recreational *de minimis* criteria for 2013 are based on 1% of the average coastwide 2011-2013 landings in each fishery: 112,782 pounds for the commercial fishery and 33,088 pounds for the recreational fishery. The Delaware commercial fishery qualifies for *de minimis* status with an average of 7,254 pounds. The South Carolina commercial fishery qualifies for *de minimis* status with an average of 36 pounds. The Georgia commercial and recreational fisheries qualify for *de minimis*

status with averages of less than 1,000 pounds (confidential) and 17,420 pounds, respectively. The Florida commercial fishery qualifies for *de minimis* status with an average of 63,509 pounds.

Bycatch Reduction

Atlantic croaker is subject to both direct and indirect fishing mortality. Historically, croaker ranked as one of the most abundant species in the bycatch of the south Atlantic shrimp trawl fishery. As a result, the original FMP recommended that bycatch reduction devices (BRDs) be developed and required in the shrimp trawl fishery. Since then the states of North Carolina through Florida have all enacted requirements for the use of BRDs in shrimp trawl nets in state waters, and croaker bycatch from this fishery has been reduced (ASMFC 2010). However, monitoring of bycatch and discards from this fishery is inadequate and results in the major source of uncertainty for assessing this stock, as well as other important Mid- and South Atlantic species. Most of the discarded croakers are age-0 and thus likely have not yet reached maturity (ASMFC 2010). North Carolina Department of Marine Fisheries has secured funding for a two-year study, beginning in 2012, to collect bycatch data from state shrimp trawlers. These data will be valuable for incorporating estimates of removals in the next stock assessment.

Atlantic croaker are also discarded from other commercial fishing gears. This is primarily due to market pressures and few restrictions on croaker harvest at the state level. The NMFS Pelagic Observer Program provides data to estimate these discards for use in assessments; however, the time series is limited and only discards from gill nets and otter trawls could be estimated for the last assessment based on the available data. Since 1988, estimated discards have fluctuated between 94 and 15,176 mt without trend, averaging 2,503 mt (ASMFC 2010).

Atlantic croaker has also been a major component of the scrap/bait fishery. Landings from this fishery are not reported to the species level, except for North Carolina, which has a continuous program in place to sample the landings and enables estimating scrap landings of croaker for use in the stock assessment. As part of the recent stock assessment, North Carolina estimated the scrap/bait landings, which have declined in recent years, from a high of 1,569 mt in 1989 to a low of 84 mt in 2008, primarily due to restrictions placed on the fisheries that produced the highest scrap/bait landings (ASMFC 2010). Several of the regulations instituted by North Carolina include a ban on flynet fishing south of Cape Hatteras, incidental finfish limits for shrimp and crab trawls in inside waters, minimum mesh size restrictions in trawls, and culling panels in long haul seines. Monitoring programs are needed to account for bait/scrap landings in other states.

Several states have implemented other commercial gear requirements that further reduce bycatch and bycatch mortality, while others continue to encourage the use of these BRD devices. NOAA Fisheries recently published a notice on June 24, 2011 for public scoping in the Federal Register to expand the methods for reducing bycatch interactions with sea turtles, which may have additional effects on the bycatch of finfish like Atlantic croaker in trawls (76 FR 37050). Continuing to reduce the quantity of sub-adult croaker harvested should increase spawning stock biomass and yield per recruit.

Atlantic croaker are also subject to recreational discarding. The number of Atlantic croaker released alive by recreational anglers has generally increased over time. Ten percent of croakers

released alive were estimated to die as a result of being discarded for the last stock assessment (ASMFC 2010). The use of circle hooks and appropriate handling techniques can help to reduce mortality of released fish.

Trigger Exercises
Amendment 1 requires the Atlantic Croaker Technical Committee (TC) to conduct stock assessments every five years unless prompted by the annual trigger exercise. The primary hard trigger is based on landings data; however, catch-per-unit-effort (CPUE) will become the premier trigger when the quality and quantity of these data improve. A stock assessment will be triggered if the most recent year's commercial or recreational landings are less than 70% of the previous two years' average landings (ASMFC 2005b).

In 2013, the TC reviewed the triggers, via three conference calls in May, June, and July. While neither the recreational landings nor commercial landings dropped below the previous two-year average- therefore not triggering a stock assessment update or benchmark- updating and revision of the data showed that the 2011 recreational data had fallen below the 70%, thus technical requiring a stock assessment to be conducted. Given the issues with monitoring the fishery through the current management triggers, the TC in conjunction with the Spot Plan Review Team (PRT) developed alternative method of elevating the fishery using a traffic light analysis. This approach was recently used by both Georgia and North Carolina in evaluating their blue crab fisheries. At the August 2013 Board meeting, the Board tasked the TC and PRT with further developing the traffic light approach with management considerations, for review in 2014.

VII. Implementation of FMP Compliance Requirements for 2013

The PRT finds that all states have fulfilled the requirements of Amendment 1.

VIII. Recommendations

Management and Regulatory Recommendations

- Encourage the use of circle hooks to minimize recreational discard mortality.
- Consider approval of the *de minimis* requests from Delaware, South Carolina, Georgia, and Florida.
- Consider the basic research and monitoring information needed for informed management in light of the budgetary constraints limiting all state governments
- Support the Technical Committee's recommendation to develop new assessment/management triggers for use in management by the Board

Research and Monitoring Recommendations

<u>High Priority</u>

- Develop and implement compatible and coordinated sampling programs for the South Atlantic shrimp trawl fishery in order to monitor and characterize Atlantic croaker bycatch in this fishery.
- Continue fisheries-independent surveys throughout the species range, with increased focus on collecting subsamples in the southern range
- Encourage fishery-dependent biological sampling, with increased focus in the southern range and expanding the commercial and recreational fishery samples to afford a full age-length key

- Determine migratory patterns and mixing rates through cooperative, multi-jurisdictional tagging studies; further studies on relative degree of genetic separation between fish in the northern and southern range of species; and continue research and analysis of otolith microchemistry data.
- Collect bio-profile information and conduct studies on growth rates, age structure, estimates of fecundity, and maturity schedule throughout the species range with a standardized protocol.
- Evaluate bycatch and discard estimates from commercial and recreational fisheries, and extend coverage of scrap fishery sampling to other states.
- Develop fishery-independent size, age, and sex specific relative abundance estimates to monitor long-term changes in croaker abundance.
- Maintain funding for current surveys and monitoring to provide needed information for stock monitoring and assessment

Medium Priority

- Develop age-size data that are representative of all seasons and areas in the fisheries on an annual basis.
- Improve catch and effort statistics from the commercial and recreational fisheries and develop more rigorous methods to standardize catch-per-unit-effort.
- Collect data on fishing attributes necessary to develop gear-type-specific fishing effort estimates.
- Evaluate commercial and recreational mortality under varying environmental factors and fishery practices and include in updated assessment.
- Update studies on the effectiveness of bycatch reduction devices (BRDs) in reducing croaker bycatch.
- Validate otolith aging methods with appropriate methods, e.g., tagging, chemical marking.
- Evaluate the optimum utilization (economic and biological) of a long-term fluctuating population such as croaker.
- Identify essential habitat requirements.
- Determine species interactions and predator/prey relationships for croaker (prey) and other more highly valued fisheries (predators).
- Determine the impacts of any dredging activity (i.e. for beach re-nourishment) on all life history stages of croaker.
- Investigate environmental covariates in stock assessment models.
- Examine socio-economic aspects of the fishery.
- Recover historical data in order to have landings data from NOAA at a finer scale
- Re-examine historical ichthyoplankton studies of the Chesapeake Bay for an indication of the magnitude of estuarine spawning.

IX. References

Atlantic States Marine Fisheries Commission (ASMFC). 1987. Fishery Management Plan for Atlantic Croaker. Washington (DC): ASMFC. Fishery Management Report No. 10. 90 p.

ASMFC. 2005a. Atlantic Croaker Stock Assessment & Peer Review Reports. Washington (DC): ASMFC. 370 p.

ASMFC. 2005b. Amendment 1 to the Interstate Fishery Management Plan for Atlantic Croaker. Washington (DC): ASMFC. Fishery Management Report No. 44. 92 p.

ASMFC. 2010. Atlantic Croaker 2010 Benchmark Stock Assessment. Washington (DC): ASMFC. 366 p.

X. Figures

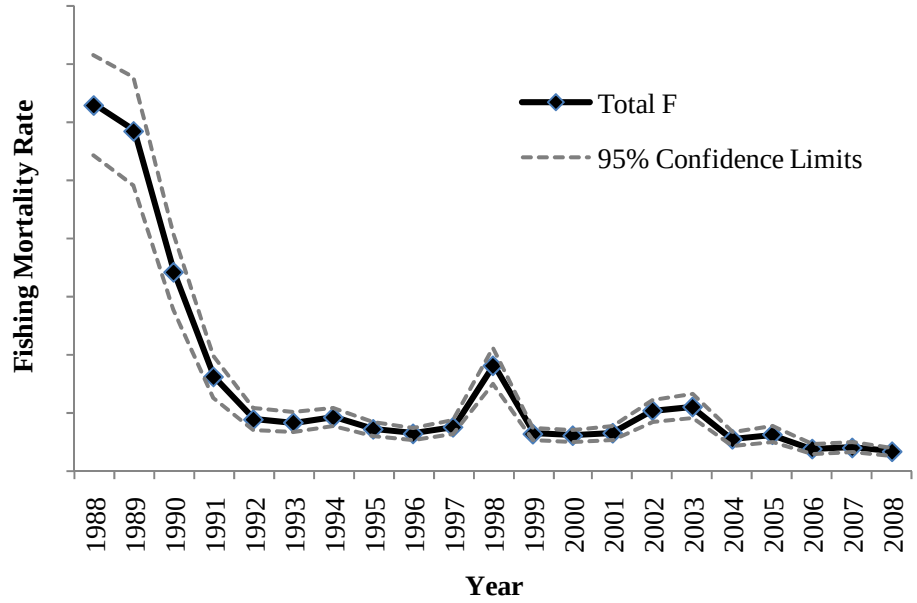

Figure 1. Trend in estimated total fishing mortality rate (F) of Atlantic croaker
(Absolute estimates of F are unreliable because of uncertainty regarding the estimation of Atlantic croaker discards in the shrimp trawl fishery, and the application of estimates in modeling. Source: ASMFC 2010.)

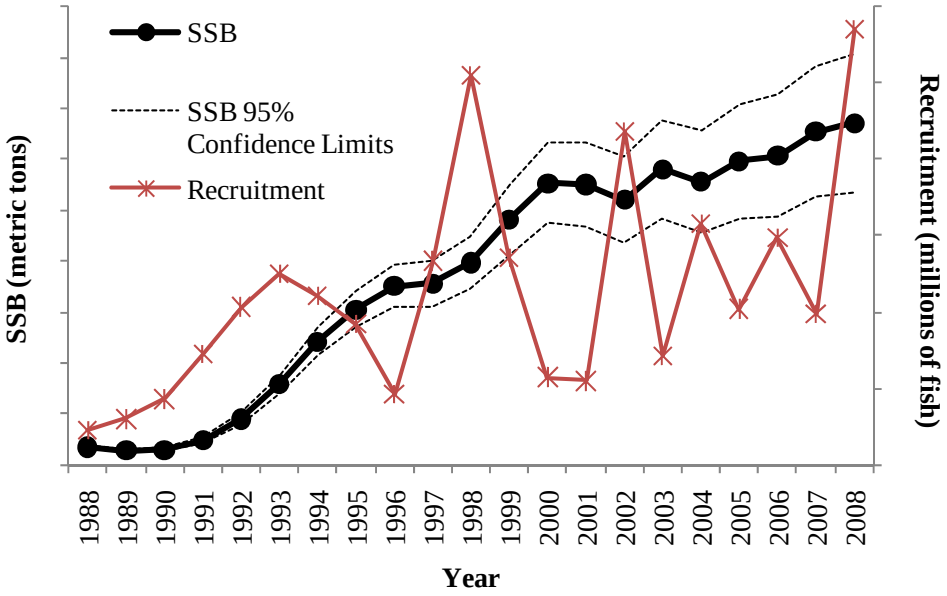

Figure 2. Trends in estimated spawning stock biomass (SSB, metric tons) and age-1 recruitment (numbers of fish) of Atlantic croaker
(Absolute estimates of stock size are unreliable because of uncertainty regarding the estimation of Atlantic croaker discards in the shrimp trawl fishery, and the application of estimates in modeling. Source: ASMFC 2010.)

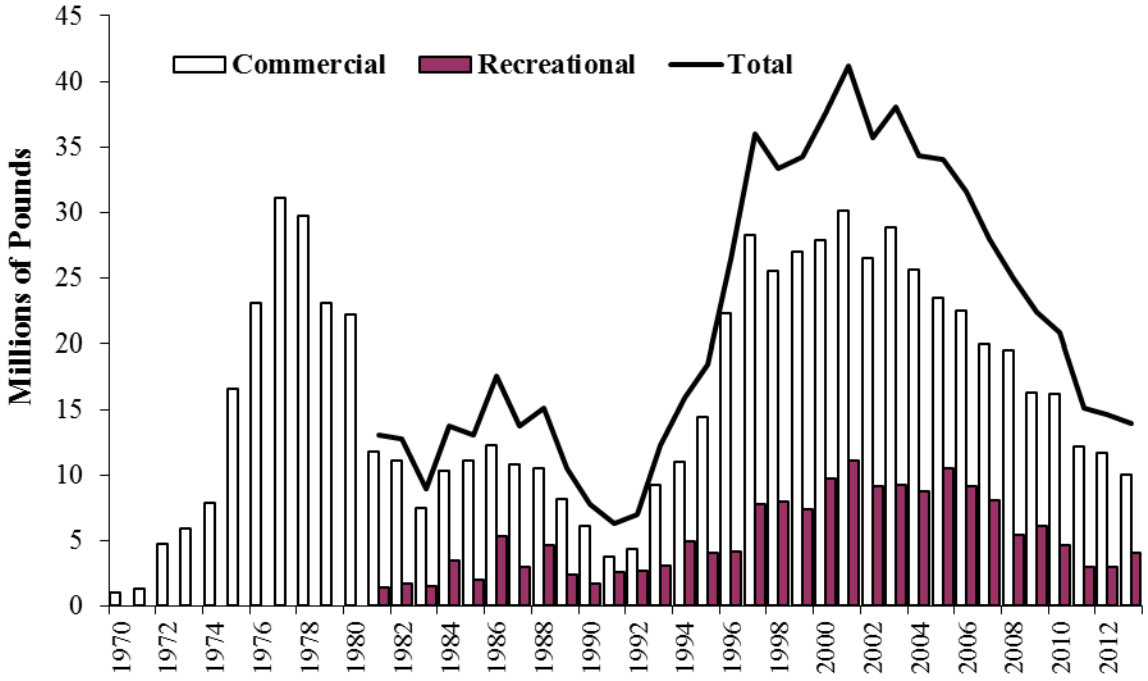

Figure 3. Atlantic croaker commercial, recreational, and total landings (pounds)
(See Tables 2 and 3 for values and source information. Commercial landings estimate for 2013 is preliminary. Reliable recreational landings estimates are not available before 1981.)

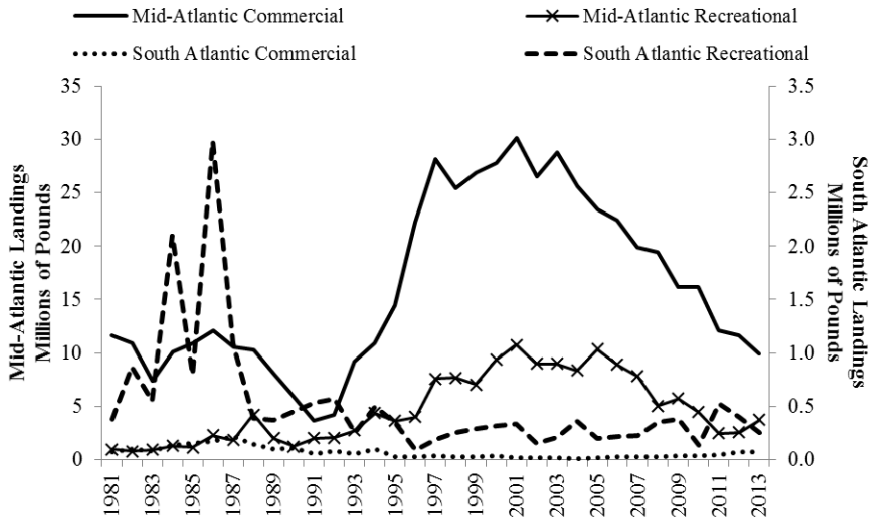

Figure 4. Mid-Atlantic (NJ-NC) and South Atlantic (SC-FL) landings (pounds)
(See Tables 2 and 3 for values and source information.)

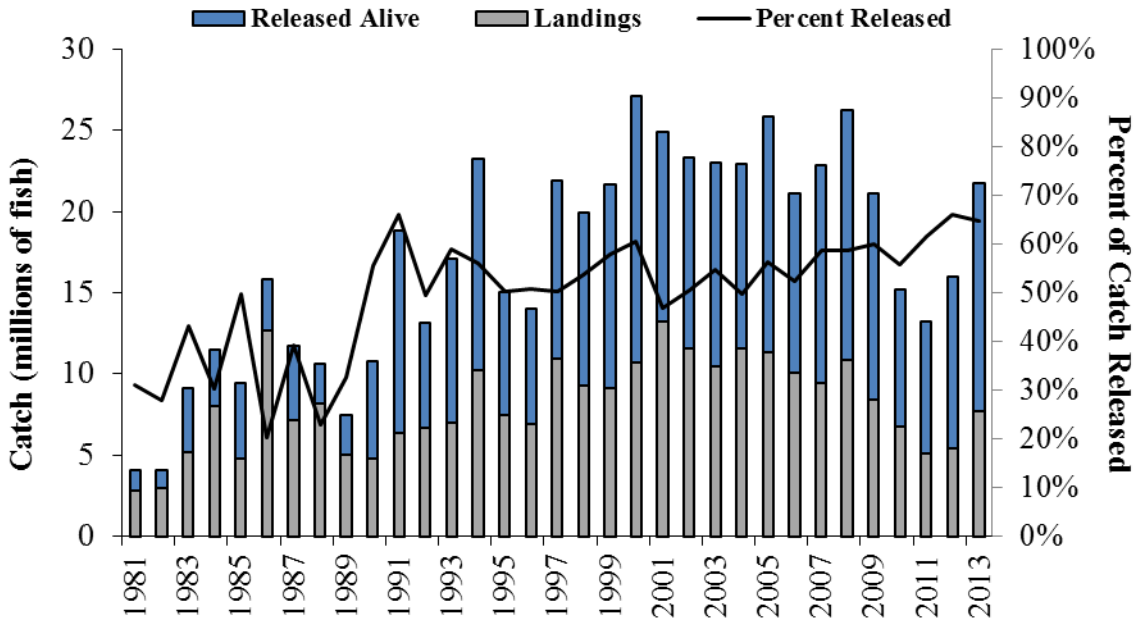

Figure 5. Recreational catch (landings and alive releases, in numbers) and the percent of catch that is released, 1981-2013
(See Tables 4 and 5 for values and source information.)

XI. Tables

Table 1. Summary of state regulations for Atlantic croaker in 2013*

State	Recreational	Commercial
NJ	none	otter/beam trawl mesh restriction for directed croaker harvest (>100 lbs in possession)
DE	8" minimum; recreational gill nets (up to 200 ft.) with license	8" minimum
MD	9" min, 25 fish/day, charter boat logbooks	9" minimum; open 3/16 to 12/31
PRFC	25 fish/day	pound net season: 2/25 to 12/15
VA	none	none
NC	recreational use of commercial gears with license and gear restrictions	
SC	mandatory for-hire logbooks	
GA	8" min, 25 fish/day	8" minimum; 25 fish/day limit except for shrimp trawls (no limit)
FL	none	none

* A commercial fishing license is required to sell croaker in all states with fisheries. For all states, general gear restrictions affect commercial croaker harvest.

Table 2. Commercial harvest (pounds) of Atlantic croaker by state, 1981-2013
(Estimates for 2013 are preliminary. Sources: state compliance reports; personal communication with ACCSP, Arlington, VA.)

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL	Total
1981	23,500	0	2,104	648	429,800	11,205,342	2,441	1,038	72,112	11,736,985
1982	100	0	7,091	188	119,300	10,824,953	386	2,177	95,357	11,049,552
1983	200	0	417	1,549	150,400	7,249,680	3,200	1,097	81,737	7,488,280
1984	57,700	0	27,072	73,701	817,700	9,170,775	3,793	434	131,375	10,282,550
1985	48,800	100	9,510	19,854	2,171,821	8,714,432	1,256		153,803	11,119,576
1986	106,000	500	135,922	99,373	2,367,000	9,424,828	924		173,531	12,308,078
1987	357,600	800	119,409	102,691	2,719,500	7,289,191	698	553	217,932	10,808,374
1988	30,100	200	98,855	12,796	1,749,200	8,434,415	2,614	304	140,033	10,468,517
1989	137,100	0	89,173	5,579	949,649	6,824,088	1,950		95,021	8,102,560
1990	644	42	2,473	5,115	201,353	5,769,512	1,190		104,402	6,084,731
1991	31,292	700	6,183	996	164,126	3,436,960	*		56,739	3,696,996
1992	51,600	800	17,050	17,692	1,339,353	2,796,612			79,040	4,302,147
1993	183,414	2,500	114,159	262,482	5,326,293	3,267,652	*		52,031	9,208,531
1994	117,256	3,000	158,918	240,271	5,759,975	4,615,754	*		96,018	10,991,192
1995	334,654	13,000	489,506	606,184	6,949,639	6,021,284	*		22,879	14,437,146
1996	621,889	9,681	792,326	1,427,285	9,409,904	9,961,834			26,045	22,248,964
1997	1,994,446	10,509	1,088,969	1,518,196	12,832,221	10,711,667	*		36,577	28,192,585
1998	1,029,332	10,368	1,006,529	610,885	11,898,586	10,865,897			26,418	25,448,015
1999	2,071,046	14,729	948,191	1,190,138	12,481,326	10,185,507			26,824	26,917,761
2000	2,130,465	11,121	902,379	1,812,130	12,822,400	10,122,627			37,953	27,839,075
2001	1,389,837	22,736	1,488,815	1,963,294	13,214,731	12,017,424		*	14,831	30,111,668
2002	1,828,484	10,732	894,879	1,421,094	12,133,834	10,189,153	*	*	17,191	26,495,367
2003	1,575,738	16,561	713,205	1,128,003	10,937,167	14,429,197	140	*	16,348	28,816,359
2004	2,067,992	30,369	1,354,982	1,631,596	8,550,574	11,993,003	*	*	11,413	25,639,929
2005	1,847,753	36,624	972,800	481,912	8,211,802	11,903,292	41	*	16,520	23,470,744
2006	1,617,144	19,307	466,833	670,276	9,252,110	10,396,554	160	*	30,272	22,452,656
2007	1,358,000	13,522	474,388	188,567	10,557,370	7,301,295	*		27,028	19,920,170
2008	946,062	10,465	592,211	337,062	11,796,771	5,791,874	116	*	31,560	19,506,121
2009	585,552	16,341	433,238	234,101	8,808,677	6,135,427	215	0	32,313	16,245,864
2010	342,116	6,182	490,067	162,571	7,879,847	7,312,159	3	0	36,960	16,229,905
2011	465,117	12,252	736,259	243,196	5,611,855	5,054,186	44	*	44,932	12,167,841
2012	363,381	2,811	901,455	273,849	6,963,815	3,106,616	62	*	74,023	11,686,012
2013	337,313	6,700	884,363	130,285	6,621,836	1,928,637	2	0	71,573	9,980,709

* confidential data

Table 3. Recreational harvest (pounds) of Atlantic croaker by state, 1981-2013
(Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD.)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	582	2,317		535,297	426,240	67,284	9,665	305,547	1,346,932
1982			70,276	455,250	264,607	67,015	45,161	754,956	1,657,265
1983			32,053	486,006	395,402	14,158	25,412	510,599	1,463,630
1984			86,462	634,870	584,660	161,661	80,684	1,856,599	3,404,936
1985			17,169	843,414	278,214	72,780	40,421	684,449	1,936,447
1986		2,595	116,542	2,034,337	126,888	173,028	21,504	2,783,651	5,258,545
1987			191,628	1,306,814	352,346	64,696	14,947	1,005,053	2,935,484
1988		827	926,399	2,390,573	935,460	54,313	20,313	316,900	4,644,785
1989		284	19,189	1,329,680	658,567	80,580	21,138	268,335	2,377,773
1990		112	37,873	875,427	347,183	123,795	205,352	127,525	1,717,267
1991	4,264	10,972	117,210	1,728,021	157,660	16,173	54,116	460,453	2,548,869
1992		3,291	53,556	1,768,962	233,533	28,512	132,596	407,672	2,628,122
1993	844	9,641	476,866	1,993,915	282,910	18,005	55,604	180,517	3,018,302
1994	818	2,892	991,166	3,024,118	351,230	128,306	34,048	337,474	4,870,052
1995	9,515	82,864	567,149	2,675,381	326,135	25,386	20,862	301,918	4,009,210
1996	39,099	205,526	702,037	2,716,759	346,501	14,480	21,797	50,038	4,096,237
1997	278,758	340,198	1,117,999	5,522,195	309,457	53,863	26,272	113,096	7,761,838
1998	135,733	293,560	1,150,459	5,920,436	161,117	76,821	30,966	141,756	7,910,848
1999	301,957	522,201	1,024,398	4,969,283	212,991	26,356	32,375	231,692	7,321,253
2000	1,125,730	483,963	2,672,996	4,888,910	201,306	13,457	62,390	242,912	9,691,664
2001	1,132,214	304,127	1,278,699	7,674,759	355,009	10,750	7,844	320,487	11,083,889
2002	268,423	250,899	1,162,278	7,075,130	242,184	29,343	10,622	117,880	9,156,759
2003	682,698	262,114	2,069,176	5,674,111	317,606	59,399	71,881	79,396	9,216,381
2004	1,151,926	342,335	1,016,801	5,792,487	267,455	53,563	15,554	179,018	8,819,139
2005	1,189,849	846,084	942,702	7,240,971	143,963	42,088	14,709	147,117	10,567,483
2006	765,867	757,082	884,082	6,460,336	151,403	19,010	9,236	176,886	9,223,902
2007	409,392	334,850	1,056,471	6,111,612	87,013	39,368	14,106	207,821	8,260,633
2008	422,833	266,787	458,671	3,612,065	154,937	15,753	12,653	340,304	5,284,003
2009	114,015	240,468	1,504,806	3,915,033	131,742	72,363	32,746	222,239	6,233,412
2010	36,063	41,533	976,143	3,394,913	241,993	11,971	10,205	56,022	4,768,843
2011	21,460	52,889	444,595	1,761,731	99,298	240,665	21,548	194,847	2,837,033
2012	96,366	63,037	535,325	1,898,966	105,530	12,291	13,503	292,365	3,017,383
2013	533,822	100,320	744,642	2,217,664	141,880	29,610	17,209	205,970	3,991,117

Table 4. Recreational harvest (numbers) of Atlantic croaker by state, 1981-2013
(Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD.)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	1,054	3,003	0	964,013	1,043,240	165,742	35,591	598,896	2,811,539
1982			10,452	273,039	596,493	193,554	169,749	1,682,619	2,925,906
1983			108,355	2,154,133	1,620,909	60,811	75,173	1,148,227	5,167,608
1984			211,035	2,047,720	2,147,871	588,114	202,364	2,781,742	7,978,846
1985			21,276	2,284,334	723,933	260,265	144,341	1,306,955	4,741,104
1986		4,694	123,578	6,384,966	356,742	599,442	69,887	5,118,552	12,657,861
1987	0	0	208,488	3,234,224	904,030	166,978	44,783	2,580,727	7,139,230
1988		1,186	1,005,452	4,048,690	2,256,128	144,057	64,093	685,778	8,205,384
1989		478	22,871	2,203,504	2,131,763	217,023	72,598	359,417	5,007,654
1990		281	100,673	2,374,679	1,063,452	346,631	585,380	304,064	4,775,160
1991	16,235	37,500	288,471	4,298,542	434,067	100,816	184,435	1,030,115	6,390,181
1992	0	9,854	117,427	4,524,040	723,823	74,051	440,185	754,595	6,643,975
1993	2,552	19,352	805,560	4,990,098	755,998	32,700	89,734	304,067	7,000,061
1994	1,567	5,718	1,633,581	6,494,691	1,179,735	188,520	102,974	599,032	10,205,818
1995	15,184	136,865	827,183	5,029,708	850,606	75,422	100,826	438,076	7,473,870
1996	35,037	235,389	775,115	4,997,021	662,240	37,464	61,957	116,575	6,920,798
1997	342,089	385,586	1,053,232	8,066,926	661,116	118,428	64,050	235,430	10,926,857
1998	143,404	391,231	1,126,058	6,730,181	387,427	170,528	64,953	234,360	9,248,142
1999	357,261	662,724	1,209,572	5,881,671	442,185	54,761	104,438	403,982	9,116,594
2000	1,023,442	517,886	2,674,880	5,486,159	391,056	32,332	128,922	455,870	10,710,547
2001	1,177,813	312,005	1,319,928	9,335,313	635,552	19,802	21,503	426,264	13,248,180
2002	253,472	261,634	1,223,385	9,129,060	408,944	66,409	36,497	177,751	11,557,152
2003	692,391	341,174	1,619,766	6,695,192	490,399	198,339	248,853	165,459	10,451,573
2004	855,927	389,218	896,855	8,259,608	511,418	171,544	38,599	415,570	11,538,739
2005	1,227,349	825,267	784,246	7,657,147	326,777	143,387	39,561	302,784	11,306,518
2006	511,220	763,216	754,969	7,221,148	556,024	58,500	34,081	172,586	10,071,744
2007	406,238	359,064	872,838	6,944,886	461,162	38,147	45,068	310,130	9,437,533
2008	600,975	368,911	619,942	8,388,497	317,940	65,853	38,246	449,054	10,849,418
2009	193,464	451,849	1,335,439	5,327,388	368,990	238,900	82,269	438,209	8,436,508
2010	63,027	75,404	1,136,589	4,743,697	478,156	46,464	35,635	132,664	6,711,636
2011	40,855	92,289	554,206	3,305,707	246,676	349,464	44,044	476,292	5,109,533
2012	237,994	84,403	701,482	3,445,232	288,812	27,541	38,402	589,643	5,413,509
2013	875,200	222,401	1,155,538	4,273,744	411,882	99,356	54,915	586,411	7,679,447

Table 5. Recreational releases (number) of Atlantic croaker by state, 1981-2013
(Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD.)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981			16,233	324,238	704,259	128,192	13,481	85,740	1,272,143
1982				77,756	641,327	107,340	111,630	188,277	1,126,330
1983			1,507,184	1,410,151	424,562	119,036	70,499	379,021	3,910,453
1984			70,192	673,080	1,701,418	746,905	37,573	236,432	3,465,600
1985			13,132	1,616,052	1,596,901	238,678	66,649	1,146,582	4,677,994
1986		1,757	43,399	2,578,268	137,841	84,335	40,623	318,511	3,204,734
1987	1,374	861	32,074	2,056,580	560,853	108,366	76,908	1,770,697	4,607,713
1988		582	273,231	832,284	984,219	112,271	20,021	200,630	2,423,238
1989		1,307	41,822	1,342,169	891,926	58,642	17,632	72,822	2,426,320
1990		1,268	88,688	3,922,564	1,351,152	111,085	317,497	168,144	5,960,398
1991	91,633	75,319	3,352,190	7,418,045	669,385	25,168	140,402	647,824	12,419,966
1992	4,103	43,583	856,292	4,167,137	954,494	26,729	178,267	251,343	6,481,948
1993	5,799	13,194	2,504,362	5,795,479	1,499,217	16,949	83,203	138,875	10,057,078
1994	17,253	14,069	1,628,824	7,676,780	3,110,528	141,513	99,026	331,736	13,019,729
1995	31,019	41,574	496,046	5,494,289	1,172,716	108,345	89,609	141,732	7,575,330
1996	17,585	76,851	403,776	5,151,206	1,218,799	64,494	60,282	126,300	7,119,293
1997	111,468	384,233	1,497,670	7,275,160	1,443,568	138,107	25,630	116,276	10,992,112
1998	221,324	839,932	3,021,780	4,990,541	1,060,928	266,068	159,928	152,744	10,713,245
1999	860,325	1,017,499	2,483,800	5,668,925	1,368,478	116,826	57,567	967,894	12,541,314
2000	688,746	694,813	4,967,856	7,811,048	1,569,385	96,402	169,903	428,131	16,426,284
2001	853,621	285,123	1,585,806	7,086,706	1,256,807	115,284	192,362	282,461	11,658,170
2002	369,003	361,355	2,523,276	7,107,656	925,806	92,498	194,474	217,054	11,791,122
2003	833,508	654,697	1,393,224	6,543,524	1,552,315	440,446	965,496	192,356	12,575,566
2004	1,237,164	599,207	854,132	6,276,767	1,656,049	320,788	154,259	253,951	11,352,317
2005	1,692,401	674,684	1,136,876	8,738,109	1,401,413	321,861	280,889	293,692	14,539,925
2006	503,490	937,193	1,783,557	4,193,675	2,578,819	595,075	283,851	187,562	11,063,222
2007	590,078	672,771	1,258,131	8,504,212	1,608,120	224,454	228,564	321,559	13,407,889
2008	2,373,945	601,994	2,127,219	7,806,627	1,419,019	205,373	293,926	596,450	15,424,553
2009	108,370	537,587	1,137,578	7,621,484	1,912,670	514,839	434,608	406,822	12,673,958
2010	167,191	228,936	1,011,236	4,824,151	1,598,139	187,138	263,987	188,637	8,469,415
2011	62,391	88,524	365,716	4,872,928	1,798,230	240,605	262,493	452,669	8,143,556
2012	1,134,778	444,935	1,578,524	5,091,063	1,255,215	216,420	167,488	641,569	10,529,992
2013	765,652	764,045	2,905,537	5,968,340	1,984,701	793,500	298,409	550,130	14,030,314

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF FISH AND WILDLIFE
MARINE FISHERIES ADMINISTRATION
BUREAU OF MARINE FISHERIES

ATLANTIC CROAKER FISHERIES SUMMARY: 2013 AND MANAGEMENT PLAN: 2014

Report By: Jennifer Pyle

Submitted to the Atlantic States Marine Fisheries Commission as a requirement of Amendment 1 to the Interstate Fisheries Management Plan for Atlantic Croaker

June 2014

I. Summary of Atlantic Croaker Fishery And Resource Monitoring in New Jersey

Amendment 1 to the Interstate Fishery Management Plan (ISFMP) for Atlantic Croaker (November 2005) does not require restrictions for the harvest of Atlantic croaker along the Atlantic coast. There have been no significant changes in monitoring or regulations regarding this species during 2013.

The ISFMP for Atlantic Croaker includes triggers to assess the population during non-assessment years. After collecting data from 2011, the recreational landings trigger was activated because coastwide landings were less than 70% of the previous two years' average landings. The Atlantic States Marine Fisheries Commission is currently looking into trigger and management options. No changes were made during 2013, but an update will be given in the 2014 compliance report.

II. Request for *De minimus* Status

New Jersey is not requesting *de minimus* status for its Atlantic croaker fisheries.

III. New Jersey Atlantic Croaker Fishery and Management Program: 2013

A. Fishery Dependent Monitoring

New Jersey initiated biological monitoring of commercially harvested Atlantic croaker in 2006 in conjunction with funding from the Atlantic Coastal Cooperative Statistics Program. Due to a vacancy of positions within New Jersey's Bureau of Marine Fisheries, and availability of samples at the docks, no samples were collected in 2013 (Table 1). Figure 1 shows the length frequencies for samples collected from 2010-2012.

As stated in the 2012 compliance report, age determination of Atlantic croaker samples collected in 2012 continued to show the strength of the 2008 and 2010 year classes (Figure 2). The 2008 year class was dominant in years 2010-2012. This was consistent with high abundance in the Delaware Estuary surveys (Table 2, Figure 4).

The recreational fishery for Atlantic croaker in New Jersey is not monitored by any state program. Fork length data for 2004 to 2013 was acquired through the Marine Recreational Information Program (MRIP). The size range of recreationally harvested fish was 127 mm to 406 mm with the majority of the 2013 harvest (30.7%) in the 275 mm range (Figure 3).

B. Fishery Independent Monitoring

The New Jersey Ocean Trawl Survey is a multispecies survey that started in August 1988 and samples the near shore waters from the entrance of New York Harbor south, to the entrance of the Delaware Bay five times a year (January, April, June, August and October). There are 15 strata with 5 strata assigned to 3 different depth regimes; inshore (3 to 5 fathoms), mid-shore (5 to 10 fathoms), and off-shore (10 to 15 fathoms). Station allocation and location is random and stratified by strata size. All species taken during these surveys were weighed and measured. Catch per unit effort (CPUE) in number of fish per tow and length frequency was calculated for each year. For this report, indices of abundance for Atlantic croaker and length frequency were calculated for the August and October trawls only, when juveniles recruit to the gear and abundance is most consistent.

Juvenile abundance for New Jersey was measured in two additional surveys in the Delaware Estuary. A near shore fixed station trawl survey has been conducted in Delaware Bay from April through November since 1991 at eleven stations using a 16 foot otter trawl. A seine survey utilizing a bagged, 100-foot long by 6-foot deep by ¼-inch mesh beach seine has been conducted for striped bass young-of-year in the Delaware River since 1980. The survey consists of seining 32 stations twice monthly from August through October. For Atlantic croaker the CPUE is calculated for the lower 24 stations within the Delaware River.

Data for the three surveys can be found in Table 2. The August – October CPUE index for the ocean trawl was above average for 2013. The Delaware Bay trawl and Delaware River seine surveys indices were below the time series averages. All of the indices varied greatly from year to year but have generally increased since the early 1990s through the present (Figure 4). Length frequency of Atlantic croaker caught during the 2013 Ocean Trawl Survey ranged from 160 to 340 mm with a mean of 200.5 mm (Figure 5). This average is below the time series average of 242.8 mm.

C. New Jersey Regulations on Atlantic Croaker in 2013

New Jersey had not enacted any size or possession limits through 2013 for its Atlantic croaker recreational or commercial fisheries.

D. New Jersey Atlantic Croaker Harvest

Commercial fishery landings for Atlantic croaker were obtained from the National Marine Fisheries Service statistics website (1950-2007) and the Standard Atlantic Fisheries Information System (2008-2013) (Table 3, Figure 6). The 2013 landings of 337,313 pounds were only 7.2% less than the 2012 landings of 363,381 pounds. The 2013 landings are below the long term average.

Recreational catch data were obtained from the MRIP website for the years 2004-2013 (Table 4, Figure 7). Queried 6/18/14, recreational catch (1,640,852 fish) and harvest (875,200 fish) were the highest since 2008. Catch was above the long term average of 1,369,282, while harvest was also above the long term average of 446,807.

E. Addendum III Habitat Requirements

No mandatory measures related to habitat or habitat protection are implemented through this amendment.

IV. New Jersey Atlantic Croaker Fishery and Management Program: 2014

A. New Jersey Regulations on Atlantic Croaker in 2014

The New Jersey recreational fishery regulations at N. J. A. C. 7:25-18.1 will remain the same for 2014.

B. Atlantic Croaker Monitoring Programs for 2013

New Jersey will continue to collect commercial harvest data through ACCSP sampling and abundance index data through various programs.

C. Changes in Management and/or Monitoring of Atlantic Croaker in 2014

No changes from the previous year.

V. Plan Specific Requirements

There are no plan specific requirements in Amendment 1.

VI. Law Enforcement Reporting Requirements

There are no plan specific law enforcement reporting requirements in Amendment 1.

ACKNOWLEDGEMENTS

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Jason Dallas and Ray Ringen, of the Division's Wildlife Conservation Corps, volunteered their time to assist on the Delaware River Recruitment Survey.

The cooperation of businesses and the general public are greatly appreciated. The Division thanks the personnel of the various marinas whose boat ramps and facilities were utilized by the Division. These include RiverGate Boat Ramp in West Deptford and Hawk Island Marina in Delanco.

Table 1. Biological characterization sample summary from commercially harvested Atlantic croaker landed in New Jersey: 2006-2012*

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**Mean**
# Lengths	363	340	608	960	750	274	660	565
Mean length (total, mm)	337.1	345.8	307.4	302.3	289.4	313.6	289.4	306.2
# Weights	364	340	608	960	750	274	660	565
Mean weight (kg)	0.54	0.56	0.38	0.37	0.33	0.43	0.32	0.39
# Otoliths	364	340	500	560	750	274	619	487
# Aged	363	338	497	558	749	261	614	483

*No samples collected in 2013

Table 2. New Jersey indices of abundance, geometric mean, for Atlantic croaker: 1980-2013

Year	DRseine	DBtrawl	OTAug	OTOct	OTAug-Oct
1980	0.00	-	-	-	-
1981	0.00	-	-	-	-
1982	0.00	-	-	-	-
1983	0.00	-	-	-	-
1984	0.00	-	-	-	-
1985	0.07	-	-	-	-
1986	0.12	-	-	-	-
1987	0.00	-	-	-	-
1988	0.00	-	-	-	-
1989	0.06	-	0.00	0.00	0.00
1990	0.00	-	0.00	0.00	0.00
1991	0.08	0.09	0.32	0.19	0.25
1992	0.04	0.95	0.08	0.25	0.16
1993	0.27	0.75	0.09	0.27	0.18
1994	0.10	0.33	0.49	0.18	0.33
1995	0.59	2.31	1.41	1.24	1.32
1996	0.57	2.23	0.31	0.91	0.58
1997	0.17	2.79	0.84	0.54	0.68
1998	0.61	7.67	0.25	0.22	0.23
1999	0.23	4.95	1.12	0.93	1.02
2000	0.47	2.55	2.51	1.08	1.70
2001	0.27	2.75	1.17	1.66	1.40
2002	**1.46**	**29.02**	**4.17**	**10.07**	**6.60**
2003	0.02	0.25	0.69	3.54	1.79
2004	0.18	0.67	**5.07**	**13.32**	**8.32**
2005	0.15	1.51	2.90	**10.78**	5.78
2006	**0.69**	**28.40**	0.70	1.13	0.91
2007	0.39	0.95	1.57	5.06	2.93
2008	0.53	**17.74**	0.42	6.62	2.29
2009	0.10	0.69	1.59	0.09	0.68
2010	0.06	0.50	1.45	1.30	1.37
2011	0.00	0.38	**16.16**	2.92	**7.20**
2012	**0.68**	5.08	1.08	7.97	3.32
2013	0.03	1.32	3.72	3.23	3.47
Mean	0.23	4.95	1.93	2.94	2.10

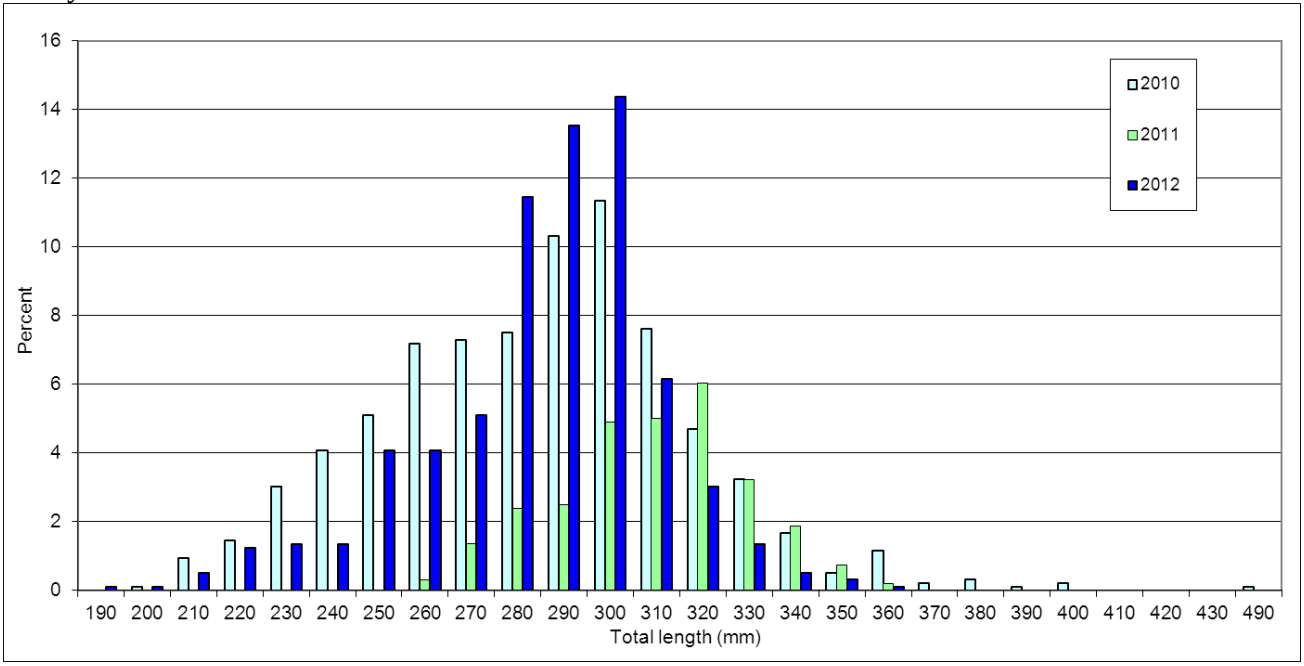
Table 3. New Jersey's Atlantic croaker commercial landings: 1950-2013

Year	Pounds	Year	Pounds	Year	Pounds
1950	37,900	1971	100	1992	51,600
1951	50,000	1972	400	1993	183,414
1952	82,700	1973	37,100	1994	117,256
1953	156,700	1974	45,100	1995	334,654
1954	369,200	1975	885,100	1996	621,889
1955	741,300	1976	700,600	1997	1,994,446
1956	76,800	1977	1,478,600	1998	1,029,332
1957	103,500	1978	654,900	1999	2,071,046
1958	400	1979	91,000	2000	2,130,465
1959	1,800	1980	12,000	2001	1,389,837
1960	8,100	1981	23,500	2002	1,828,484
1961	56,900	1982	100	2003	1,575,738
1962	4,300	1983	200	2004	2,067,992
1963		1984	57,700	2005	1,847,753
1964		1985	48,800	2006	1,617,144
1965		1986	106,000	2007	1,358,000
1966		1987	357,600	2008	946,062
1967		1988	30,100	2009	585,552
1968		1989	137,100	2010	342,116
1969		1990	644	2011	465,117
1970	200	1991	31,292	2012	363,381
				2013	337,313
				Mean Weight	463,224

Table 4. New Jersey's Atlantic croaker recreational catch (number) and harvest (number and weight) from MRIP: 2004-2013

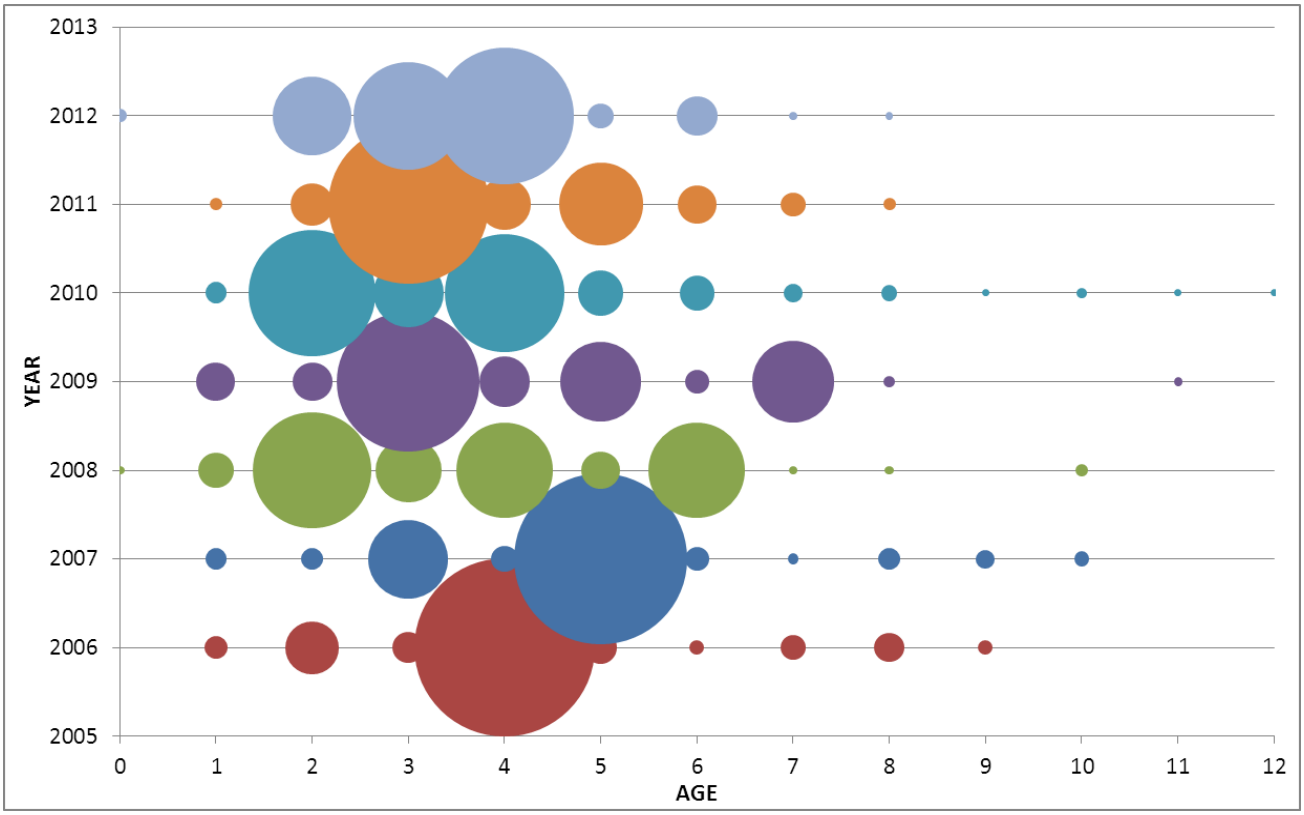
Year	Catch	Harvest	Weight (lbs)	Mean Weight (lbs)
2004	2,093,090	855,927	859,373	1.00
2005	2,919,750	1,227,349	1,193,848	1.00
2006	1,014,711	511,220	632,085	1.20
2007	996,316	406,238	453,854	1.10
2008	2,974,920	600,975	527,179	0.90
2009	301,835	193,464	114,015	0.60
2010	230,218	63,027	36,063	0.60
2011	103,246	40,855	21,460	0.50
2012	1,417,877	266,832	96,366	0.40
2013	1,640,852	875,200	533,822	0.60
Mean	1,369,282	504,109	446,807	

Figure 1. Length frequencies from commercially harvested Atlantic croaker landed in New Jersey: 2010-2012*



*No samples collected in 2013

Figure 2. Age frequencies from commercially harvested Atlantic croaker landed in New Jersey: 2006-2012*



*No samples collected in 2013

Figure 3. New Jersey's recreational length frequencies, from MRIP: 2010-2013

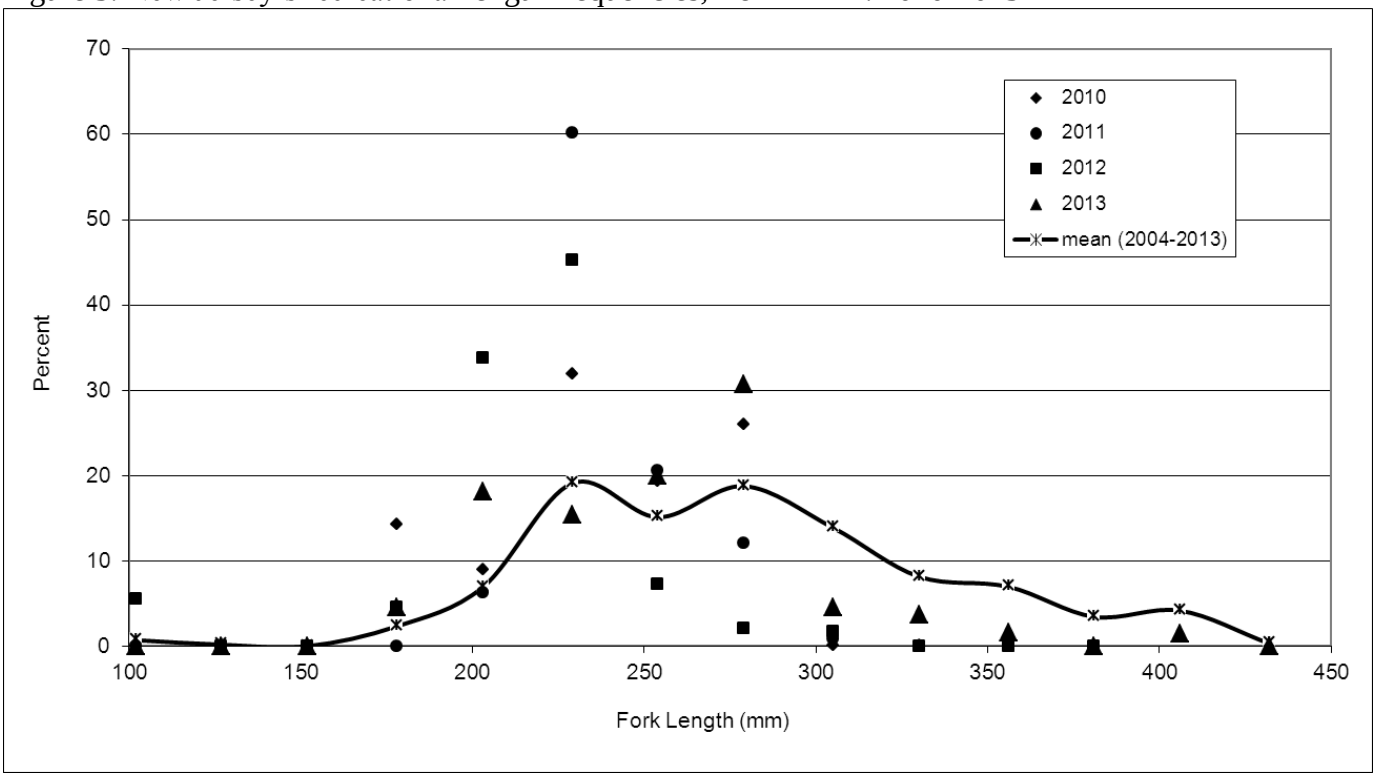


Figure 4. New Jersey indices of abundance, geometric mean, for Atlantic croaker: 1991-2013

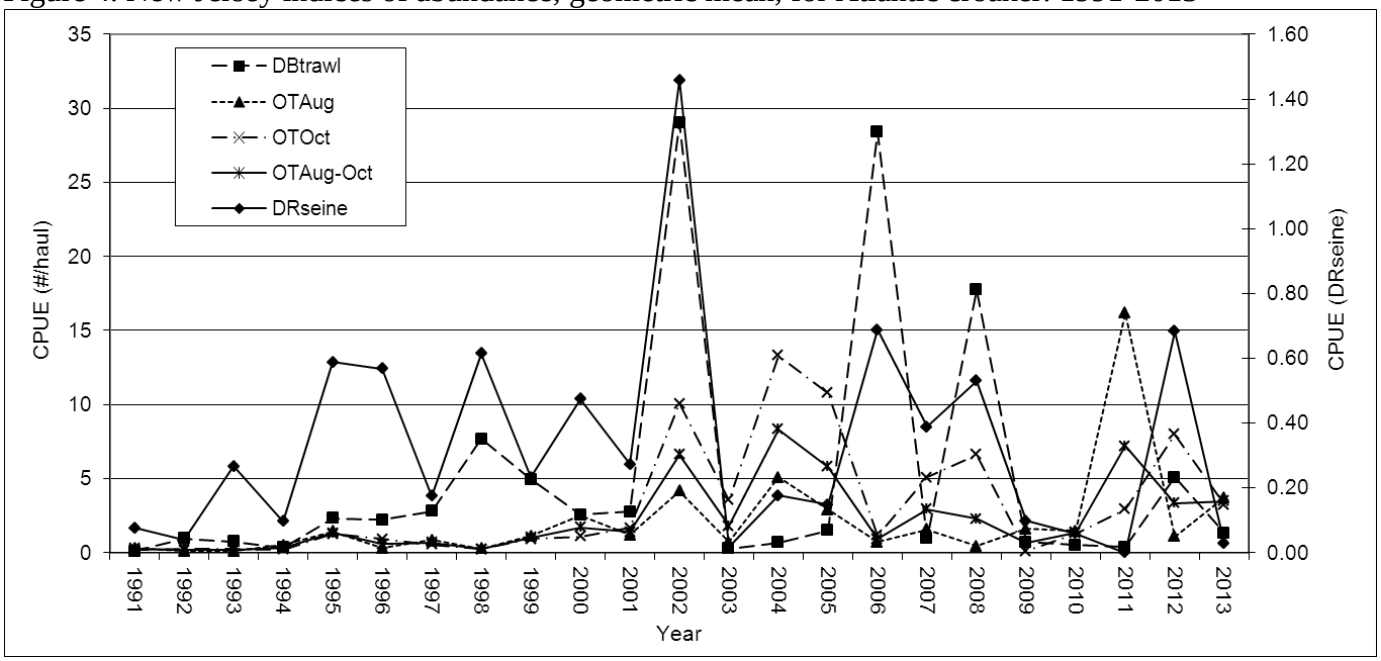


Figure 5. Ocean Trawl Survey Atlantic croaker length frequency: 2013

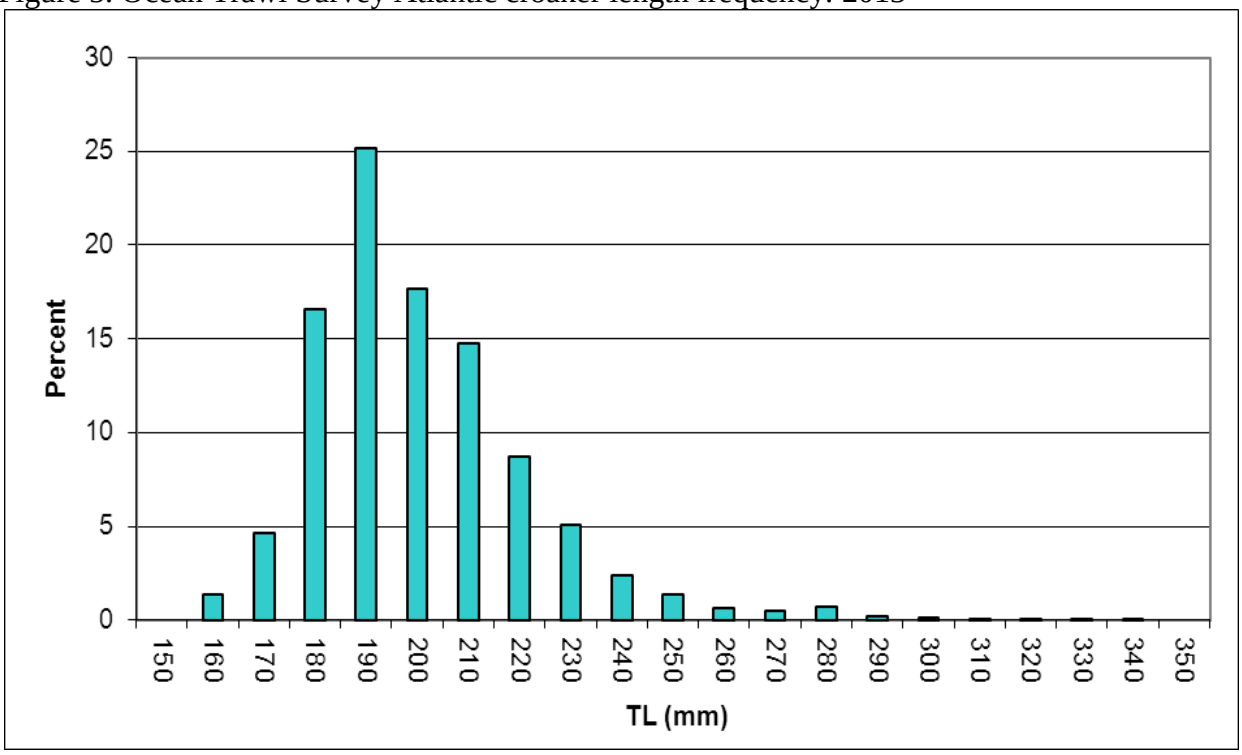


Figure 6. New Jersey's Atlantic croaker commercial landings: 1950-2013

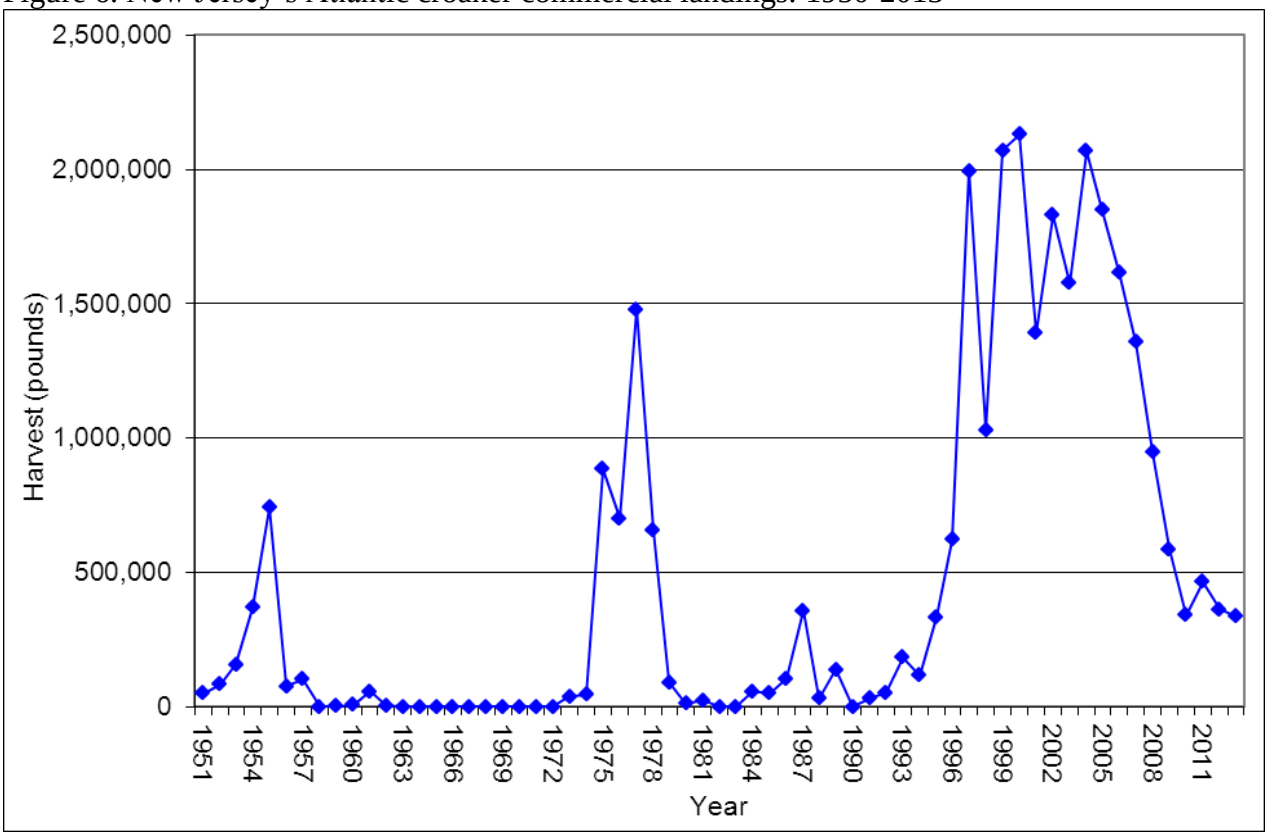
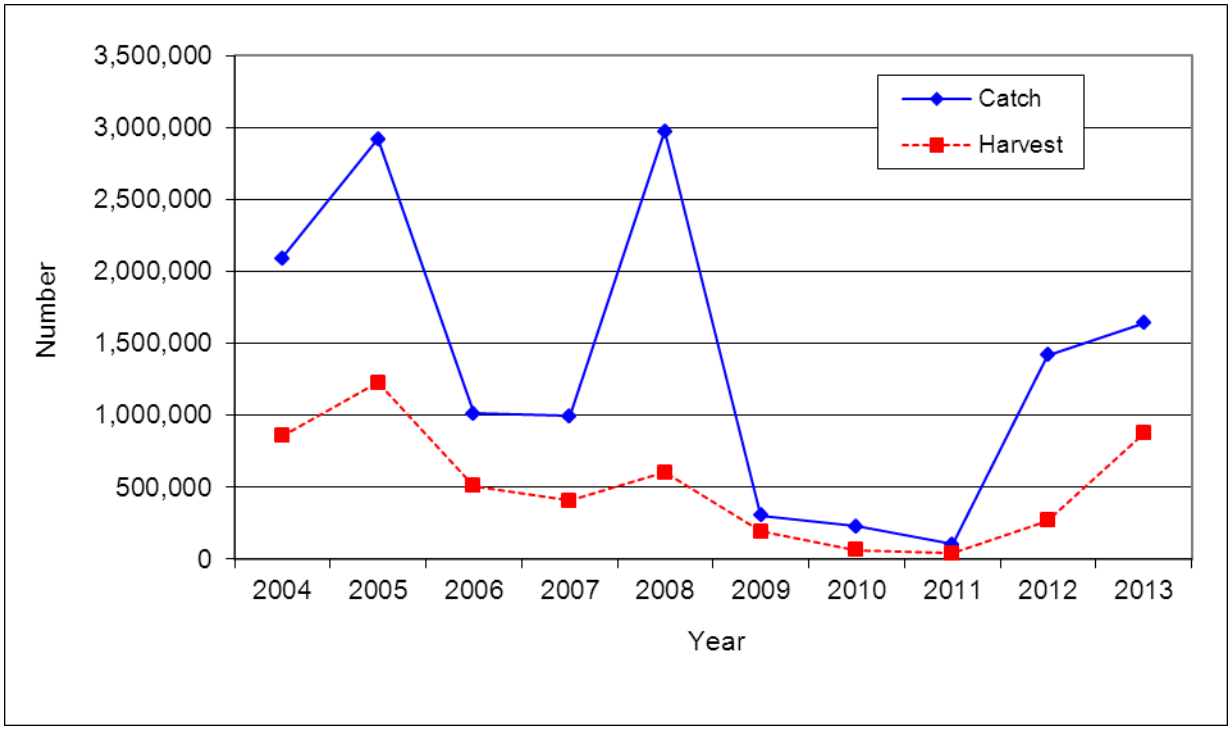


Figure 7. New Jersey's Atlantic croaker recreational catch and harvest, in number of fish, from MRIP: 2004-2013



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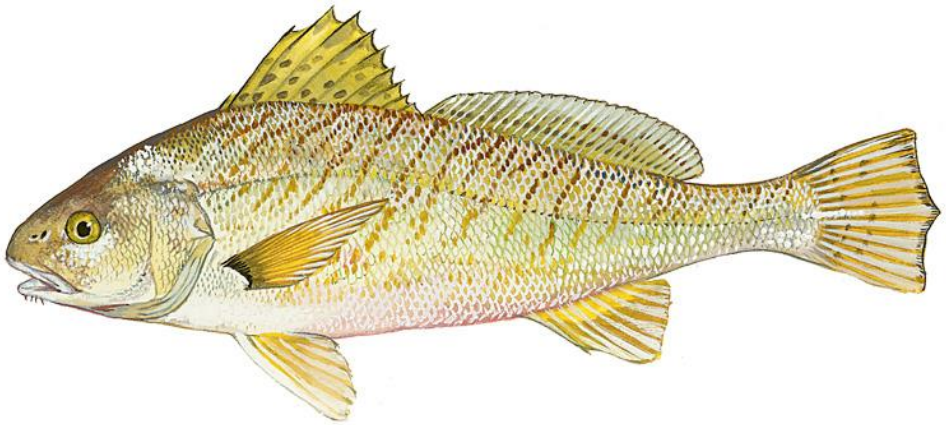
Annual Atlantic croaker Report for the State of Delaware: Harvest, Monitoring and Conservation for 2013 and Management Program for 2014



Report to the Atlantic States Marine Fisheries Commission

Compiled by
Michael Greco
Delaware Division of Fish and Wildlife
Dover DE
June 2014

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I. Introduction

Both recreational and commercial landings increased in 2013 relative to 2012. The Marine Recreational Information Program (MRIP) estimate of Atlantic croaker landed by Delaware was the highest since 2009. Commercial landings of Atlantic croaker accounted for less than 1% of Delaware's total commercial catch in 2013.

Overall and young-of-the-year (YOY) abundance of Atlantic croaker taken in Delaware's adult and juvenile trawl surveys declined for the Delaware Estuary in 2013. However, overall and YOY abundance increased in Delaware's Inland Bays in 2013 relative to 2012. There were no changes in monitoring or regulations for 2013 and there are no changes planned for 2014.

II. Request for *de minimus*

Delaware requests continued *de minimus* status for the commercial fishery in 2014. Delaware's 2013 harvest of 6,700 pounds accounted for less than 1% of the coast wide landings for the year, thus qualifying Delaware for *de minimus* status.

Delaware's 2013 recreational harvest of Atlantic croaker (210,835 fish or 96,152 pounds) was approximately 2.5% of coast wide landings, and does not qualify for *de minimus* consideration.

III. Previous calendar year's fishery and management program

A. Activity and results of fishery dependent monitoring.

Delaware monitored the commercial fishery through mandatory monthly state logbook reports submitted by fishermen. Trip based data collected from these reports include pounds landed by species, area fished, effort and gear type. Commercial landings data is supplemented through the Standard Atlantic Fisheries Information System (SAFIS). No additional fishery dependent monitoring of the commercial Atlantic croaker fishery was conducted in 2013. Delaware's reported Atlantic croaker landings were 6,700 pounds (Table 1; Figure 1).

Delaware used the MRIP online data query for estimates of the recreational fishery in 2013. An estimated 210,656 Atlantic croaker were harvested in Delaware in 2013 (Table 2; Figure 2).

B. Activity and result of fishery independent monitoring.

Delaware conducts a bottom trawl survey to monitor relative abundance of adult ground fish in the Delaware Bay. This survey has been conducted annually since 1990; prior surveys were conducted from 1966-1971 and 1979-1984. Atlantic croaker ranked third in abundance by number and ninth by weight in 2013 sampling (Greco 2014). The relative abundance of Atlantic croaker decreased by 86% from the 2012 index, and dropped relative abundance below the mean for the time series (Table 3; Figure 3).

The Division monitors juvenile fish abundance through a 16-ft bottom trawl survey, which has been conducted annually in the Delaware Bay since 1980. Separate Atlantic croaker YOY indices are generated for the Delaware Estuary (Bay and River) and Delaware's "Inland Bays" (Indian River and Rehoboth). Atlantic croaker YOY recruitment declined in the Delaware Estuary to 1.78 per tow (geometric mean) and remained below the time-series mean and median (Table 4; Figure 4). The Inland Bays YOY index increased to 5.83 per tow, and was the highest level since 2009 (Table 4; Figure 5).

C. Copy of regulations that were in effect.

Delaware's Atlantic croaker conservation measures are established by Delaware Code (Appendix). These measures were unchanged for 2013 with a legal minimum size of 8 inches. This minimum size applies to both the commercial and recreational fisheries. In addition, no Atlantic croaker can be caught and sold in Delaware without a commercial foodfish license.

D. Harvest

Commercial Fishery

Reported commercial landings of Atlantic croaker increased 138% relative to 2012 to 6,700 pounds (Table 1; Figure 1). As in previous years, gill net gear dominated landings accounting for 65.9% of commercial landings (Table 5).

Recreational Fishery

The 2013 recreational harvest of Atlantic croaker was estimated at 210,656 fish and 96,152 pounds by the MRIP. This was the highest harvest since 2009 (Table 2; Figure 2). The estimated total number caught (including those released) was 960,570 fish, also the highest since 2009. The mean weight of harvested Atlantic croaker was 2.19 pounds based on MRIP estimates.

E. Review of progress in implementing habitat recommendations.

N/A

IV. Planned management programs for the current calendar year

A. Summary of regulations for current year.

1. Commercial Fishery

There are no changes in regulations pertaining to Atlantic croaker in effect or anticipated for the current year. The commercial size limit will remain at 8 inches.

2. Recreational Fishery

There are no changes in regulations pertaining to Atlantic croaker in effect or anticipated for the current year. The recreational size limit will remain at 8 inches.

B. Summary of monitoring programs.

1. Commercial Fishery

The Division will continue to monitor the commercial fishery through mandatory monthly logbook reporting as submitted by the commercial fishermen.

2. Recreational Fishery

Delaware will rely on the Marine Recreational Information Program for the collection of data characterizing Atlantic croaker caught recreationally in Delaware waters.

3. Research Trawl Survey

Delaware will continue to monitor Atlantic croaker relative abundance and YOY recruitment through the Division's research trawl surveys.

REFERENCE CITED

Greco, M. J. 2014. Coastal Finfish Assessment Survey, Federal Aid in Fisheries Restoration Project F-42-R-25. Annual Report. Delaware Division of Fish and Wildlife, Dover.

Table 1. Reported commercial landings for spot caught in Delaware waters, 1985-2013.

Year	Pounds
1985	66
1986	466
1987	770
1988	162
1989	0
1990	42
1991	1,111
1992	687
1993	2,435
1994	3,044
1995	12,106
1996	9,681
1997	10,509
1998	10,384
1999	15,068
2000	11,118
2001	21,759
2002	10,515
2003	16,612
2004	30,369
2005	36,624
2006	19,307
2007	13,522
2008	10,465
2009	16,341
2010	6,182
2011	12,252
2012	2,811
2013	6,700

Table 2. Recreational harvest of Atlantic croaker for Delaware, 1986-2013. Source: MRIP, NMFS. Catch includes both landed and released fish.

Year	Observed Harvest (A)	PSE (%)	Reported Harvest (B1)	PSE (%)	Released Alive (B2)	PSE (%)	Total Catch (A+B1+B2)	PSE (%)	Harvest Total Weight (lbs)	PSE (%)
1986	392	100.0	4,301	87.3	1,757	100.0	6,451	64.6	2,595	89.2
1987	0	.	0	.	861	100.0	861	100	.	.
1988	604	51.6	582	71.6	582	71.8	1,768	37.7	826	46.9
1989	478	56.9	0	.	1,307	74.5	1,785	56.7	283	60.3
1990	281	73.7	0	.	1,268	59.5	1,549	50.5	112	69.7
1991	28,837	28.4	8,663	41.1	75,319	19.4	112,818	15.2	10,972	22.3
1992	9,281	28.0	573	73.8	43,583	26.7	53,437	22.3	3,292	25.9
1993	19,352	30.3	0	.	13,194	27.8	32,547	21.2	9,640	29.9
1994	4,970	25.5	748	59.5	14,069	31.8	19,787	23.6	2,892	25.3
1995	122,720	29.7	14,145	36.4	51,574	22.1	178,439	21.3	82,863	26.7
1996	221,423	23.1	13,967	30.3	76,851	19.2	312,240	17.7	205,527	21.4
1997	373,621	12.9	11,964	36.4	384,233	13.5	769,819	9.2	340,198	13.4
1998	352,468	11.6	38,763	27.0	839,932	12.4	1,231,163	9.1	293,561	11.9
1999	618,676	13.2	44,048	22.6	1,017,499	11.0	1,680,223	8.3	522,201	12.7
2000	497,491	16.4	20,394	42.3	694,813	17.0	1,212,699	11.8	483,963	16.7
2001	278,907	15.7	33,097	32.0	285,123	17.0	597,128	11.1	304,126	14.7
2002	207,344	20.4	54,290	22.6	361,355	10.9	622,989	9.5	250,900	16.4
2003	238,617	14.1	102,557	19.8	654,697	15.8	995,871	11.1	262,113	12.6
2004	306,801	32.1	82,417	32.9	599,207	37.7	988,425	25.1	307,312	23.8
2005	391,456	17.6	433,812	33.5	674,684	21.0	1,499,951	14.3	750,857	19.5
2006	419,010	23.8	344,205	21.9	937,193	17.5	1,700,409	12.1	717,803	18.7
2007	272,092	21.7	86,971	44.2	672,771	30.3	1,031,835	20.9	321,200	21.5
2008	198,531	25.4	170,380	56.0	601,994	25.3	970,906	19.2	322,166	34.6
2009	319,734	39.2	132,115	33.4	537,587	20.7	989,436	17.5	240,468	36
2010	46,152	26.9	29,252	63.3	228,936	43.8	304,340	33.8	41,533	29.2
2011	45,523	26.6	46,766	70.7	88,524	34.0	180,813	25.6	52,889	36.1
2012	72,284	32.8	15,259	53.1	446,879	26.4	534,423	22.6	63,037	30.5
2013	177,086	19.9	33,749	25.6	749,914	16.4	960,570	13.3	96,152	16.4

Table 3. Atlantic croaker relative abundance from 30-foot trawl sampling in the Delaware Bay, 1966-2013.

Year	# of Tows	# / NM	Kg / NM	Kg / Tow	# / Tow
1966	56	0	0	0	0
1967	75	0	0	0	0
1968	40	0	0	0	0
1969	42	0	0	0	0
1970	35	0.095	0	0	0.114
1971	39	0	0	0	0
1979	99	0.05	0.0278	0.0336	0.061
1980	93	0	0	0	0
1981	98	0.021	0.0008	0.0008	0.02
1982	40	0	0	0	0
1983	38	0.432	0.0931	0.0763	0.368
1984	45	0	0	0	0
1990	61	0.067	0.0079	0.0037	0.033
1991	71	2.938	0.298	0.3482	3.352
1992	89	0.899	0.0634	0.0649	0.899
1993	83	1.34	0.176	0.1981	1.482
1994	71	3.964	0.4116	0.4533	4.394
1995	88	6.72	0.5865	0.6898	7.932
1996	76	24.367	2.8559	2.9559	23.697
1997	89	57.724	7.0637	7.4705	60.36
1998	80	69.64	7.1738	8.247	79.65
1999	87	81.638	12.5941	13.0549	84.655
2000	90	34.549	8.5129	8.5964	34.833
2001	90	11.239	3.8461	3.9631	11.522
2002	68	236.657	12.6966	13.5873	250.809
2003	63	131.626	33.5122	32.0817	125.73
2004	90	30.352	9.5552	9.8124	31.156
2005	90	17.234	4.4592	4.4916	17.367
2006	90	193.099	14.1799	14.225	192.867
2007	90	7.142	1.452	1.5027	7.444
2008	90	42.25	3.9058	3.876	42.178
2009	90	107.176	12.2825	11.6075	101.933
2010	90	8.672	1.5372	1.5726	8.878
2011	90	12.989	2.1806	2.1764	12.867
2012	90	98.851	3.7301	3.719	98.722
2013	90	14.08	1.0123	1.0019	13.889

Table 4. Annual YOY indices, expressed as the geometric mean of the catch per tow, for spot collected in Delaware Division of Fish & Wildlife 16 ft. trawl surveys, 1980-2013.

Year	YOY Indices	
	Delaware Bay	Inland Bays
1980	0.20	-
1981	0.19	-
1982	0	-
1983	0	-
1984	2.17	-
1985	6.90	-
1986	2.20	0
1987	1.24	0.10
1988	0	0.06
1989	5.12	0.67
1990	0.10	0.03
1991	1.91	0.17
1992	13.95	0.95
1993	15.75	0.52
1994	5.86	0.34
1995	28.87	1.85
1996	39.22	0.84
1997	22.86	0.81
1998	29.83	4.64
1999	51.16	2.96
2000	18.46	1.42
2001	72.16	2.32
2002	89.43	1.36
2003	4.64	0.31
2004	17.19	0.99
2005	5.54	0.43
2006	11.77	1.18
2007	4.47	0.67
2008	7.52	0.87
2009	16.47	2.38
2010	17.62	1.09
2011	4.49	0.90
2012	4.31	0.52
2013	1.16	1.83
Mean 1980-2012	15.20	1.05
Median 1980-2012	5.86	0.84

Table 5. Reported commercial landings in pounds, by gear, for Atlantic croaker caught in Delaware waters, 1985-2013. * - Other gear types includes fish pot, haul seine and dredge by-catch. **** denotes confidential data.**

Year	Gill Net	Pound Net	Hook & Line	Otter Trawl	Purse Seine	Other *
1985	11		**			
1986	466		0			
1987	745		**			
1988	162		0			
1989	0		0			
1990	**		0			
1991	668		431			12
1992	644		43			
1993	1,878		557			
1994	2,129		915			
1995	9,888		2,218			
1996	5,332		4,349			
1997	2,635		7,400			**
1998	3,733		6,614			**
1999	4,513		10,554			**
2000	4,053		7,051			**
2001	9,987		11,477			**
2002	1,989		8,469			**
2003	7,494		8,994			**
2004	15,267		14,225			877
2005	24,949		11,268			407
2006	6,413		11,835			1,059
2007	4,700		8,474			**
2008	6,306		4,052			**
2009	11,925		4,267			**
2010	3,541		2,563			**
2011	9,967		2,241			**
2012	798		2,010			**
2013	4,416		2,253			**

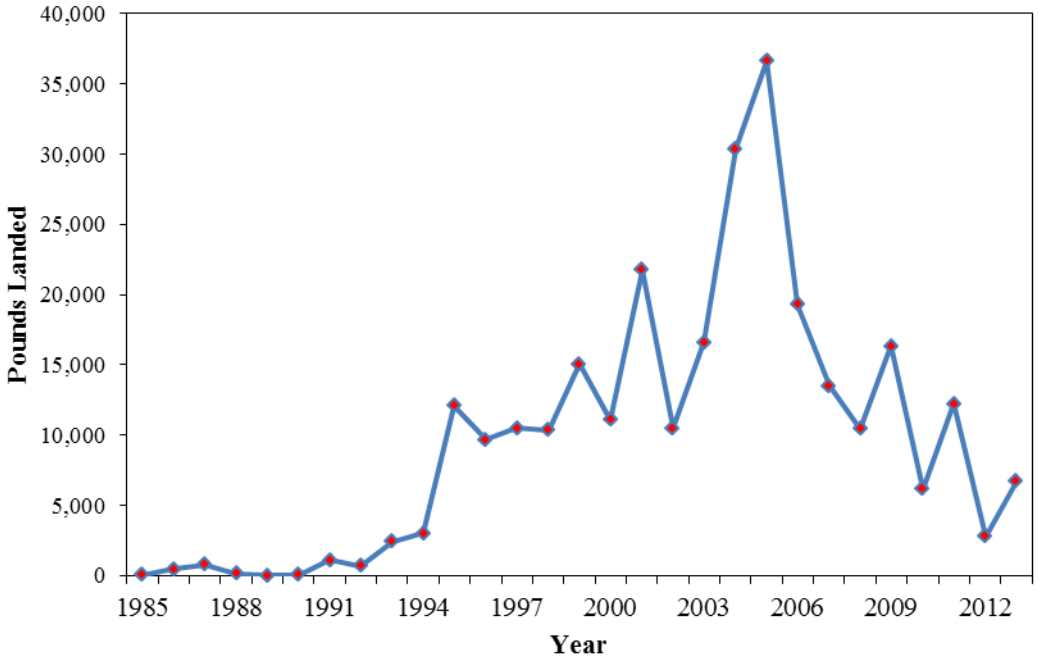

Figure 1. Delaware's commercial landings of Atlantic croaker, 1985-2013.

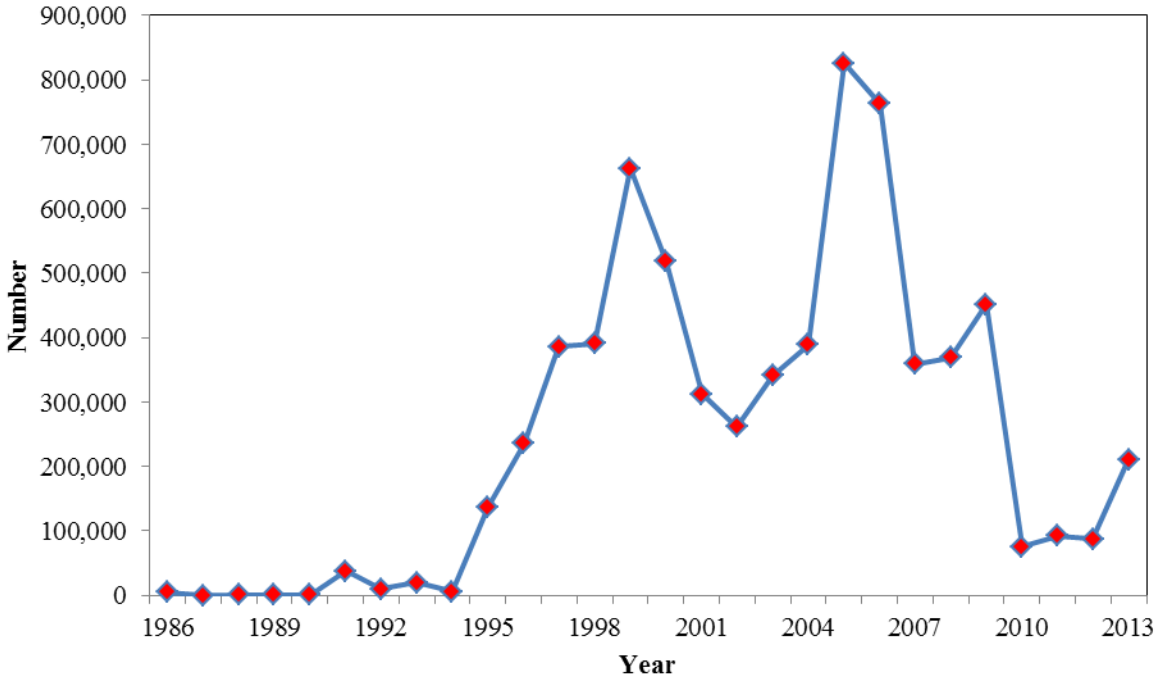

Figure 2. Delaware's estimates of harvest of Atlantic croaker from the recreational fishery, 1986-2013.

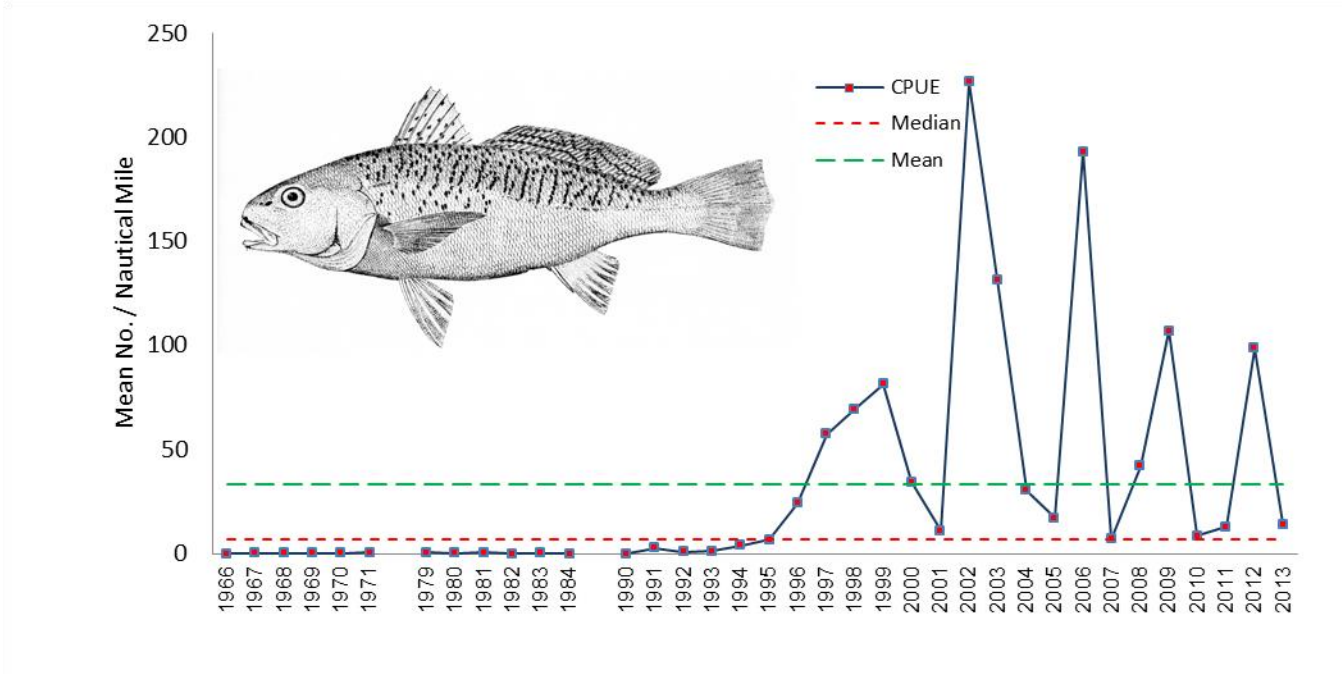

Figure 3. Atlantic croaker relative abundance (mean number per nautical mile), time series (1966-2012) mean and median as measured in 30-foot trawl sampling in the Delaware Bay.

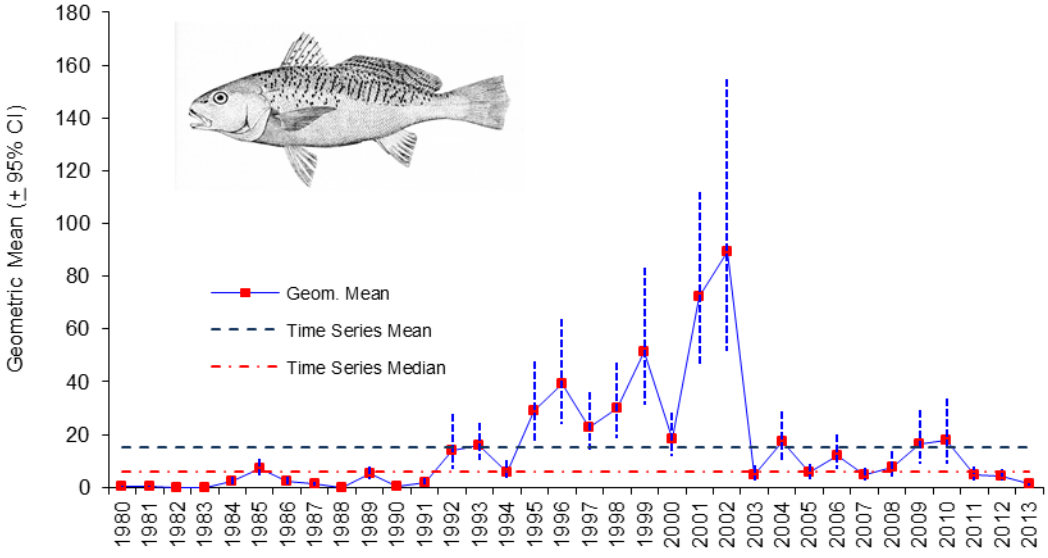

Figure 4. Index of young-of-the-year Atlantic croaker abundance, time series (1980-2012) mean and median as measured by 16-foot trawl sampling in the Delaware Estuary.

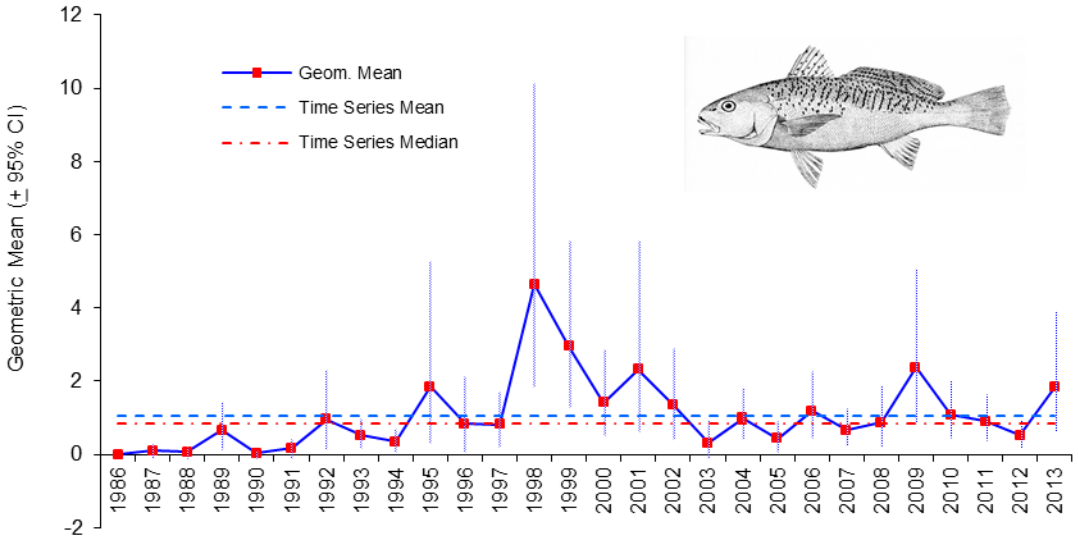

Figure 5. Index of young-of-the-year Atlantic croaker abundance, time series (1986-2012) mean and median as measured by 16-foot trawl sampling in Delaware's Inland Bays.

Appendix

Title 7 Delaware Code

§ 929 Size limits on finfish; exceptions [Subject to the provisions of 64 Del. Laws, c. 251, § 4]

(a) Unless otherwise provided in this chapter or by regulation promulgated by the Department or permit issued by the Division subsequent to April 27, 1984, no person shall possess any finfish listed in this section or any regulations promulgated by the Department that measure less than the dimensions set forth in this section or any regulation promulgated by the Department, unless said finfish is the legal product of artificial propagation and aquaculture authorized under permit issued by the Division. The dimensions of said finfish shall be the total measured from the tip of its snout to the furthest tip of its tail.

(b) Unless otherwise provided in this chapter or by regulation promulgated by the Department or permit issued by the Division subsequent to April 27, 1984, no person shall possess any finfish in the State unless said finfish has at least the following dimensions:

(1) Striped bass (Morone saxatilis) taken from or caught in Delaware's internal waters shall have a minimum length of 14 inches;

(2) Striped bass taken from or caught in Delaware's territorial sea shall have a minimum length of 24 inches;

(3) Weakfish (Cynoscion regalis): The minimum length of a weakfish shall be 10 inches;

(4) Atlantic croaker (Micropogan undulatus): The minimum length of an Atlantic croaker shall be 8 inches;

(5) Atlantic sturgeon (Acipenser oxyrhynchus): The minimum length of an Atlantic sturgeon shall be 54 inches;

(6) Summer flounder (Paralichthys dentatus): The minimum length of a summer flounder shall be 12 inches;

(7) Tautog (Tautoga onitis): The minimum length of a tautog shall be 12 inches; and

(8) White perch (Marone americana): The minimum length of white perch shall be 8 inches.

(c) Any person, who comes into possession by purchasing, trading or bartering for, any finfish measuring less than the dimensions set forth in this section or the dimensions set forth in any regulation promulgated by the Department, shall immediately report the possession of said finfish to the Department and then dispose of said finfish in a manner directed by the Department provided that none may be sold, traded or bartered.

(d) [Repealed.]

64 Del. Laws, c. 251, § 1; 65 Del. Laws, c. 407, §§ 1, 2; 65 Del. Laws, c. 408, § 2; 67 Del. Laws, c. 293, § 1; 70 Del. Laws, c. 55, § 1.;

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Joseph P. Gill, Secretary
Frank W. Dawson III, Deputy Secretary

Maryland Atlantic Croaker (*Micropogonias undulatus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2013

Prepared by

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Maryland Department of Natural Resources
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June 23, 2014

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I. Introduction

Atlantic croaker (*Micropogonias undulatus*) are found in Maryland's Chesapeake Bay, offshore waters and coastal bays from late spring through early fall. Landings are highest in the southern portion of Maryland's Chesapeake Bay, with adults becoming less common north of the Bay Bridge. Atlantic croaker support important recreational and commercial fisheries in Maryland. They are part of a mixed species fishery, with commercial catch historically dominated by pound nets, and recreational harvest primarily from bottom fishing boat anglers. Maryland waters also provide extensive juvenile croaker habitat.

Maryland has a minimum size limit of nine inches (229mm) total length (TL) for both commercial and recreational fishermen. Recreational harvest is restricted to 25 fish per day and is open year round, while commercial fishermen have no quota, but are limited to a season of March 16th through December 31st.

Preliminary 2013 commercial harvest of 884,363 pounds decreased 7% compared to the 2012 harvest. The recreational harvest estimate increased 18% to 1,155,539 fish in 2013, and the 2013 release estimate increased 68% to 2,905,537 fish compared to 2012.

II. Request for *de minimis* status

N/A

III. 2013 Fishery and Management Programs.

a. Fishery dependent monitoring

MD DNR fisheries biologists sampled commercial pound nets bi-weekly in Maryland's portion of the Chesapeake Bay from May 28, 2013 through September 3, 2013. Atlantic croaker mean length from the onboard pound net survey was 276 mm TL in 2013, was similar to the 2012 value of 274 mm TL, and was the fourth lowest value of the 21 year time series (Table 1). The onboard pound net length frequency distribution for 2013 indicated a decrease in larger croaker, with no croaker in the 390 and 410 mm length groups (Figure 1). Mean lengths and weights by sex for Atlantic croaker sampled from pound nets in 2013 were 284 mm TL and 324 g for females (n = 146) and 275 mm TL and 280 g for males (n = 103). Pound net samples were 59% female and 41% male. Pound net samples, in which sex determination and weight were taken, were not randomly selected; therefore sex specific data may be biased.

Ages derived from pound net caught Atlantic croaker otoliths in 2013 ranged from 0 to 10 (n=247; Table 2). The number of Atlantic croaker sampled for length in 2013 (n=2,320) was applied to an age-length key for 2013 (Table 2). This application indicated that 28% of the fish were age five, 25% were age three, 22% were age four, 14% were age one, 5% were age seven, and 0% age zero or nine fish were present. The remaining age groups each accounted for four percent or less of the fish sampled (Table 2). Atlantic croaker greater than six years old have become less abundant in recent years compared to the mid 2000s.

b. **Fishery independent monitoring**

A 4.9-m semi-balloon otter trawl has been used to sample Maryland's Atlantic coastal bays since 1972 (Bolinger *et al* 2007). Since 1989, 20 fixed stations have been trawled for six minutes at monthly intervals during April-October. Prior to 1989, monthly effort, tow time and locations sampled varied considerably. Consequently, index values for juvenile Atlantic croaker prior to 1989 are not as reliable and, therefore, were not computed. The geometric mean catch per hectare (GM) of juvenile croaker was used as a standardized index of abundance (Bolinger *et al* 2007). The 2013 GM of 1.01 fish per hectare was below the 25 year time series mean of 1.62 (Figure 2, Table 3).

Finfish collected by Maryland's Chesapeake Bay blue crab trawl survey have been enumerated since 1980, (Davis et al.1995). However, since some data entry inconsistencies make electronic data files prior to 1989 incomplete for all species, only data from 1989 through 2010 were used to generate a Chesapeake Bay Atlantic croaker juvenile index. The Chester River, Eastern Bay, Choptank River, and Patuxent River each contain six fixed sampling locations, while Tangier Sound has five stations and Pocomoke Sound, eight. Each site is sampled once a month from May thru October. A 4.9 m semi-balloon otter trawl with a body and cod end of 25-mm-stretch-mesh and a 13-mm-stretch-mesh cod end liner is towed for 6 min at 4.0-4.8 km/h.

A Chesapeake Bay juvenile trawl index was calculated as the geometric mean catch per tow. Since juvenile Atlantic croaker have been consistently caught only in Tangier Sound, Pocomoke Sound and the Patuxent River, only these areas were utilized in this analysis to minimize zeros that may represent unsuitable habitat rather than abundance. The Atlantic croaker Chesapeake Bay juvenile index was lower from 2005-2007 than in the late 1990s. However, this index increased to the third highest of the 24 year time series for 2008 at 4.51 fish per tow, but was below the time-series mean from 2009 to 2011. The 2012 and 2013 index values of 3.76 and 2.24 were around the 25 year time series mean value of 3.36 fish per tow (Figure 3, Table 3).

Seine surveys are also conducted in the Maryland coastal bays and Chesapeake Bay. These surveys, designed primarily to catch other species, utilize a 30.5 meter, 6.35mm stretch mesh beach seine (4 ft. height in Chesapeake Bay and 6 ft. height in the Coastal bays). Atlantic croaker presence in these surveys is incidental; however, a GM index is calculated for each survey. The surveys do tend to capture juvenile croakers in years of high abundance and little to none during low abundance years (Figure 4, Table 3).

In 2013 MD DNR began a summer gill net survey on the lower Choptank River from an imaginary line extending from Howell Point to Jenkins Creek to the mouth of the river. The survey uses four 30.5m by 1.8m panels of monofilament gill net with 6.4cm, 7.6cm, 8.9cm and 10.1cm stretch mess sizes rigged to sink. All four panels are connected randomly as a single set of nets with an approximately 1.5m space between panels. The section of river sampled was divided into a 457m by 457m block grid; a simple random sampling design was used to select four grids to be sampled per day. Sampling grids with mean low water less than zero meters or greater than 12.2 meters and any grid that contained more than 15% land area were eliminated prior to selection. Sets were made in no less than 1.4 meters or more than 12.2 meters of water as read on the vessels depth finder. If a set could not be made in a given day within a selected grid an alternate randomly selected grid was used. Each sampling grid was assigned a shallow or deep designation each sampling day. This designation determined weather the set was made toward the shallow or deep end of the grid. The set was made in

the center of the grid if there was no appreciable depth change within the grid. All set were made perpendicular to the channel, with a target soak time of one hour. Sets were made once per week from June 17th to September 12th. Four Hundred Seventy-six Atlantic croaker were sampled in 48 sets, with 366, 87, 19 and 4 Atlantic croaker being caught in each panel from smallest mesh size to largest. Length ranged from 176mm TL to 366mm TL. Further data analysis will be completed when multiple years of data are available.

c. Atlantic Croaker Regulations

From the Code of Maryland Regulations: 08.02.05.18.18 Croaker:

A. Minimum Size.

(1) A recreational angler may not catch or possess a croaker less than 9 inches total length.

(2) A person licensed to catch finfish for sale may not catch or possess a croaker less than 9 inches total length.

B. Recreational Catch Limit. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than 25 croaker per day.

C. Commercial Season. The commercial season for taking croaker is March 16 through December 31.

D. General.

(1) The Secretary may modify catch limits or open or close a season for croaker by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date of the modification.

(2) The Secretary shall make a reasonable effort to disseminate public notice of a modification under §D(1) of this regulation through various other media so that an affected person has reasonable opportunity to be informed of the modification.

d. Commercial and Recreational Harvest

Commercial Harvest

The following 2013 landings are considered preliminary and may change slightly. The 2013 commercial harvest of 844,363 pounds decreased 7% compared to the 2012 harvest of 908,619 pounds (Table 4, Figure 5). Gill nets accounted for 80% of the harvest followed by pound nets at 18%, while all other gear types combined accounted for 2% of the 2013 harvest (Table 5). Pound nets were the dominate gear in Maryland for catching croaker in 2008, as in most years historically, but was exceeded by gill net harvest in 2009 through 2013. Ninety-eight percent of the preliminary MD harvest in 2013 was from the Chesapeake Bay and the remaining catch occurred in Atlantic coastal waters and Maryland's coastal bays.

Recreational Harvest

Recreational harvest estimates from the Marine Recreational Information Program (MRIP) for Maryland increased 18% from 979,216 fish (PSE = 25.8) in 2012 to 1,155,539 fish (PSE = 15.3) in 2013 (Table 4, Figure 6; MRIP 2014, personnel communication). Croaker harvest in 2013 was above the 1981-2012 average of 763,145 fish. Recreational release estimates for Atlantic croaker in

Maryland increased 68% from 1,731,079 fish (PSE = 22.8) in 2012 to 2,905,537 fish (PSE = 14.5) in 2013 (Figure 6; MRIP 2014, personnel communication). The 2013 release estimate was above the long term average of 1,265,823 fish, indicating sub-legal fish were more common in 2013, potentially corroborating the above average 2012 and near average 2013 JI indices.

Maryland charter boat captains are required to maintain daily logs of where they fish, how many fish of each species they harvest, how many they release and how many anglers participated. No indication of target species is recorded, so the catch per unit effort (CPUE) includes only trips in which croaker were captured. The number of anglers was used as effort and the number of croakers harvested was used as catch. The annual geometric mean number of croaker per angler was calculated for 1993-2013. The 2012 data is preliminary but should not change significantly. Reported charter boat harvest and effort peaked in 2000 (Figure 7). Effort has declined from 2000 to 2013, and harvest declined from 2000 through 2003, was relatively stable through 2009, and declined from 2010 to 2013. Geometric Mean CPUE increased steadily from 2.7 fish per angler in 2003 to the time series high of 6.0 fish per angler in 2010 before declining to 4.7 in 2011 and remaining stable through 2013 (Figure 8). The 2013 value of 4.7 fish per angler is still above the long term mean of 4.1 fish per angler. The majority of croaker caught by charter boat anglers were harvested, with the years of highest releases coinciding with the years of highest harvest (Figure 9).

e. Habitat Recommendations

There were no habitat requirements in Amendment 1.

IV. Planned Mangement Programs for 2014

a. No regulation changes are planned for 2014

b. Maryland will continue to monitor commercial pound nets and collect otoliths for aging. Maryland may also resume fish house sampling of commercial catch in 2014 to maintain adequate sample sizes of Atlantic croaker if necessary.

V. Plan Specific Requirements

None

References

Bolinger, A., S. Doctor, A. Luettel, M. Luisi, and G. Tyler. 2007. Investigation of Maryland's Coastal Bays and Atlantic Ocean Finfish Stocks. Federal Aid Project Report No. F-50-R-15. Maryland Department of Natural Resources. Annapolis, Maryland.

Davis, G. R., B. K. Daugherty, and J. F. Casey. 1995. Analysis of blue crab, *Callinectes sapidus*, stocks in the Maryland portion of the Chesapeake Bay from summer trawl data. Maryland Department of Natural Resources, Annapolis, Maryland.

Table 1. Atlantic croaker mean total length in mm, standard deviation and number sampled from the onboard pound net survey, 1993 – 2013.

Year	Mean Length	Standard Deviation	n
1993	233	35	471
1994	259	34	1,081
1995	286	42	974
1996	294	31	2,190
1997	301	39	1,450
1998	310	40	1,057
1999	296	54	1,399
2000	302	45	2,209
2001	317	37	733
2002	279	73	771
2003	287	55	3,352
2004	311	43	1,653
2005	317	48	2,398
2006	304	66	1,295
2007	307	54	2,963
2008	298	62	1,532
2009	320	50	91
2010	295	34	1,970
2011	281	31	1,764
2012	274	42	1,842
2013	276	36	2,320

Table 2. Proportion at age, number of length samples and number of age samples for Atlantic croaker captured in commercial pound nets, 1999-2013.

Year	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	# Aged	# Measured
1999	0.0	34.0	22.5	3.3	9.4	4.2	16.0	6.0	4.2	0.4					180	1,399
2000	0.0	10.1	42.5	25.1	1.0	1.4	4.9	7.4	5.3	2.2					145	2,209
2001	No Data															
2002	18.4	4.0	10.1	8.9	29.4	24.0	1.0	0.0	3.0	0.5	0.6				66	771
2003	0.0	15.2	38.6	1.3	12.2	26.6	3.8	0.1	0.2	0.1	0.7	0.3	1.0		129	3,352
2004	0.0	0.6	54.9	5.0	5.4	6.9	23.3	3.1	0.0	0.2	0.0	0.6			161	1,653
2005	0.0	10.1	4.8	51.5	7.6	1.5	7.3	11.4	5.6	0.0	0.1	0.1			190	2,398
2006	16.7	6.3	18.1	4.8	36.8	2.3	3.2	5.0	5.2	1.8	0.0	0.0	0.0	0.1	253	1,295
2007	0.0	11.2	14.4	30.0	8.8	27.0	1.3	1.1	1.6	3.3	1.0	0.3			275	2,963
2008	5.5	7.2	28.3	14.0	19.0	4.5	17.6	1.0	0.4	0.5	1.7	0.3			288	1,532
2009	0.0	30.9	8.5	37.4	11.1	7.8	1.8	2.2	0.3						222	1,381
2010	0.0	1.2	25.7	8.7	36.5	15.8	9.4	0.9	1.3	0.3	0.0	0.3			267	2,516
2011	0.0	0.8	17.4	48.2	11.3	16.6	3.6	1.7	0.3	0.1					245	1,886
2012	10.2	0.9	22.5	21.8	34.1	6.5	2.8	0.9	0.3						255	1,842
2013	0.0	13.5	2.3	24.7	22.2	27.9	4.1	4.9	0.1	0.0	0.2				247	2,320

Table 3. Maryland juvenile Atlantic croaker geometric mean indices. Both seines and the Chesapeake trawl are per haul and the coastal bays trawl is per hectare.

	Chesapeake Bay		**Coastal Bay**	
	Trawl	Seine	Trawl	Seine
Year	Geometric Mean	Geometric Mean	Geometric Mean	Geometric Mean
1959		0.00		
1960		0.00		
1961		0.00		
1962		0.00		
1963		0.00		
1964		0.02		
1965		0.00		
1966		0.00		
1967		0.00		
1968		0.00		
1969		0.00		
1970		0.00		
1971		0.00		
1972		0.04		
1973		0.01		
1974		1.30		
1975		3.11		
1976		0.06		
1977		0.00		
1978		0.07		
1979		0.00		
1980		0.00		
1981		0.00		
1982		0.01		
1983		0.47		
1984		0.00		
1985		0.00		
1986		0.00		
1987		0.00		
1988		0.00		
1989	0.83	0.00	1.01	0.06
1990	0.18	0.01	0.11	0.02
1991	4.06	0.94	3.09	0.70
1992	1.28	0.01	0.91	0.10
1993	3.67	0.01	2.02	0.06
1994	4.25	0.24	3.52	0.09
1995	0.74	0.03	3.01	0.05
1996	2.15	0.00	1.46	0.10
1997	5.32	0.24	3.20	0.35
1998	30.05	0.84	4.88	0.19
1999	4.18	0.10	2.24	0.02
2000	2.76	0.02	0.97	0.06
2001	0.86	0.00	0.40	0.02
2002	3.50	0.30	2.28	0.08
2003	0.81	0.00	0.85	0.00
2004	3.51	0.00	0.68	0.00
2005	0.44	0.00	0.41	0.00
2006	2.10	0.11	1.93	0.18
2007	0.54	0.01	0.53	0.00
2008	4.51	0.28	0.96	0.03
2009	0.67	0.01	1.46	0.00
2010	0.59	0.00	0.97	0.00
2011	1.15	0.00	1.05	0.00
2012	3.76	0.93	1.52	0.02
2013	2.24	0.30	1.01	0.08

Table 4. Maryland Atlantic croaker commercial harvest in pounds and MRIP recreational estimated harvest in numbers.

Comercial				
Year	Pounds		Year	Pounds
1929	2,215,799		1972	500
1930	2,113,380		1973	37,300
1931	900,825		1974	120,300
1932	1,355,501		1975	639,700
1933	1,806,866		1976	1,069,100
1934	2,131,100		1977	692,300
1935	3,399,900		1978	597,000
1936	2,812,800		1979	97,400
1937	982,900		1980	7,080
1938	3,024,900		1981	2,104
1939	2,498,600		1982	7,091
1940	3,432,000		1983	417
1941	4,406,000		1984	27,072
1942	5,960,000		1985	9,510
1943			1986	135,922
1944	4,998,915		1987	119,409
1945	2,510,803		1988	98,855
1946	2,992,316		1989	89,173
1947	1,914,323		1990	2,473
1948	2,216,778		1991	6,183
1949	2,351,731		1992	17,050
1950	2,517,692		1993	114,159
1951	1,850,611		1994	158,918
1952	850,304		1995	489,506
1953	462,927		1996	792,326
1954	912,825		1997	1,088,969
1955	1,704,639		1998	1,006,529
1956	1,748,667		1999	948,191
1957	1,399,996		2000	902,379
1958	658,471		2001	1,488,815
1959	838,201		2002	894,879
1960	585,934		2003	713,205
1961	48,769		2004	1,354,982
1962	11,100		2005	972,801
1963	1,500		2006	466,833
1964	2,400		2007	474,388
1965	400		2008	592,211
1966	800		2009	433,238
1967	1,200		2010	490,067
1968	100		2011	546,896
1969	400		2012	908,619
1970	100		2013	844,363
1971	200			

Recreational		
Year	Number Harvested	Number Released
1981	0	16,233
1982	10,452	0
1983	108,355	1,507,184
1984	211,035	70,192
1985	21,276	13,132
1986	123,578	43,399
1987	208,488	32,074
1988	1,005,452	273,231
1989	22,871	41,822
1990	100,673	88,688
1991	288,471	3,352,190
1992	117,427	856,292
1993	805,560	2,504,362
1994	1,633,581	1,628,824
1995	827,183	496,046
1996	775,115	403,776
1997	1,053,232	1,497,670
1998	1,126,058	3,021,780
1999	1,209,572	2,483,800
2000	2,674,880	4,967,856
2001	1,319,928	1,585,806
2002	1,223,385	2,523,276
2003	1,619,766	1,393,224
2004	896,855	854,132
2005	784,246	1,136,846
2006	754,969	1,783,557
2007	872,838	1,258,131
2008	619,942	2,427,219
2009	1,335,439	1,137,578
2010	1,136,589	1,011,236
2011	554,206	365,716
2012	979,216	1,731,079
2013	1,155,539	2,905,537

Table 5. Maryland 2013 preliminary commercial Atlantic croaker harvest by gear.

Gear	Pounds	% of Harvest
Pound net	151,198	17.91
Gill Net	677,918	80.29
Trawl	399	0.05
Hook and line	3,383	0.40
Fyke nets	10,876	1.29
Other gear	589	0.07

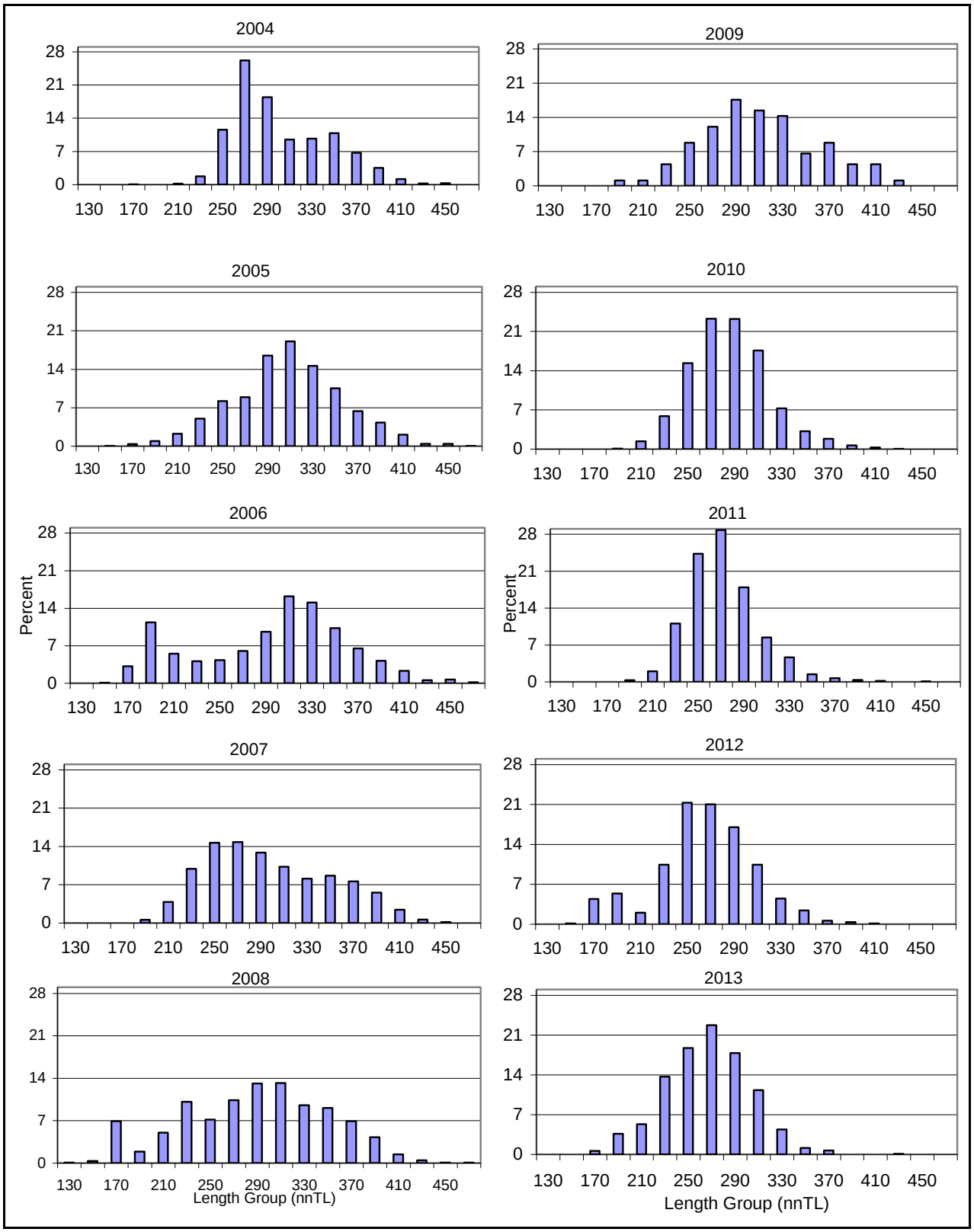

Figure 1. Atlantic croaker length frequency distributions from onboard pound net sampling, 2004-2013.

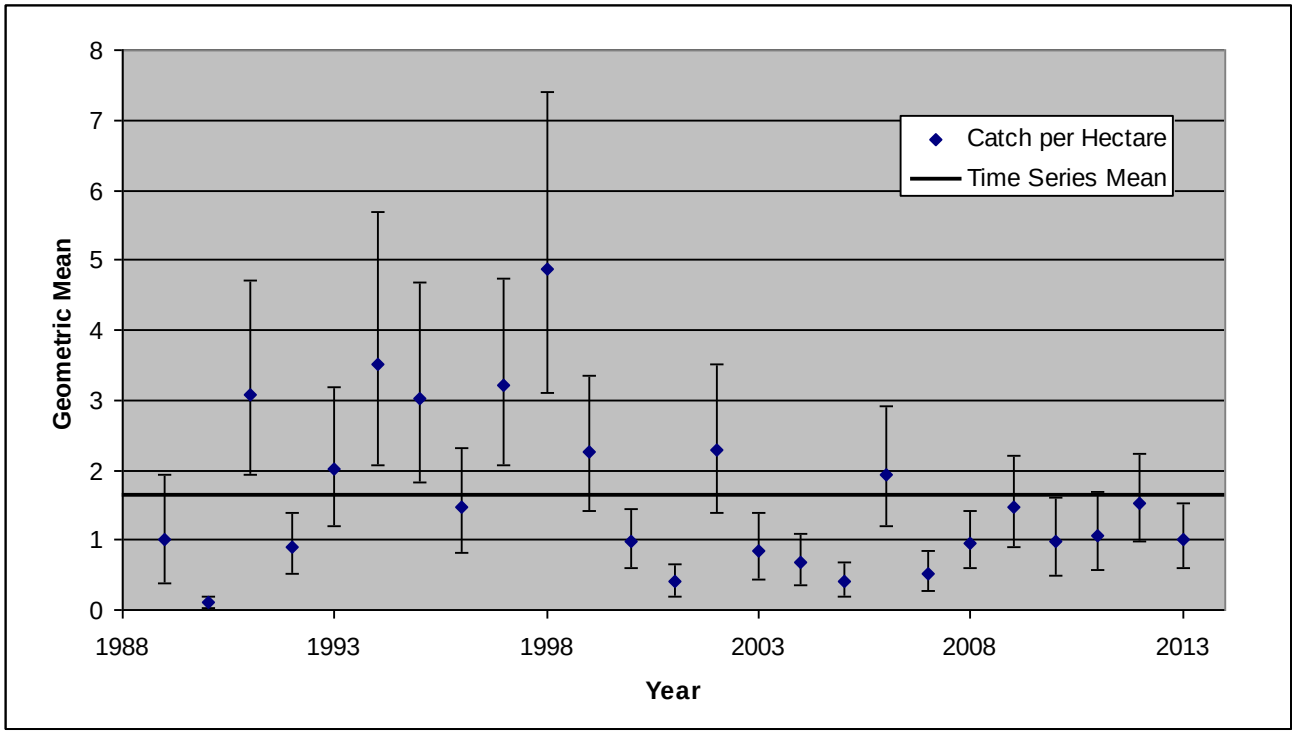

Figure 2. Coastal bay trawl juvenile Atlantic croaker annual geometric mean catch per hectare, upper and lower 95% confidence limits and time series mean, 1989-2013.

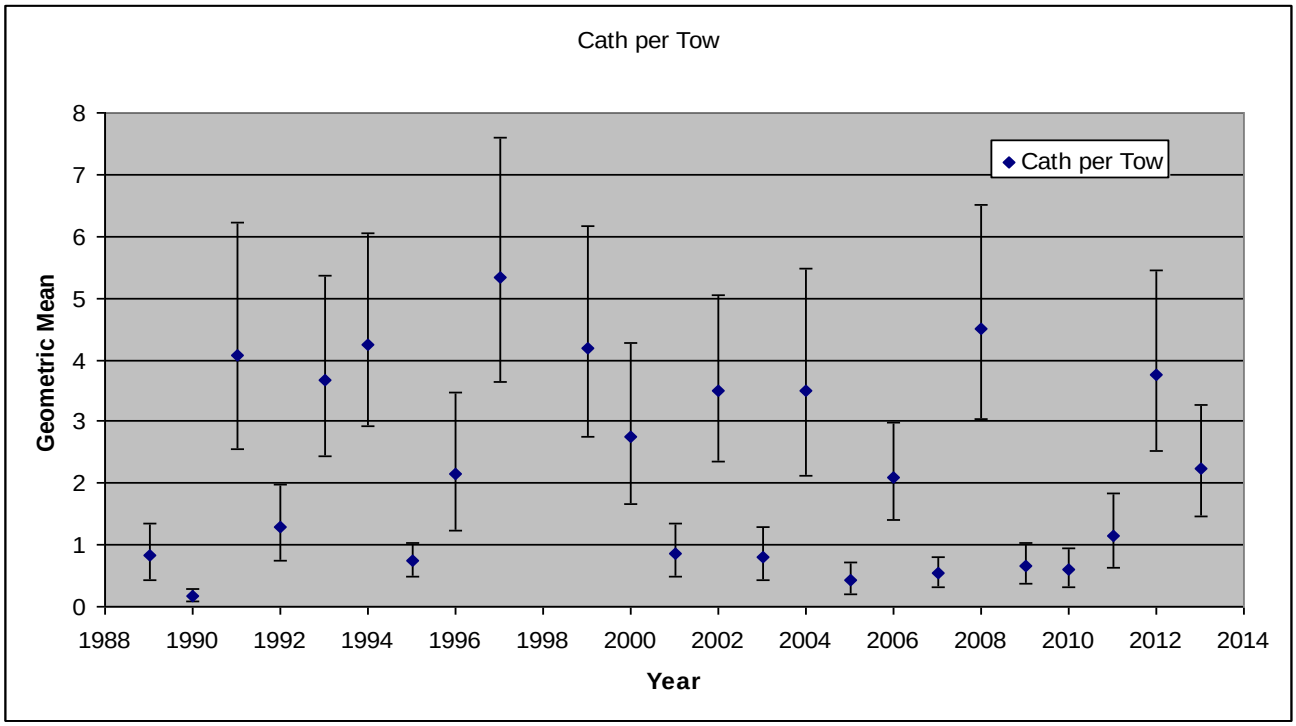

Figure 3. Maryland juvenile Atlantic croaker annual geometric mean catch per trawl and 95% confidence intervals for Maryland's lower Chesapeake Bay, 1989 – 2013. The 1998 value of 30.05 Atlantic croaker per tow was omitted to preserve the scale of the graph.

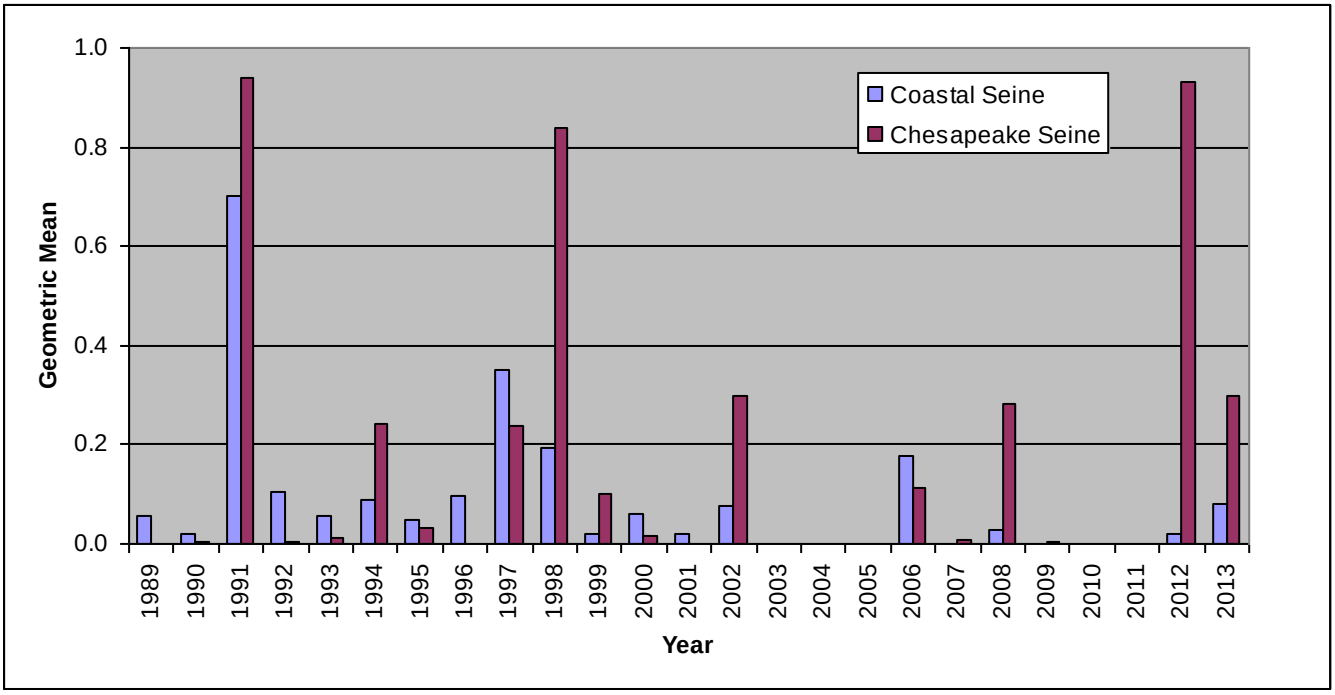

Figure 4. Geometric mean catch per haul for juvenile croaker derived from two seine surveys in Maryland, 1989-2013.

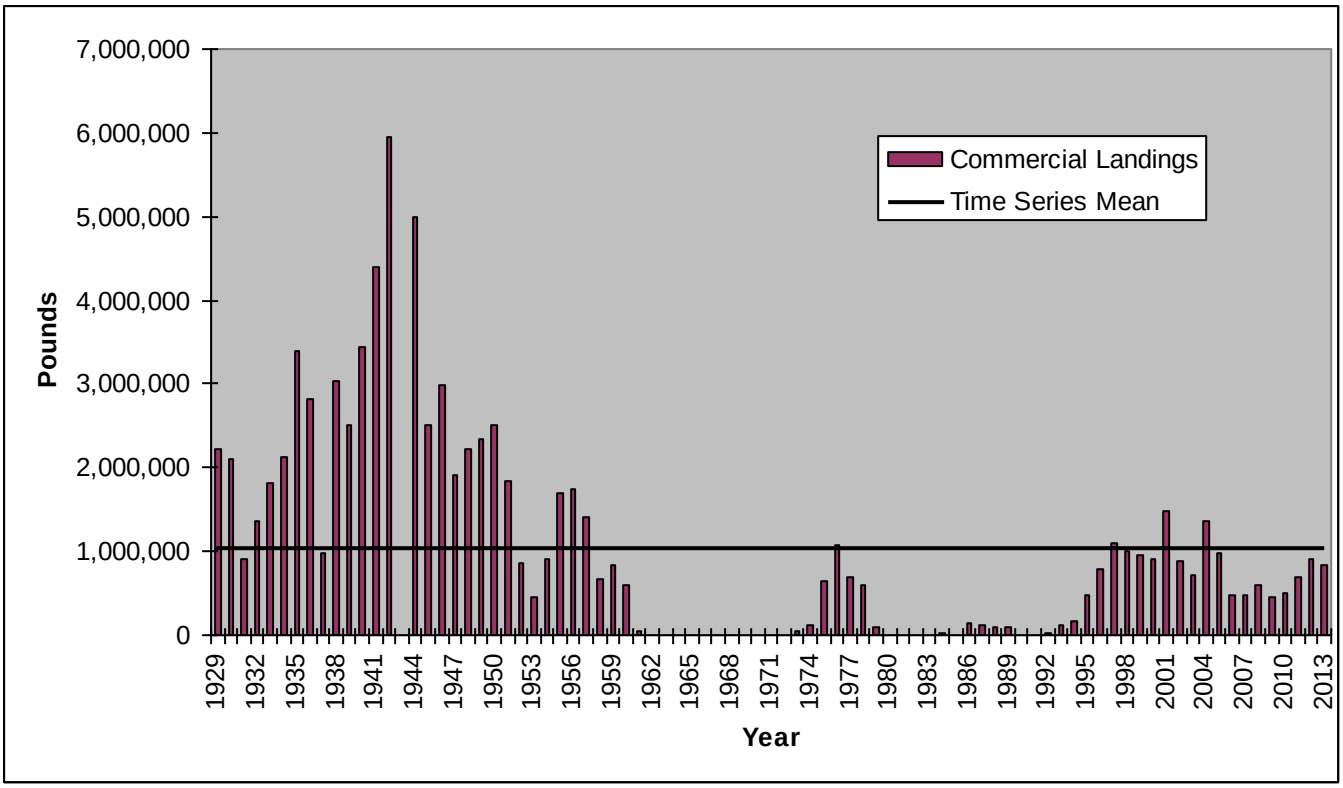

Figure 5. Maryland commercial landings from 1929 – 2013 (2013 landings preliminary) and time series mean.

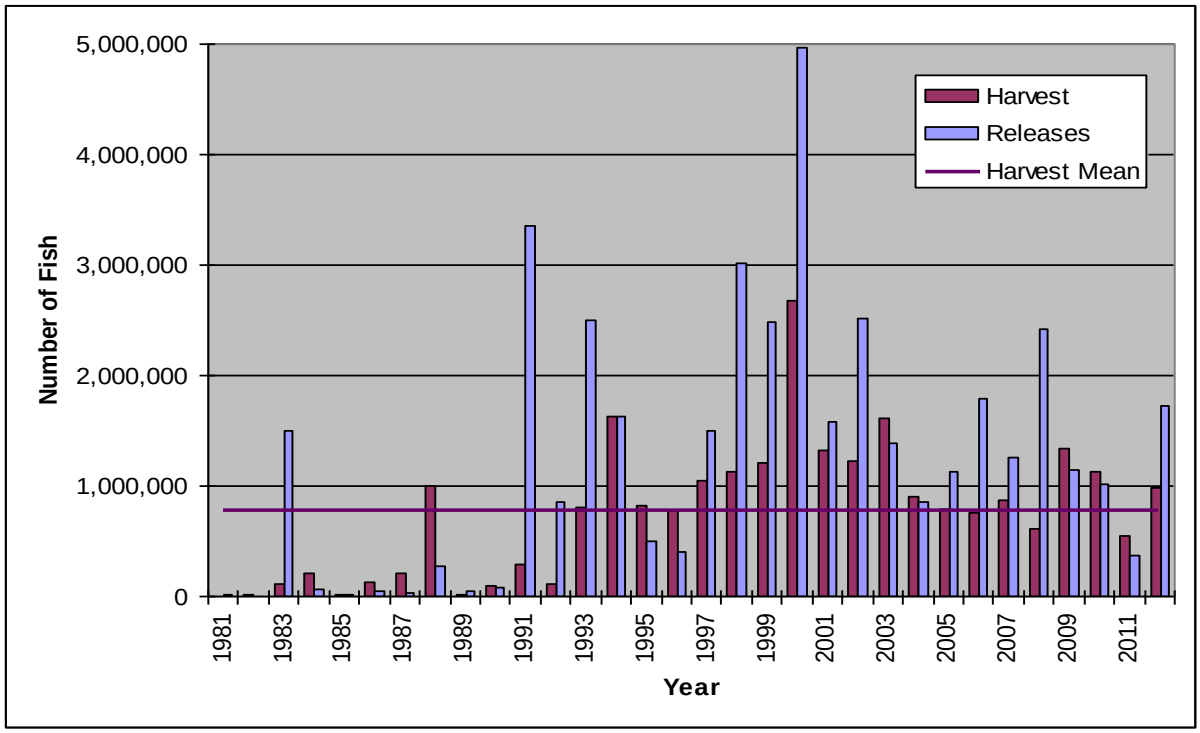

Figure 6. Recreational MRIP Atlantic Croaker harvest estimates, release estimates and harvest time series mean for Maryland waters, 1981-2013.

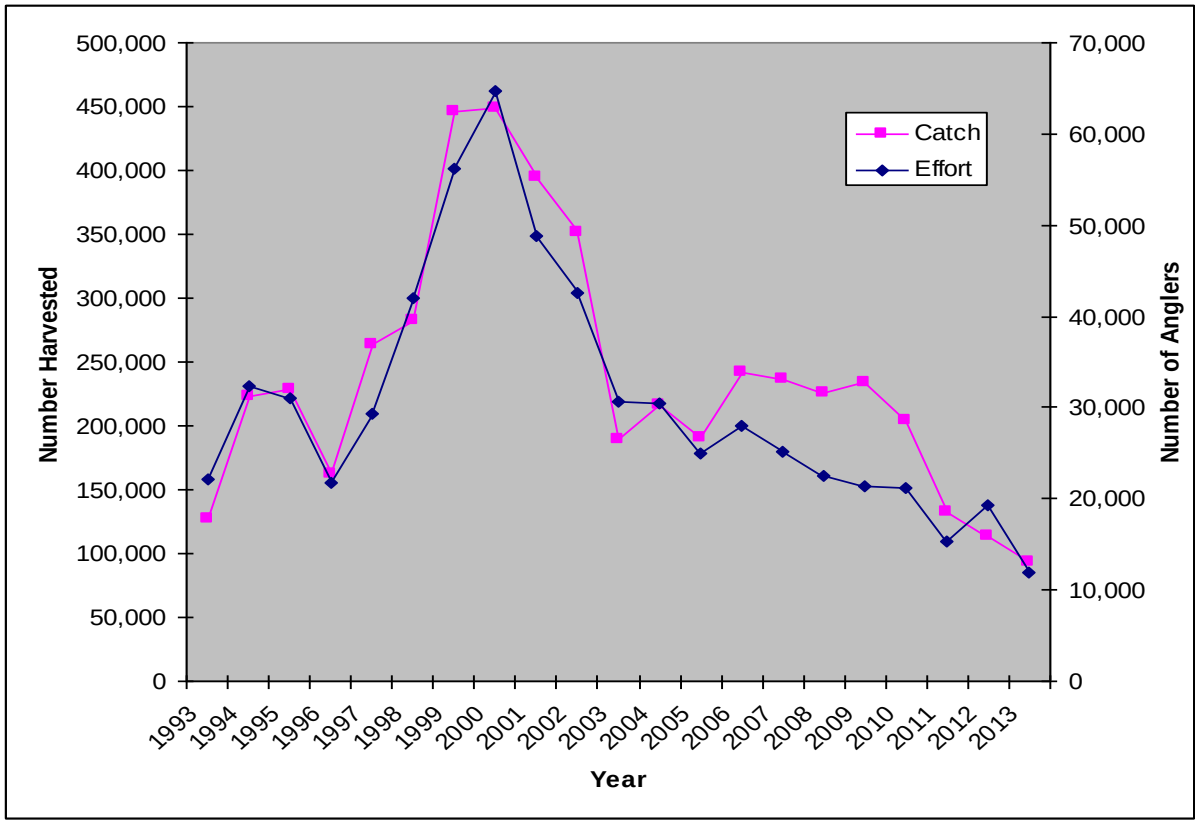

Figure 7. Maryland charter boat Atlantic croaker harvest and number of anglers, 1993-2013.

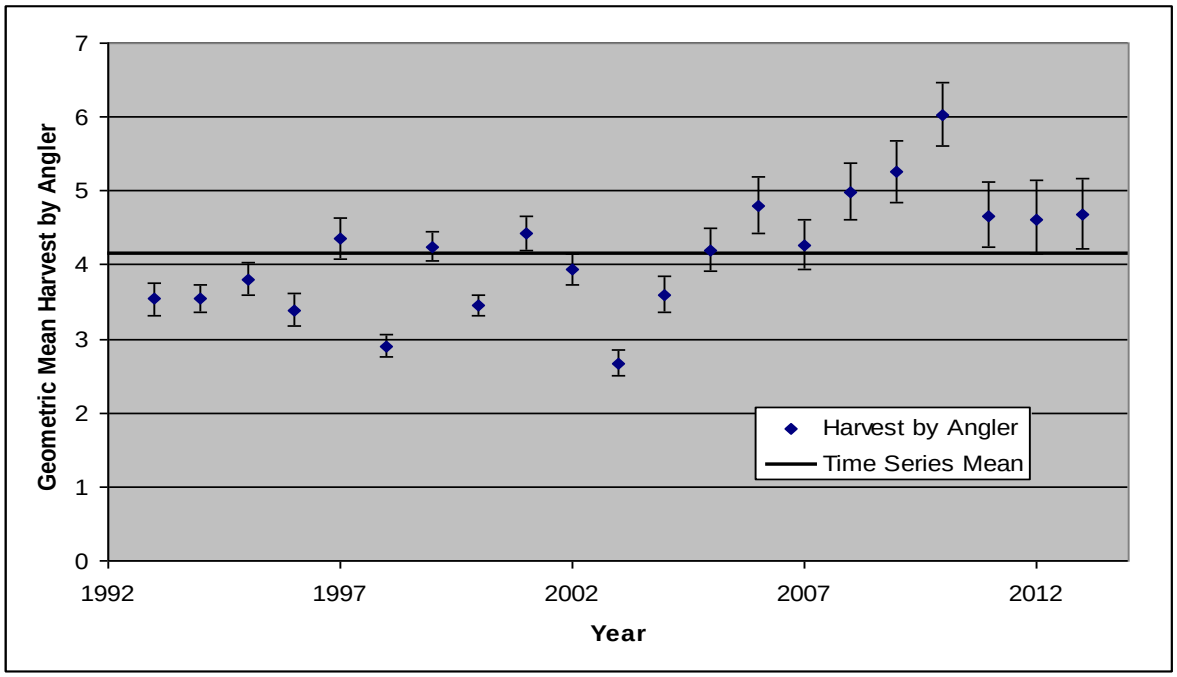

Figure 8. Maryland charter boat Atlantic croaker harvest geometric mean catch per angler, 95% confidence intervals and time series mean, 1993-2013.

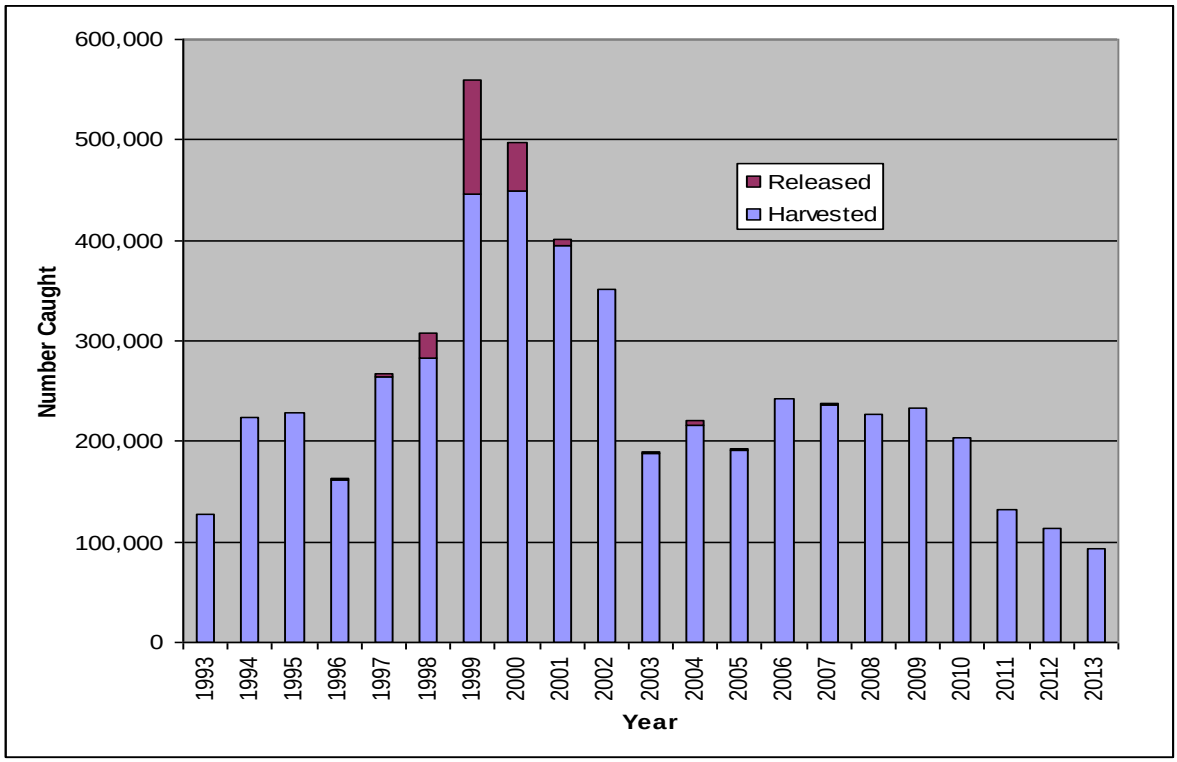

Figure 9. Number of reported Atlantic croaker harvested and released from Maryland charter boat logs, 1993-2013.

MARYLAND - VIRGINIA
"Potomac River Compact of 1958"
Potomac River Fisheries Commission
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ATLANTIC CROAKER
2013 Annual Compliance Report
June 1, 2014

I. Introduction

Commercial harvest of Atlantic croaker in the Potomac River in 2013 was the lowest reported harvest since 1992. The annual juvenile abundance survey reported that the YOY geometric mean index increased slightly to 0.48 in 2013.

II. Request *de minimis,* where applicable – N/A

III. Previous calendar year's fishery and management program

A. Fishery Dependent Monitoring

Pound nets are the primary commercial gear for Atlantic croaker. Haul seines, fyke nets, and several miscellaneous gear types can occasionally contribute to the total croaker harvest. The PRFC has a mandatory commercial harvest daily reporting system.

B. Fishery Independent Monitoring

Maryland DNR personnel have conducted an annual juvenile abundance survey since 1954. Atlantic croaker data has been recorded from 1959 to present. Fixed stations and some auxiliary stations are used each year for a beach haul seine survey in which the juveniles of all species encountered are identified and recorded. The YOY geometric mean index has been at zero (2009-2011), but increased to 0.41 in 2012 and to 0.48 in 2013 (Figure 2). For further details, refer to the MD DNR web site:
http://www.dnr.state.md.us/fisheries/juvindex/index.html

C. Regulations in Effect

The commercial pound net season was February 15 through December 15. There were no size or harvest limits.

In 2011, it became mandatory for pound netters to properly install six PRFC approved fish cull panels in the side panels of their pound nets. Studies have shown that small croaker are released alive when the fish cull panels are used.

The recreational Atlantic croaker season was January 1 through December 31. There was no size limit and the catch limit was 25 fish per person per day.

D. Harvest

Commercial Atlantic croaker harvest in 2013 totaled 130,285 pounds, the lowest value since 1992 (Table 1). This estimate is from the PRFC's mandatory commercial daily harvest

reporting system. The pound net fishery effort is expressed as "PN fished days" which is one pound net fished one time. The fyke net fishery effort is expressed as "FN fished days" which is one fyke net fished one time. The haul seine fishery effort is expressed as "hauls" and is one-fishing of the haul seine. The hook and line effort is expressed as "hours" fished. Miscellaneous gear effort is expressed as "gear days".

Harvest (lbs)	Gear	Effort
123,342	Pound Net	842 PN fished days
5,413	Miscellaneous	66 gear days
1,322	Haul Seine	8 hauls
188	Fyke Net	27 FN fished days
20	Hook & Line	9 hours

For the private recreational fishery, results are reported and included as either MD or VA catches. Contact information is supplied to the NOAA For Hire Survey for all charter boats licensed to operate in the Potomac.

E. Losses

The PRFC's mandatory commercial harvest daily reporting system collects harvest data as well as discards or releases. In 2013, pound net fishermen in the Potomac reported releasing 6,500 pounds of juvenile croaker. The pound net fish cull panels also release small croaker before the net is fished; therefore an unknown amount of small fish were released/escaped from the net and were not reported. In addition, juvenile croaker were released by fish potters (5 lbs.), fyke netters (18 lbs.) and fish trot liners (10 lbs.).

Tables and Figures:

Table 1 shows the Potomac River commercial harvest of Atlantic croaker by gear type from 1964 through the reporting year.
Figure 1 illustrates the Potomac River commercial Atlantic croaker harvest.
Figure 2 illustrates the Potomac River geometric mean for young-of-year croaker.

IV. Planned management programs for the current calendar year

A. Summarize regulations that will be in effect

The pound net fishery is a limited entry fishery, with a maximum of 100 licenses on a total riverwide basis. A pound net is defined as a fixed fishing device with one head, trap or pound measuring not less than 20 feet square at the surface of the water on the channel end and only one leader or hedging not less than 300 feet in length. We have no specific regulations for Atlantic croaker.

Regulation effective January 1, 2011 – all pound nets in the Potomac River must have at least six PRFC approved fish cull panels properly installed in each pound net to help release undersize fish. These fish cull panels were being used by some pound netters on a voluntary basis prior to 2011. Tests have shown that when these cull devices are used, 100 percent of croaker less than nine inches were released alive.

B. Monitoring programs

We expect MD will continue the annual juvenile abundance survey. We will continue our mandatory daily harvest reports.

C. Any changes from the previous year - None

Table 1

Potomac River Commercial Harvest (lbs) for CROAKER by gear type

YEAR	HAUL SEINE	POUND NET	FYKE NET	GILL NET	H & L	MISC.	LBS. LANDED IN MARYLAND	LBS. LANDED IN VIRGINIA	TOTAL
1964	-	-	-	-	-	3,012	-	3,012	3,012
1965	-	-	-	-	-	11,784	-	11,784	11,784
1966	-	-	-	-	-	6,906	110	6,796	6,906
1967	-	-	-	-	-	16,840	166	16,674	16,840
1968	-	-	-	-	-	-	-	-	-
1969	-	-	-	-	-	-	-	-	-
1970	-	-	-	-	-	1,010	-	1,010	1,010
1971	-	-	-	-	-	50	-	50	50
1972	-	-	-	-	-	1,505	-	1,505	1,505
1973	-	-	-	-	-	3,756	29	3,727	3,756
1974	-	-	-	-	-	5,124		5,124	5,124
1975	-	-	-	-	-	41,660	1,594	40,066	41,660
1976	30,905	250,570	-	-	-	-	36,781	244,694	281,475
1977	468	1,251,270	-	4,912	-	-	20,013	1,236,637	1,256,650
1978	-	351,568	-	54	-	69	1,729	349,962	351,691
1979	-	55,138	-	-	-		84	55,054	55,138
1980	2,024	182,092	-	-	-		2,089	182,027	184,116
1981	-	648	-	-	-	-	67	581	648
1982	-	188	-	-	-	-	44	144	188
1983	-	1,549	-	-	-	-	115	1,434	1,549
1984	30,139	43,562	-	-	-	-	24,714	48,987	73,701
1985	374	19,447	-	33	-	-	1,087	18,767	19,854
1986	4,430	94,498	-	25	420	-	12,802	86,571	99,373
1987	18,480	84,211	-	-	-	-	20,738	81,953	102,691
1988	-	12,791	-	-	5	-	901	11,895	12,796
1989	21	5,558	-	-	0	-	1,179	4,400	5,579
1990	-	5,115	-	-	0	-	396	4,719	5,115
1991	-	996	-	-	0	-	55	941	996
1992	-	17,684	-	-	8	8	1,512	16,180	17,692
1993	9,113	253,331	-	-	31	7	85,811	176,671	262,482
1994	3,873	236,350	27	-	8	13	62,239	178,032	240,271

Table 1 continued

Potomac River Commercial Harvest (lbs) for CROAKER by gear type

							LBS. LANDED IN		
YEAR	HAUL SEINE	POUND NET	GILL NET	FYKE NET	H & L	MISC.	MARYLAND	VIRGINIA	TOTAL
1995	417	605,244	-	22	334	167	58,426	547,758	606,184
1996	-	1,426,949	-	67	269	-	378,490	1,048,795	1,427,285
1997	602	1,517,044	-	521	29	-	558,386	959,810	1,518,196
1998	965	607,347	70	2,280	74	149	264,266	346,619	610,885
1999	106	1,189,266	25	335	335	71	609,238	580,900	1,190,138
2000	9,649	1,794,411	2	5,387	252	2,429	572,073	1,240,057	1,812,130
2001	14,260	1,940,177	-	7,848	683	326	705,840	1,257,454	1,963,294
2002	232	1,412,828	3	1,679	59	6,293	574,739	846,355	1,421,094
2003	604	1,114,131	-	10,431	506	2,331	799,902	328,101	1,128,003
2004	922	1,625,702	-	4,158	72	742	1,241,669	389,927	1,631,596
2005	-	480,142	-	1,461	72	237	388,378	93,534	481,912
2006	65	669,277	-	603	-	331	516,730	153,546	670,276
2007	172	186,278	-	483	6	1,628	109,951	78,616	188,567
2008	16	336,454	-	571	-	21	253,025	84,037	337,062
2009	1,643	229,908	-	167	27	2,356	148,395	85,706	234,101
2010	1,825	156,882	-	1,010	630	2,224	85,996	76,575	162,571
2011	6,192	224,668	-	1,062	60	11,214	89,234	153,962	243,196
2012	3,952	243,878	-	24	224	25,771	175,774	98,075	273,849
2013	1,322	123,342	-	188	20	5,413	43,345	86,940	130,285

Figure 1

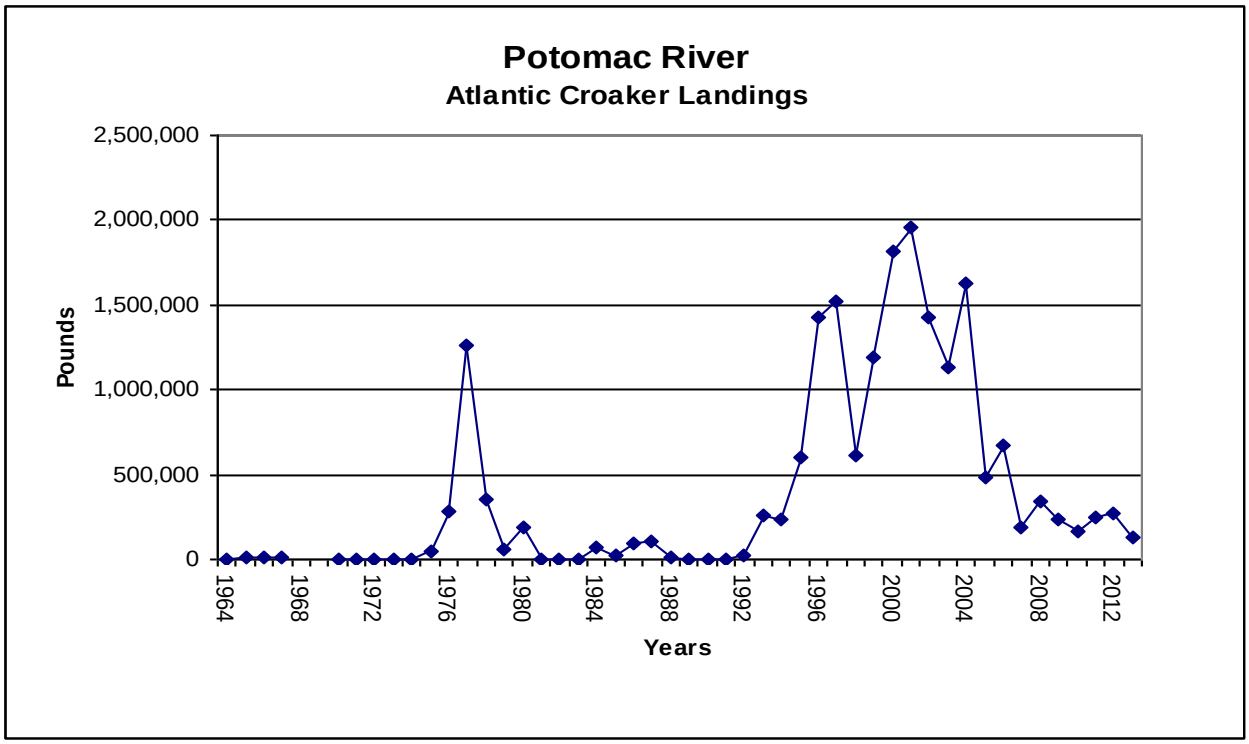
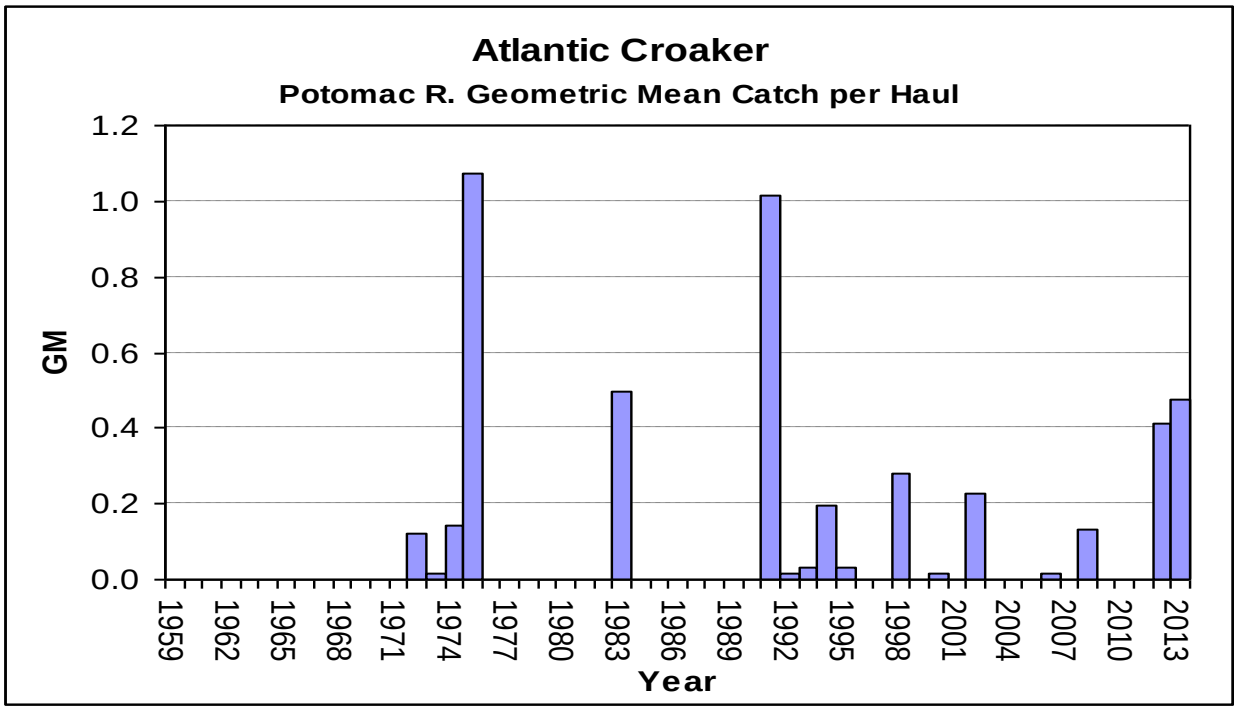


Figure 2 - MD DNR state wide annual young of the year survey



COMMONWEALTH of VIRGINIA

Marine Resources Commission
2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

Molly Joseph Ward
Secretary of Natural Resources

John M.R. Bull
Commissioner

July 1, 2014

MEMORANDUM

TO: Kirby Rootes-Murdy, Atlantic Croaker FMP Coordinator
Atlantic States Marine Fisheries Commission

FROM: Adam B. Kenyon, Biological Sampling Program Manager,
Virginia Marine Resources Commission

SUBJECT: Virginia's 2014 Atlantic Croaker Compliance Report
Note: Table 4, referenced in this report, contains confidential data.

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1. Introduction

Summary of the year: highlight any significant changes in monitoring, regulations, or harvest.

Virginia continued its collection of biological data from commercial fisheries. A sample of 7,305 total lengths was collected in 2013. For age determination, 450 Atlantic croaker were sampled in 2013, and an average of 376 Atlantic croaker has been sampled, for age, per year, since 1998 (Table 1).

Commercial landings in 2013 (6,621,836 pounds) were slightly lower than in 2012 (6,963,815 pounds) and below the long-term average of 9,594,777 pounds (1994 through 2012) (Table 4, *Contains confidential data*). The 2013 Marine Recreational Information Program (MRIP) estimate for Virginia recreational landings (A+B1) is 2,221,747 pounds, below the 2004 through 2012 MRIP average landings estimate of 4,696,312 million pounds (Table 5-7).

Delta-lognormal stratified index values for Atlantic croaker young-of-year relative abundance estimates based on the spring recruitment window of April through June are provided by the Virginia Institute of Marine Science (VIMS). The 2013 croaker index value was 16.665 which was down from the 2012 value of 56.201 (Table 3).

No direct changes in management measures or regulatory requirements occurred in 2013 or are planned for 2014.

2. There is no request for *de minimis,* by the VMRC.

3. Previous calendar year's fishery and management program

   a. Activity and results of fishery-dependent monitoring (provide general results and references to technical documentation).

      Tables 1 and 2 characterize the collections of biological data from Atlantic croaker fisheries in Virginia. Table 1 provides a summary of the numbers of Atlantic croaker measured for length and weight, the number of fish sexed, and the number of fish that were aged based on otoliths. Please note that age data collections began in 1998, under a cooperative agreement between the Old Dominion University (ODU) Center for Quantitative Fisheries Ecology and the VMRC. Table 2 provides seasonal information on length and age collections, according to sampled commercial gear types.

   b. Activity and results of fishery-independent monitoring (provide general results and references to technical documentation).

      Relative abundance index values for Atlantic Croaker young-of-year are based on catches from the Virginia Institute of Marine Sciences (VIMS) Trawl Survey in April, May, and June. A 'mean all' value, using all strata in the Bay and rivers, and a 'mean rivers' value, using only river strata, are provided. The 2013 croaker index value was 16.665 which was down from the 2012 value of 56.201 (Table 3). The 2013 value, representing the 2012 year class, is the seventh highest on record, since the survey began in 1988.

   c. Copy of regulations that were in effect, including a reference to the specific compliance criteria as mandated in the FMP.

      At this time, there is no regulation in effect or required by the ASMFC. Trawling within Virginia waters has been banned since July 1, 1989.

   d. Harvest broken down by commercial (by gear type where applicable) and recreational, and non-harvest losses (when available).

      Gill net, pound net, and haul seine harvests accounted for 34.3%, 23.2%, and 20.0% of the 2013 landings, respectively (Table 4, *Contains confidential data*). In 2013, 59% of the landings occurred during the months of June through September.

      The 2013 estimate of Virginia's recreational landings (A+B1) for Atlantic croaker in terms of weight was 2,221,747 pounds (Table 5). Recreational landings have declined over the last seven years from a high of 7,137,432 pounds in 2006 to a low of 1,761,731

pounds in 2011 (Table 5). Virginia's recreational landings of Atlantic croaker, in terms of numbers, was 4,278,568 fish, 31% less than the average annual landings over the 2004 through 2012 time-period (Table 6).

Non-harvest losses from the commercial fishery are not monitored by the VMRC. However, the gill net fishery utilizes mesh sizes that select for marketable fish. The number of Atlantic croaker released alive by the recreational fishery in 2013 was 5,961,193 fish (Table 7).

e. Review of progress in implementing habitat recommendations.

Locations of juvenile Atlantic croaker are known from the monthly trawl surveys performed by the VIMS. Both the Juvenile Fish and Blue Crab Trawl Survey and the CHESMMAP Trawl Survey of adult fishes and the VMRC field collection program have compiled data, concerning the locations (habitats) of adult Atlantic croaker.

The VMRC collaborates with other state agencies (VIMS, Department of Environmental Quality, ODU, and the Department of Health) as part of a Harmful Algal Bloom Response Team Network that monitors and assesses hypoxic and other water quality events. The Department of Environmental Quality is the lead agency for investigating fish kill events and the Harmful Algal Bloom Response Team Network, and collaborates with VMRC on these events.

All permit applications for dredging undergo a joint permit application process involving federal and state agencies, including the VMRC, and are gauged against habitat requirements for fisheries resources.

4. Planned management programs for the current calendar year

a. Summarize regulations that will be in effect (copy of current regulations if different from 3c.

No change.

b. Summarize monitoring programs that will be performed.

Fishery-dependent (VMRC) and fishery-independent (VIMS trawl survey and ChesMMAP) collections will continue, as in 2013.

c. Highlight any changes from the previous year.

No change.

North Carolina Department of Environment and Natural Resources

Division of Marine Fisheries

North Carolina Atlantic Croaker Compliance Report for 2013

Daniel Zapf
North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries
943 Washington Square Mall
Washington, NC 27889

July 1, 2014

I. INTRODUCTION

In 2013, 5,629 commercial trips harvested 1,928,637 lbs. of Atlantic croaker valued at $1,724,423 in North Carolina. Compared to 2012, landings decreased by approximately 38%, while the number of trips increased 6%. The increase in trips comes primarily from estuarine gill nets (a low volume fishery). In North Carolina, commercial landings have declined each year from 2003 to 2008, increased in 2009 and 2010, and then declined again in 2011, 2012 and 2013. The recent decrease in landings is just 27% of the 10-yr average (7,092,253 lbs.). The decrease in commercial landings from 2011 - 2013 is likely the result of decreased effort in the ocean fly net fishery caused by shoaling in Oregon Inlet. The fly net fishery is a high volume fishery and typically accounts for over 50% of commercial Atlantic croaker landings. Recreational harvest (141,880 lbs.) accounts for 7% of the total state croaker landings and increased 34% when compared to 2012. During 2013 there were no changes to regulations or monitoring programs, specifically for Atlantic croaker.

II. REQUEST FOR DE MINIMIS

North Carolina does not request *de minimis* status for 2013.

III. 2013 FISHERY AND MANAGEMENT PROGRAM (Atlantic Croaker Plan Specific)

A. FISHERY DEPENDENT MONITORING

Directed Commercial Harvest

Four gear types (gill nets, fly nets, flounder trawl, and haul seines) are used in directed commercial trips and harvest of Atlantic croaker, and account for approximately 99% of the total landings. In 2013, 5,629 commercial trips harvested 1,928,637 lbs. of Atlantic croaker valued at $1,724,423 in North Carolina. These catches are reported by the North Carolina Trip Ticket Program, a fishery-dependent program initiated by the North Carolina Division of Marine Fisheries (NCDMF) in 1994. The program was designed to better assess fisheries with more detailed harvest data.

A trip ticket is the form used by fish dealers to report commercial landings information. Trip tickets collect information about the fisherman, the dealer purchasing the product, the transaction date, crew number, area fished, gear used and the quantity of each species landed for each trip. Some trip tickets also collect the species of shrimp landed and disposition (heads on/off), the state of catch, bottom type (public or leased) and lease number. Each month, dealers are required to send these forms to the NCDMF for processing (http://portal.ncdenr.org/web/mf/46).

Commercial fishing activity is monitored through fishery-dependent sampling conducted under Title III of the Interjurisdictional Fisheries Act and has been ongoing since 1982. Data collected in this program allows the size distribution of Atlantic croaker to be characterized by gear/fishery (Assessment of North Carolina Commercial Finfish Fisheries, Completion Reports 1984-2013, North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries). Further sub-sampling is conducted to procure samples for age determination (sectioned otoliths), sex ratio, reproductive condition, and weight (Survey of Population Parameters of Marine Recreational Fishes in North Carolina. Completion Report Project F-42 Segments, North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries).

Recreational Harvest Estimate

Marine Recreational Information Program (MRIP)

The MRIP consists of two complementary surveys: 1) a telephone survey of households in coastal counties to get trip information and 2) an intercept survey of anglers at shore side access sites to obtain catch rates and species composition. The data from the two surveys are combined to provide estimates of the total number of fish caught, released, and harvested; the weight of the harvest; the total number of trips; and the number of people participating in marine recreational fishing. In 2013, an estimated 525,173 directed recreational trips harvested 141,882 lbs. (PSE=13.6) of Atlantic croaker.

Recreational Commercial Gear License (RCGL)

Commercial fishing gears such as gill nets, crab pots, and shrimp trawls have been used for recreational purposes in the coastal waters of North Carolina for many years. The use of these types of gears provides pleasure and a source of sustenance for both North Carolina residents as well as individuals from other states. To participate in these activities the user must possess a RCGL that entitles the individual to use limited amounts of commercial gear to catch fish for personal consumption but does not allow for sale of the catch. The RCGL survey was discontinued in 2009 due to budget cuts.

B. FISHERY INDEPENDENT MONITORING

North Carolina has no current fishery-independent monitoring programs specifically for Atlantic croaker. However, the NCDMF has conducted a stratified random trawl survey in Pamlico Sound (Pamlico Sound Survey, Program 195) since 1987 to obtain juvenile abundance indices (JAI) for several economically important species, including Atlantic croaker. The 2013 Atlantic croaker JAI (mean number of individuals/tow) was 571 (2012 JAI=1,142). The JAI for 2012 was the second highest recorded in North Carolina (2010 JAI=1,185 was the highest). From 2004-2013 the average JAI was 431.

C. REGULATIONS IN EFFECT (INCLUDING CRITERIA MANDATED BY FMP)

Commercial Regulations

There are no direct restrictions on the commercial harvest of Atlantic croaker within coastal, joint, or inland waters of NC. There are however numerous indirect restrictions that effect the commercial harvest and bycatch of Atlantic croaker in North Carolina (coastal and joint waters Table 1, inland waters

Table 2). Atlantic croaker has nongame fish status in inland waters and a noncommercial special device license is required if three (3) or fewer special devices are used regardless of purpose (commercial or recreational).

Table 1. NC commercial fishery restrictions that indirectly affect the harvest and bycatch of Atlantic croaker in **coastal and joint waters**.

Action	**Proclamation/Rule**	**Year**
Area restrictions and incidental finfish limits taken by shrimp and crab trawls in inside waters limit these gears from having no more than 500 pounds of finfish from December 1 through February 28 and 1,000 pounds of finfish from March 1 to November 30.	Rule: 15A NCAC 3J .0104(a)	1991
Finfish taken in shrimp and crab trawls in the Atlantic Ocean. It is unlawful to possess finfish incidental to shrimp or crab trawl operations from December 1 through March 31 unless the weight of the combined catch of shrimp and crabs exceeds the weight of finfish.	Rule: 15A NCAC 3J .0202 (5)(a)	1997
Limits the catch of unclassified bait to 5,000 lbs. per vessel per day	Rule: 15A NCAC 3M .0162	
Establish a minimum mesh size restriction in shrimp trawls (1 ½" tail bag) and crab trawls (3").	Rule: 15A NCAC 03L .0103 and .0202	
Limit head rope length internally to 90 feet and establish shrimp trawl prohibited areas	Rule: 15A NCAC 03L. 0103 &15A NCAC 03R. 0114	2006
Bycatch reduction devices (BRDs) required in all shrimp trawls.	Proclamation and consent of the MFC. Rule: 15A NCAC 3J .0104	
Increase minimum mesh size restrictions for crab trawls to 4" in western Pamlico Sound.	By proclamation. (NC southern flounder FMP) Rule: 15A NCAC 03L .0202	2005 2014
Minimum mesh size for fly nets. A minimum stretched mesh length of less than 3" hung on the square or 3 ½" hung on a diamond. Fly nets are defined as nets having the first body (belly) section consisting of 35 or more continuous meshes of 8" or greater (stretched mesh) webbing behind the bottom and top line with tail bags less than 15 feet in length. Tail bags constructed of square mesh may have the terminal 3 feet of mesh hung on a diamond with a minimum stretched mesh length of 2".	Proclamation: FF-26-92 (ASMFC Weakfish FMP)	
Closure of ocean waters south of Cape Hatteras to the SC State line to fly nets.	Proclamation: FF-18-94 Rule:15A NCAC 3J .0202 (4)	1994
No person may possess aboard or land from any vessel using a fly net more than 100 pounds of weakfish during any one day or trip, whichever is longer, in state waters or within 200 miles of the shore in the Atlantic Ocean.	Proclamation: FF-14-96 (Revised FF-66-2010) (implement restrictions required to comply with Addendum IV of Amendment 4	1996

Action	Proclamation/Rule	Year
The weight of the weakfish possessed shall not exceed 10% of the combined catch up to 100 pounds of weakfish, unless all fly nets onboard meet the following requirements: 1) The fly net has a large mesh in the wings that measure 8" to 64" (inside stretched mesh length; and 2) The first body section (belly) of the net has 35 or more meshes that are at least 8 inches (inside stretched mesh length); 3) Mesh decreases in size throughout the body of the net to a tail bag of a minimum length of 15 feet in length with a minimum inside stretched mesh length of 3 ½" hung on the square or 3 ¾" hung on a diamond. 4) Tail bags constructed of square mesh may have the terminal three feet constructed of material hung on a diamond with a minimum inside stretched mesh length of 2".	of the ASMFC weakfish FMP)	
Mandatory use of long haul cull panels and swipe nets south/west of a line from Bluff Point in Pamlico Sound to Ocracoke Island.	Rule: 15A NCAC 3J .0109 (3)	1999, 2004
No person may possess aboard or land from, any vessel using or having on board a gill net with a mesh length less than 2 7/8 inches stretched mesh, more than 100 pounds of weakfish during any one day or on any trip, whichever is longer, in state waters or within 200 miles of the shore in the Atlantic Ocean. The weight of weakfish possessed shall not exceed 10% of the total weight of the combined catch up to 100 pounds of weakfish.	Proclamation: FF-14-96 (Revised FF-66-2010) (implement restrictions required to comply with Addendum IV of Amendment 4 of the ASMFC weakfish FMP)	1996
Small mesh (< 5") estuarine gill net attendance requirements from May 1 to November 30 in select areas in inside waters. Also the small mesh gill net attendance requirement extended to include weekends, December through February under spotted seatrout FMP.	Rule: 15A NCAC 3J .0103 (h) (NC red drum and spotted seatrout FMPs)	1998, 2008, 2010
Authorized gear allowed and restrictions applied to the Recreational Commercial Gear License. Modified 2008 to allow mechanical retrieval of shrimp trawl.	Rule: 15A NCAC 3O .0302	1999, 2008
Inside large mesh gillnets (excluding strike nets) which are defined as: $\geq$ 4 in through 6 ½ in. stretch mesh, protective turtle restrictions are: Restrict the number of days during the week	Proclamation M-8-2010	2010

Action	Proclamation/Rule	Year
that fishermen could operate (Mon – Fri) and limit soak times to night time. Establish a maximum yardage limit of 2,000 yards. Nets must be deployed as low profile with a net height of no more than 15 meshes, all cork and other buoys removed except as required for identification, and set in individual 100-yard shots with at least a 25-yard break between individual shots. Provide observer coverage of gill nets		
Exempts portions of Croatan and Roanoke sounds and all of Albemarle and Currituck sounds and their tributaries and the Neuse, Bay, and Pamlico rivers from actions of Proclamation M-8-2010 above. Closes Southern Core Sound, Back Sound, the Straits, North River and tributaries to large mesh gill nets from April 1 through November 30, 2012.	Proclamation M-28-2012	2012
Exempt areas in Pamlico, Bay, and Neuse rivers (Proclamation M-28-2012) must check gill nets at least once during a 24 hour period no later than noon each day.	Proclamation M-52-2012 (NC Southern Flounder FMP)	2012
Exempt areas in Pamlico, Bay, and Neuse rivers (Proclamation M-28-2012) limited to no more than 2,000 yards of large mesh gill net per vessel	Proclamation M-3-2013 (NC Southern Flounder FMP)	2013
In Deer and Schoolhouse (Rocky Run) creeks from October 1 through March 31: Unlawful to use gill nets or seines from 8:30pm to sunrise. Unlawful to use a gill net or seine more than 200 yards in length. Gill nets and seines must have reflective markers every 50 yards on top line or cork line of nets. Nets shall be attended at all times to facilitate movement of nets so as not to obstruct navigation.	Proclamation M-9-2013	2013
Closes Southern Core Sound, Back Sound, the Straits, North River and tributaries to large mesh gill nets from May 8 through October 14, 2013.	Proclamation M-12-2013	2013

Table 2. NC commercial fishery restrictions that indirectly affect the harvest and bycatch of Atlantic croaker in inland waters.

Action	Proclamation/Rule	Year
Nongame fishes, except alewife and blueback herring (greater than six inches in length) and bowfin, taken by hook and line, grabbling or by licensed special devices may be sold. Alewife and blueback herring less than 6 inches in length may be sold except in those waters specified in Paragraph (d) of Rule .0402 of this Section, where their possession is prohibited	Rule: 15A NCAC 10C .0401 (b)	?
Game fishes and their young taken while netting for bait shall be immediately returned unharmed to the water	Rule: 15A NCAC 10C .0402 (c)	?
Except in designated public mountain trout waters, and in impounded waters located on the Sandhills Game Land, there is a year-round open season for the licensed taking of nongame fishes by bow and arrow. The use of special fishing devices in impoundments located entirely on game lands is prohibited. Seasons and waters in which the use of other special devices is authorized are indicated by counties below:	Rule: 15A NCAC 10C .0407 (b)	?

Recreational Regulations

Hook and Line

Currently there are no direct recreational restrictions on the harvest of Atlantic croaker within coastal, joint, or inland waters of North Carolina.

RCGL

15A NCAC 3O .0302: AUTHORIZED GEAR FOR RCGL
(a) The following are the only commercial fishing gear authorized (including restrictions) for use under a valid Recreational Commercial Gear License:

(1) One seine 30 feet or over in length but not greater than 100 feet with a mesh length less than 2 1/2 inches when deployed or retrieved without the use of a vessel or any other mechanical methods. A vessel may be used only to transport the seine;
(2) One shrimp trawl with a head rope not exceeding 26 feet in length per vessel.
(3) With or without a vessel, five eel, fish, shrimp, or crab pots in any combination, except only two pots of the five may be eel pots. Peeler pots are not authorized for recreational purposes;
(4) One multiple hook or multiple bait trotline up to 100 feet in length;
(5) Gill Nets:
    (A) Not more than 100 yards of gill nets with a mesh length equal to or greater than 2 1/2 inches except as provided in (C) of this Subparagraph. Attendance is required at all times;
    (B) Not more than 100 yards of gill nets with a mesh length equal to or greater than 5 1/2 inches except as provided in (C) of this Subparagraph. Attendance is required when used from one hour after sunrise through one hour before sunset in internal coastal fishing waters east and north of the Highway 58 Bridge at Emerald Isle and in the Atlantic Ocean east and north of 77° 04.0000' W. Attendance is required at all times in internal coastal fishing waters west and south of the Highway 58 Bridge at Emerald Isle and in the Atlantic Ocean west and south of 77° 04.0000' W; and
    (C) Not more than 100 yards of gill net may be used at any one time, except that when two or more Recreational Commercial Gear License holders are on board, a maximum of 200 yards may be used from a vessel;
    (D) It is unlawful to possess aboard a vessel more than 100 yards of gill nets with a mesh length less than 5 1/2 inches and more than 100 yards of gill nets with a mesh length equal to or greater than 5 1/2 inches identified as recreational commercial fishing equipment when only one Recreational Commercial Gear License holder is on board. It is unlawful to possess aboard a vessel more than 200 yards of gill nets with a mesh length less than 5 1/2 inches and more than 200 yards of gill nets with a mesh length equal to or greater than 5 1/2 inches identified as recreational commercial fishing equipment when two or more Recreational Commercial Gear License holders are on board;
(6) A hand-operated device generating pulsating electrical current for the taking of catfish in the area described in 15A NCAC 03J .0304;
(7) Skimmer trawls not exceeding 26 feet in total combined width.

(8) One pound net used to take shrimp with each lead 10 feet or less in length and with a minimum lead net mesh of 1 1/2 inches, and enclosures constructed of net mesh of 1 1/4 inches or greater and with all dimensions being 36 inches or less. Attendance is required at all times and all gear must be removed from the water when not being fished. Gear is to be marked and set as specified in 15A NCAC 03J .0501.

(b) It is unlawful to use more than the quantity of authorized gear specified in Subparagraphs (a)(1) through (a)(7) of this Rule, regardless of the number of individuals aboard a vessel possessing a valid Recreational Commercial Gear License.

(c) It is unlawful for a person to violate the restrictions of or use gear other than that authorized by Paragraph (a) of this Rule.

(d) Unless otherwise provided, this Rule does not exempt Recreational Commercial Gear License holders from the provisions of other applicable rules of the Marine Fisheries Commission or provisions of proclamations issued by the Fisheries Director as authorized by the Marine Fisheries Commission.

D. COMMERCIAL AND RECREATIONAL HARVEST

Directed Commercial Harvest

Four gear types (gill nets, fly nets, flounder trawl, and haul seines) are used in directed commercial trips and harvest of Atlantic croaker, and account for more than 99% of the total landings. The total harvest of Atlantic croaker in 2013 was 1,928,637 lbs. (Table 3) and occurred in 5,629 trips (Table 4). The decrease in commercial landings from 2011 - 2013 is likely the result of decreased effort in the ocean fly net fishery caused by shoaling in Oregon Inlet. The ocean fly net fishery is a high volume fishery for Atlantic croaker and typically accounts for over 50% of annual landings. Although the number of trips increased by 6%, the increase came largely from the estuarine gill net fishery, a relatively low volume fishery for Atlantic croaker.

Table 3. North Carolina commercial harvest (lbs.) of Atlantic croaker by gear, 1994-2013.

YEAR	ESTUARINE GILLNET	OCEAN SINK GILLNET	FLOUNDER TRAWL	FLYNET	HAUL SEINE	OTHER	Grand Total
1994	93,172	1,373,566	109,399	2,869,275	103,573	66,768	4,615,754
1995	151,519	1,923,282	70,676	3,650,520	162,890	62,397	6,021,284
1996	183,373	4,102,497	71,846	4,615,359	358,764	629,997	9,961,834
1997	81,238	2,810,345	225,337	6,944,964	61,423	588,360	10,711,667
1998	159,212	5,608,831	1,081,913	3,964,733	25,270	25,937	10,865,897
1999	101,445	3,903,184	466,319	5,656,496	7,159	50,903	10,185,507
2000	94,826	3,805,749	660,116	5,481,846	67,146	12,945	10,122,627
2001	140,116	5,230,828	470,800	6,025,709	99,776	50,195	12,017,424
2002	130,055	4,209,753	448,727	5,362,031	31,545	7,042	10,189,153
2003	89,234	4,114,734	688,888	9,476,207	51,480	8,653	14,429,197
2004	82,587	3,970,134	461,163	7,432,523	34,643	11,952	11,993,003
2005	66,982	4,440,748	130,448	7,223,644	32,114	9,356	11,903,292
2006	61,167	2,756,604	39,526	7,499,038	35,964	4,255	10,396,554
2007	28,384	2,057,705	246,428	4,939,253	17,999	11,528	7,301,296
2008	67,405	2,180,372	202,939	3,326,199	11,789	3,063	5,791,766
2009	52,582	2,000,817	187,291	3,847,541	33,251	13,945	6,135,437
2010	171,825	3,037,799	112,504	3,807,850	171,746	10,435	7,312,159
2011	45,923	4,437,331	22,970	459,381	80,810	7,771	5,054,186
2012	77,023	2,668,307	27,864	314,244	6,794	12,383	3,106,615
2013	35,256	1,518,730	365,921	3,414	2,780	2,536	1,928,223
Mean	95,666	3,307,566	304,554	4,645,011	69,846	79,521	8,502,144

Table 4. North Carolina commercial trips that landed Atlantic croaker by gear, 1994-2013.

YEAR	ESTUARINE GILLNET	OCEAN SINK GILLNET	FLOUNDER TRAWL	FLYNET	HAUL SEINE	OTHER	Grand Total
1994	7,906	2,730	66	148	455	3,044	14,349
1995	11,054	3,131	61	166	459	3,394	18,265
1996	8,222	3,899	107	163	497	2,530	15,418
1997	8,881	3,507	73	304	296	2,153	15,214
1998	5,486	3,520	343	188	192	933	10,662
1999	7,999	2,863	192	175	98	1,653	12,980
2000	7,891	2,081	152	137	216	1,334	11,811
2001	7,983	2,565	104	147	234	1,922	12,955
2002	5,874	1,715	75	147	169	835	8,815
2003	4,862	1,540	60	179	153	567	7,361
2004	5,341	1,360	66	173	161	777	7,878
2005	4,488	1,246	31	166	125	454	6,510
2006	3,971	1,230	25	170	213	291	5,900
2007	4,216	1,082	56	116	131	346	5,947
2008	4,484	1,078	34	105	109	294	6,104
2009	5,474	1,019	47	162	165	321	7,188
2010	5,249	1,119	16	125	239	526	7,274
2011	2,622	1,729	5	25	199	258	4,838
2012	3,440	1,409	13	14	59	381	5,316
2013	3,737	1,439	18	1	73	361	5,629
Mean	5,959	2,013	77	141	212	1,119	9,521

Directed Recreational Harvest Estimates

Hook and line

The total recreational hook and line harvest of Atlantic croaker in 2013 was 141,880 lbs., with 525,173 trips taken (Table 5). Data from 1994-2003 uses the old MRFSS calculation method and 2004-2013 uses the new MRIP calculation method.

Table 5. North Carolina recreational harvest of Atlantic croaker 1994-2013, with number of directed trips, landings in number and pounds, and number of discards.

Year*	Directed Trips	Harvest Number	Harvest (lbs.)	PSE	Discard Number
1994	679,123	1,179,735	351,230	6.9	3,110,528
1995	462,683	850,606	326,135	10.4	1,172,716
1996	447,907	662,240	346,501	10.9	1,218,799
1997	396,140	661,116	309,457	15.6	1,443,568
1998	343,675	387,427	161,117	11.2	1,060,928
1999	372,719	442,185	212,991	12.1	1,368,478
2000	473,684	391,056	201,306	13.0	1,569,385
2001	447,251	635,552	355,009	14.4	1,256,807
2002	300,282	408,944	242,184	16.9	925,806
2003	465,690	490,399	317,606	17.7	1,552,315
2004	454,897	511,418	306,029	18.0	1,656,049
2005	418,485	326,777	168,797	22.4	1,401,413
2006	618,550	556,024	222,286	21.1	2,578,819
2007	432,614	461,162	131,185	18.8	1,608,120
2008	430,286	317,940	132,731	17.1	1,419,019
2009	483,949	368,990	131,742	16.5	1,912,670
2010	451,316	478,156	241,993	12.4	1,598,139
2011	404,682	246,676	99,298	13.2	1,798,230
2012	373,795	288,813	105,530	11.9	1,255,215
2013	525,173	411,880	141,880	13.6	1,984,701
Mean	449,145	503,855	225,250		1,594,585

*1994-2003 use old the MRFSS calculation and 2004-2013 use the new MRIP calculation method

RCGL

Refer to 2009 Atlantic croaker compliance report for past trends in RCGL data.

Non-harvest losses

Non-harvest losses of Atlantic croaker within North Carolina are not available at this time.

E. REVIEW OF PROGRESS IN IMPLEMENTING HABITAT RECOMMENDATIONS

There were no new implementations in the habitat recommendations during the past year.

IV. PLANNED MANAGEMENT PROGRAMS FOR THE CURRENT CALENDAR YEAR

A. Regulations that will be in effect

No new regulations are planned for the current year.

Summary of monitoring programs that will be performed

Monitoring programs will be the same as the previous fishing year. As listed and described in sections 3A – 3C, the NCDMF will continue to monitor Atlantic croaker harvest in the commercial and recreational fisheries through the utilization of the NC Trip Ticket Program and MRIP.

Highlight any changes from the previous year

There was a change in the recreational index from MRFSS data to include the new MRIP data. NOAA identified a process error in recreational estimates from 2004-2013, those data have been updated in Table 5.

South Carolina
Atlantic Croaker Fishery and Management Program
Compliance Report for the Year 2013

1 July, 2014

Prepared by: Christopher McDonough

Marine Resources Division
South Carolina Department of Natural Resources

I. INTRODUCTION

There were only 2 lbs reported for commercial landings for Atlantic croaker in 2013. This was even more limited than reported commercial landings for Atlantic croaker in 2012 (62 lbs) and 2011 (44 lbs) which was primarily incidental by-catch from shrimp trawlers. Commercial landings are monitored through the South Carolina commercial fisheries monitoring program, which reports its data to the National Marine Fisheries Service (NMFS) and the ACCSP (Atlantic Coastal Cooperative Statistics Program). This species is also a relatively minor component of the coast wide recreational landings (see below). No regulatory changes were implemented under State law that would affect South Carolina's croaker landings or any reporting requirements for the fishery.

II. REQUEST FOR *de minimis*

The Atlantic croaker ISFMP allows for a state to request ***de minimis status if, for the preceding three years for which data are available, their average commercial landings or recreational landings (by weight) constitute less than 1% of the coast wide commercial or recreational landings for the same two year period. A state that qualifies for de minimis based on their commercial landings will qualify for exemptions in their commercial fishery only, and a state that qualifies for de minimis based on their recreational landings will qualify for exemptions in their recreational fishery only.***

The reported commercial landings for Atlantic croaker in South Carolina for the past twelve years (2002-2013) have not exceeded 160 lbs and have made up significantly less than 1% of the reported Atlantic coast landings required for *de minimis* status. Reported commercial landings in 2013 fulfills the above requirement for the commercial fishery in South Carolina to be in *de minimis* status.

The recreational landings of Atlantic Croaker (A + B1) for South Carolina and the percentage of the coast wide landings made up by these catches were:

Table 1. Recreational landings (by weight) for Atlantic croaker in South Carolina.

Year	SC Landings (lbs) (A + B1)	Coastal Landings (lbs) (A+B1)	SC Percentage of Landings (2-yr mean)
2008	16,326	6,365,744	0.191
2009	71,517	6,222,596	1.038
2010	12,566	4,743,302	0.200
2011	240,665	2,825,794	4.389
2012	12,433	3,026,678	0.329
2013	32,296	4,004,068	1.104

Atlantic croaker harvest in South Carolina increased in 2013 (159.7%) over 2012 with landings of 32,296 lbs. South Carolina landings in 2013 did not meet criteria for *de minimis* status at less than 1% of the 3 year total Atlantic coast average. Recreational Atlantic croaker landings were just above *de minimis* levels in 2013 at 1.1% of Atlantic coast total landings. There are currently no ASMFC management measures restricting the recreational harvest of Atlantic croaker in Amendment 1.

III. ATLANTIC CROAKER FISHERY AND MANAGEMENT PROGRAM

A. Fishery Dependent Monitoring:

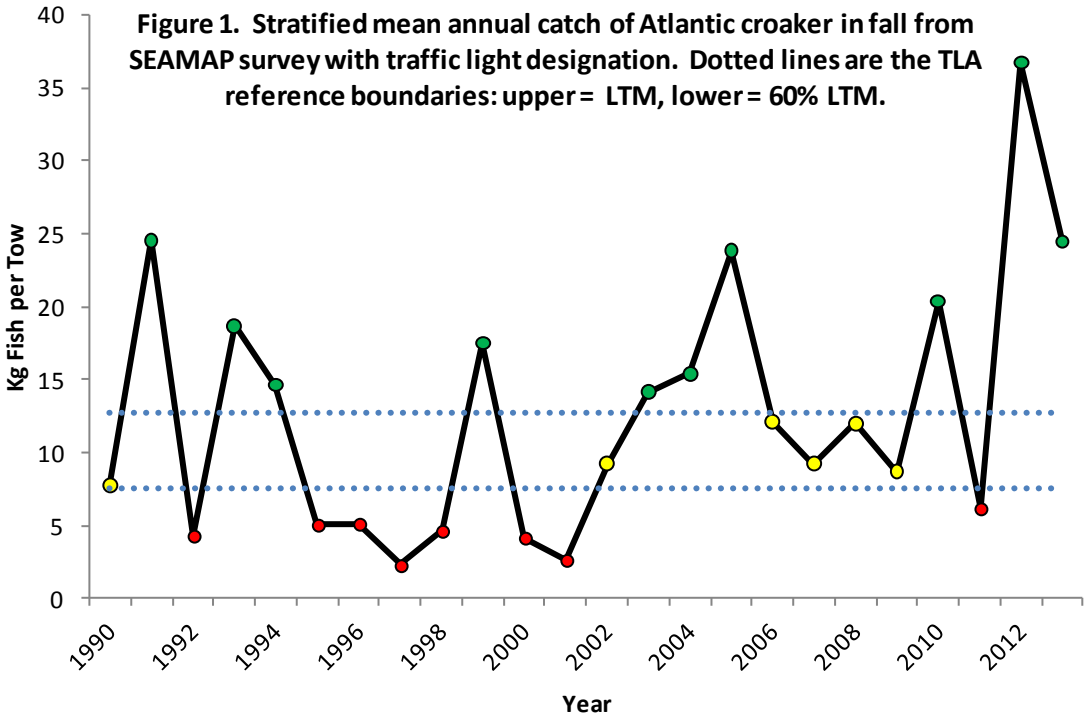
South Carolina's croaker fishery is recreational in nature. Fishery dependent data related to Atlantic croaker have been available primarily through the SCDNR State Finfish Survey (SFS), the National Marine Fisheries Service's Marine Recreational Information Program Survey (MRIP), and a SCDNR-managed mandatory trip reporting system for licensed charterboat operators. Beginning in 2013, the SCDNR took over the MRIP data collection in South Carolina. Since the data coming from the SC-SFS is now incorporated into the MRIP data set they will not be reported separately. The one exception to this occurs during wave 1 (Jan-Feb) sampling. The MRIP survey had not sampled during this wave in the past and so the SC-SFS will still be used to cover this time period.

Marine Recreational Information Program - The MRIP data indicated a sizable increase in harvest (A + B1) in 2013 (32,296 lbs) from the previous year in 2012 (10,050 lbs). This represented an approximate 160% increase in harvest over 2012 harvest levels. Large annual increases in harvest have been observed in previous years (1984, 1986, 1994, 2009) and do not necessarily reflect changes in stock status, as the changes occurred over a single year after which they generally decreased by at least 50% the following year, which was the case in 2012. The percent standard error (PSE) level for 2013 was high (22.6%) but not unreasonably so, indicating expansion of harvest estimates from intercept data may have some issues. (www.st.nmfs.gov/st1/recreational/queries/index.html). The overall trend in recreational harvest in South Carolina is negative with a general decline since the early 1990s. The uncharacteristically higher landings in 2011 do offset this decline somewhat, but annual harvest has been below the long term average landings (57,531 lbs) 11 of the last 15 years.

B. Fishery Independent Monitoring:

While Atlantic croaker are not necessarily a specifically targeted species for SCDNR monitoring programs or projects, they are a common component species of three fishery independent monitoring efforts conducted by the SCDNR. The summary catch effort data for each of the fishery independent surveys can be found in Table 2 at the end of this report.

The first is the Southeast Area Monitoring and Assessment – South Atlantic Program (SEAMAP-SA) conducted by SCDNR staff. This shallow water (15 to 30 ft) trawl survey monitors status and trends of numerous coastal species within the South Atlantic Bight from Cape Canaveral, FL to Cape Hatteras, NC. The annual stratified mean catch per tow in weight for Atlantic croaker in 2013 decreased by 33.5% (24.4 kg/tow) over 2012 (36.7 kg/tow) (Fig. 1). Although 2012 catch levels represented the highest level seen in the entire series, and there was a decrease in 2013, the catch level in 2013 was still high with the second highest year in the series after 2012. Catch levels were still well above the long term mean catch for the entire series and the overall increasing trend in Atlantic croaker in the SEAMAP survey that began in the 1990s continued.



The second survey was an inshore estuarine trammel net survey. The trammel net survey has been conducted since 1991 and is currently an ongoing program. It uses a stratified random sampling protocol from seven different estuaries (as strata) with individual sampling sites chosen at random within each estuarine area on a monthly basis. The trammel net program was designed to monitor important recreational finfish species over a broad geographic range. Because of size selectivity due to mesh size, the trammel net survey typically caught age 1+ Atlantic croaker, although age 0 were captured during the fall once they were large enough to entangle in the net mesh. Atlantic croaker were common in the trammel net, but their occurrence is highly seasonal with the months of May through September accounting for 95% or greater of the total annual catch. Therefore, only those months were used to calculate the index. Additionally, not all estuarine strata were sampled equally over the entire time series and individual differences in CPUE between strata were not factored into the index. In 2013 there was a 57.5% increase in CPUE from 2012 (1.80 fish per set up from 1.14 fish per set) (Fig. 2). Annual CPUE values ranged from 0.39 to 3.60 fish per set and catch effort in 2012 was above the long term mean of 1.48 fish per set.

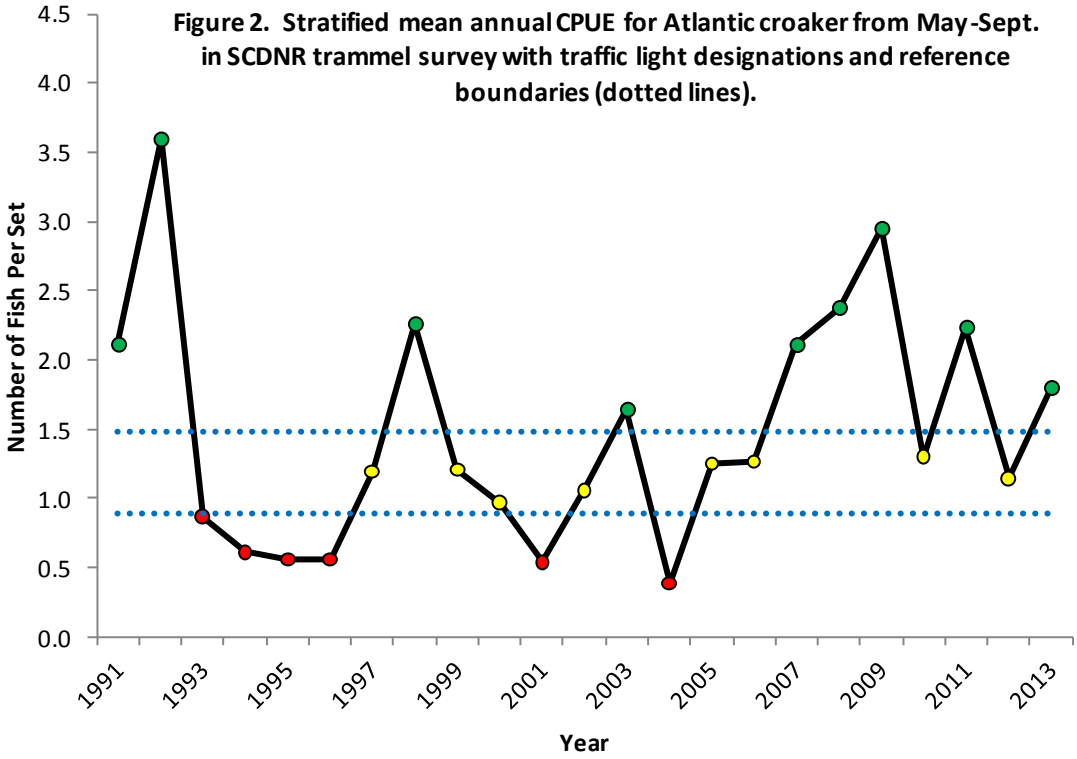


Figure 2. Stratified mean annual CPUE for Atlantic croaker from May-Sept. in SCDNR trammel survey with traffic light designations and reference boundaries (dotted lines).

The third survey was an electroshock survey conducted in low salinity brackish and tidal freshwater portions of different South Carolina

estuaries. The electroshock program monitors the abundance and trends of recreationally important finfish in these low salinity estuarine areas using a monthly random stratified design of 6 estuarine strata. The majority of croaker captured by the electroshock survey were juveniles (< 100 mm standard length), with stratified mean catch effort data (CPUE) being equivalent to the number of fish captured per set. The standard electroshock set sampled 0.25 mile of shoreline. Since the electroshock survey captured primarily juvenile croaker, the mean annual CPUE values serve as a proxy index for relative juvenile abundance. The majority of juveniles (87.2%) were captured during the peak recruitment months (Feb-July), so the index was calculated using only those months. The CPUE index value for 2013 increased 71.7% from 2012 (0.739 in 2013 from 0.431 in 2012) and continued a trend of annual CPUE being below the long term mean for the 5th consecutive year. Overall mean annual CPUE ranged from 0.43 to 2.57 for the entire time series with a long term mean of 1.094 fish per set (Fig. 3). Outside of the two peak years (2007 and 2008) the general trend for the time series has been negative.

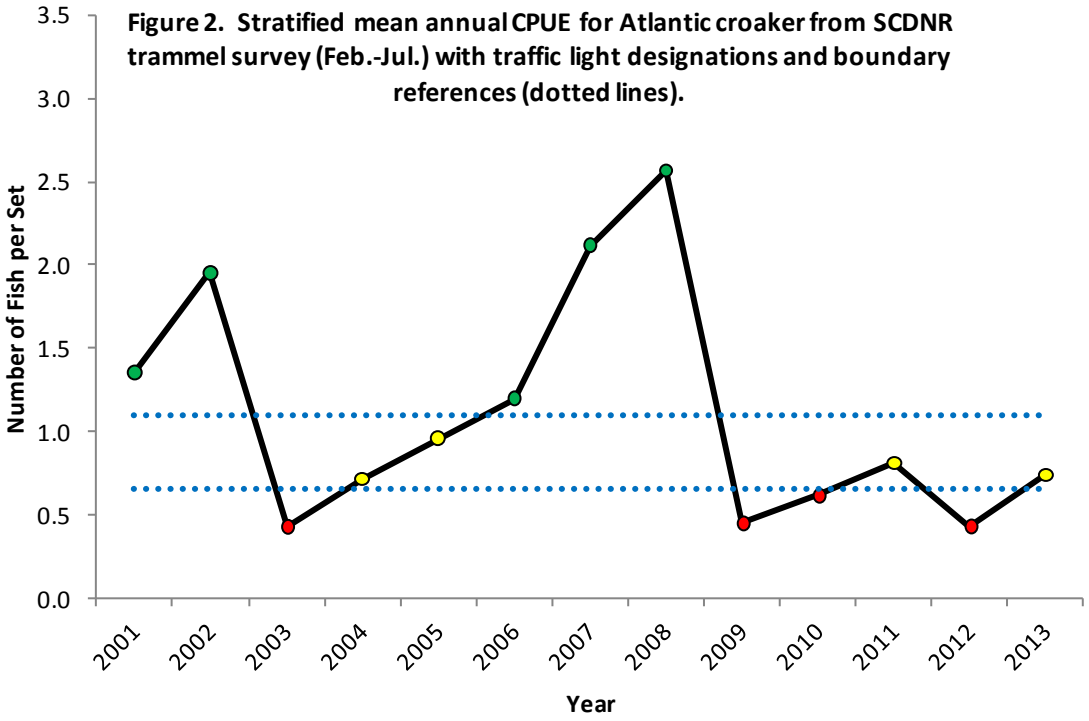


Figure 2. Stratified mean annual CPUE for Atlantic croaker from SCDNR trammel survey (Feb.-Jul.) with traffic light designations and boundary references (dotted lines).

Table 2. South Carolina Atlantic croaker CPUE indices (weight or number of Atlantic croaker per set or tow) for fishery independent surveys from 1990 to 2012, all CPUE values are stratified (arithmetic) mean annual CPUE based on randomly stratified sampling protocols.

Year	SEAMAP Weight (kg)	SEAMAP Number	SC-SEAMAP Weight (kg)	SC-SEAMAP Number	Trammel Number	Electroshock Number
1990	7.718	137.3	5.500	93.1	-	-
1991	24.527	291.8	13.504	162.8	2.115	-
1992	4.324	51.5	0.793	10.5	3.596	-
1993	18.684	270.8	1.320	21.9	0.867	-
1994	14.640	244.4	2.102	31.2	0.612	-
1995	5.075	74.1	3.657	53.6	0.559	-
1996	5.141	93.3	5.985	110.6	0.559	-
1997	2.298	34.9	1.322	21.7	1.194	-
1998	4.655	87.1	2.890	61.1	2.262	-
1999	17.480	314.4	10.591	225.8	1.209	-
2000	4.186	57.4	1.451	13.8	0.969	-
2001	2.662	44.0	0.590	15.2	0.542	1.351
2002	9.243	132.0	2.827	44.8	1.058	1.951
2003	14.125	190.8	15.989	188.1	1.645	0.429
2004	15.385	252.7	3.282	56.6	0.386	0.714
2005	23.829	434.9	11.124	240.3	1.253	0.958
2006	12.079	193.0	2.602	40.2	1.264	1.198
2007	9.201	113.9	5.455	65.7	2.111	2.116
2008	12.017	230.8	8.240	172.1	2.379	2.565
2009	8.693	130.2	2.364	37.8	2.950	0.449
2010	20.386	405.2	2.201	31.0	1.301	0.615
2011	6.197	104.0	5.219	84.8	2.237	0.813
2012	36.731	668.3	19.760	343.6	1.144	0.431
2013	24.437	505.1	1.942	29.9	1.802	0.739

C. Atlantic Croaker Regulations in Effect:

Section 50-5-1915 requires for-hire boats to maintain a logbook of catch data.

Section 50-5-380 of the South Carolina Code gives the Department authority to require wholesale dealers and others to submit mandatory landings reports on a monthly basis. This information forms the basis for the state's commercial landings monitoring. Additionally, Section 50-5-360 requires that anyone, who buys, receives or handles any live or fresh

saltwater fish or any saltwater fishery products taken or landed in the state must obtain a wholesale dealers license.

D. Atlantic Croaker Harvest:

Currently, there is no directed commercial fishery for Atlantic croaker in South Carolina and the only reported landings come from incidental shrimp trawl by-catch data. The reported landings for 2013 were negligible at 2 lbs reported.

The reported total recreational harvest of Atlantic croaker for South Carolina for 2013 from the MRIPS was 32,296 lbs (PSE = 36.7%). However, while there was a 95% decrease in landings, the South Carolina portion of the total Atlantic coast landings was still above the 3 year average landings required for *de minimis* status.

E. Habitat Recommendations – Not applicable.

IV. PLANNED ATLANTIC CROAKER MANAGEMENT PROGRAMS

A. Regulations in Effect:

No regulatory changes occurred for croaker in 2013.

B. Monitoring programs that will be performed:

No new programs dedicated to the monitoring of this species are planned at this point however all previously described sampling activities will continue.

C. Changes from the Previous Year:

While South Carolina currently has no specific laws pertaining to size or possession limits for Atlantic croaker in state waters, there is currently a bill being considered by the South Carolina Legislature that would include Atlantic croaker under an aggregate bag limit (50 fish per person per day) as part of a small *Sciaenidae* group that includes Atlantic croaker, spot, and kingfish (3 species).

V. PLAN SPECIFIC REQUIREMENTS – Not applicable.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
COASTAL RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

A.G. 'SPUD' WOODWARD
DIRECTOR

June 30, 2014

Kirby Rootes-Murdy
FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 N. Highland St., Suite 200 A-N
Arlington VA, 22201

Kirby,

Please find enclosed Georgia's 2013 Atlantic Croaker Compliance Report. The State of Georgia requests *de minimis* status for the Atlantic croaker commercial and recreational fisheries. Please let me know if you require additional information.

Sincerely,

Dawn Franco

Dawn Franco
Marine Fisheries Section

cc: Pat Geer

ONE CONSERVATION WAY | BRUNSWICK, GEORGIA 31520-8686
912.264.7218 | FAX 912.262.3143 | WWW.COASTALGADNR.ORG

State of Georgia Atlantic croaker Compliance Report for the Year 2013

I. Introduction: Summary of the year: highlight any significant changes in monitoring, regulations, or harvest.

The minimum size limit for Atlantic croaker landed in Georgia was eight (8) inches total length for recreational fisheries. The bag/creel limit was 25 fish per person per day for both fisheries except that there was no quantity limit for trawlers harvesting shrimp for human consumption. The season was open year round for both.

Commercial harvest of Atlantic croaker in Georgia is typically limited to sales of fish caught within the recreational size and bag limit. If less than three dealers report landings then that information would be considered confidential. Pursuant to the requirement in Section 4.2.6, the Georgia Department of Natural Resources, Coastal Resources Division (CRD) has a trip ticket system for commercial fisheries that conforms to ACCSP standard data element requirements. Through this program, commercial harvest is continuously monitored.

The Atlantic croaker was not ranked among the top species targeted by recreational anglers in Georgia. From 2009-2013, only ~0.67% of the average ~548,709 directed trips in Georgia were for Atlantic croaker. However, recreational harvest will continue to be monitored through the National Marine Fisheries Service's (NMFS) Marine Recreational Information Program (MRIP). Personnel at CRD have performed this intercept survey, as the state sub-contractor, since 2000.

The Marine Sportfish Population Health Survey (MSPHS) used a variety of sampling gear including trammel nets, gill nets, and hook and line to collect fishes of recreational importance from two Georgia estuaries. During 2013, 366 trammel and gill net sets captured 174 Atlantic croaker.

The Ecological Monitoring Survey continues to monitor estuarine finfish data as part of the monthly trawl surveys in six Georgia estuaries. In 2013, a total of 470 tows captured 41,122 croaker with a total weight of 619.96 kilograms.

II. Request for *de minimis*, where applicable.

There were no Atlantic croaker landings reported by Georgia dealers in 2013. The most recent average landings over the past 3 years (2010, 2011, and 2012) for the Atlantic coast was 13.2 million pounds (Table 1). The State of Georgia requests *de minimis* status for the Atlantic croaker commercial fisheries based on Georgia's reported landings of less than 1,000 pounds.

Table 1. Atlantic croaker, NMFS Commercial Landings Query, Atlantic coast	
Year	Weight (lbs)
2010	16,148,333
2011	11,895,004
2012	11,462,161
GRAND TOTALS:	39,505,498
3-YR AVERAGE	13,168,499
2013 coast wide commercial landings were not available at the time of reporting.	

The three-year average of Atlantic croaker recreational landings along the Atlantic coast, as estimated by the NMFS Marine Recreational Information Program (MRIP), was 3.3 million pounds. In contrast, the average landings for Georgia coast for the same time period was only 17,420 pounds, only 0.5% of the Atlantic coastal landings for the same time period (Table 2). The state of Georgia requests *de minimis* status for Atlantic croaker recreational fisheries based on the low average state landings.

Table 2. Atlantic Croaker, NMFS Marine Recreational Information Program (MRIP)				
Annual Data for Catch Type A+B1 (Harvest), all fishing modes and areas combined				
	Atlantic Coast		Georgia Coast	
Year	Weight (lbs)	PSE	Weight (lbs)	PSE
2011	2,837,034	11.6	21,548	48.1
2012	3,017,384	12.3	13,503	29.6
2013	3,996,187	12.5	17,209	26.3
3-yr AVERAGE	3,283,535		17,420	
			0.5% of Coast wide landings	

III. Previous calendar year's fishery and management program

a. Activity and results of fishery dependent monitoring.

Finfish Carcass Recovery: The Marine Sportfish Carcass Recovery Project, a partnership with recreational anglers along the Georgia coast, was used to collect biological data from finfish such as red drum, spotted seatrout, southern flounder, sheepshead, and southern kingfish. Chest freezers were located at public access points along the Georgia coast. Each freezer was clearly marked and contained a supply of plastic bags, pencils, and data cards. Anglers placed their filleted fish carcasses in plastic bags along with completed data card in the freezer. Personnel at CRD collected the carcasses and processed them to determine species, length, sex, and maturity stage when possible. Sagittal otoliths were removed and processed to determine the age of the fish. In 2013, a total of 4,390 fish carcasses were donated through this

program. Even though not on the list of requested species, there were 4 Atlantic croaker donated in 2013.

b. **Activity and results of fishery independent monitoring.**

The Marine Sportfish Population Health Survey (MSPHS) was used to collect information on the biology and population dynamics of recreationally important finfish. Altamaha and Wassaw estuaries were sampled on a seasonal basis using entanglement gear. Specific information collected for some species included: 1) age composition of the stock; 2) size and age at first spawning; 3) ratio of males to females in the stock; 4) movement and/or migration; 5) fishing mortality; 6) growth; and 7) spawning season. To provide age information, otoliths were removed from a size-stratified sub-sample of the catch from select sampling events. Currently, age and maturity information is not collected for Atlantic croaker.

Trammel and Gill Nets: From June to August, young-of-the-year red drum in the Altamaha River Delta and Wassaw estuary were targeted using gillnets to gather data on relative abundance and location of occurrence. From September to November, fish populations in the Altamaha River Delta and Wassaw estuary were monitored using trammel nets to gather data on relative abundance, size composition, and general species composition. Lengths of Atlantic croaker were measured and then fish were released (Table 3).

Table 3. Preliminary annual trammel net and gill net data summary for Altamaha and Wassaw sound, including total number captured (n), lengths statistics, effort, catch-per-unit-effort (CPUE), and geometric mean for Atlantic croaker, 2013

Gear	Trammel	Gill
n	19	155
Average length (mm TL)	234.95	221.92
Minimum length (mm TL)	149	168
Maximum length (mm TL)	265	312
Effort (# of net sets)	150	216
CPUE (#/net set)	0.13	0.72
Geometric mean	0.08	0.43

Ecological Monitoring Survey: Estuarine finfish were monitored as part of the monthly Ecological Monitoring Survey (EMS), which conducted onboard the research vessel *Anna*. A 40-foot flat otter trawl was towed for 15 minutes through each of 42 stations each month in six Georgia estuaries. In 2013, 470 tows were conducted totaling 118.24 hours of tow time. A total of 41,122 Atlantic croaker with a total weight of 619.96 kilograms were observed during these tows. Lengths ranged from 28 to 285 millimeters total length, with a mean total length of 115.08 millimeters (Table 4).

Table 4. Atlantic croaker observed during Ecological Monitoring Surveys (EMS)

Year	2009	2010	2011	2012	2013
Total number	31,316	28,061	15,733	7,508	41,122
Total weight (kg)	546.52	301.6	218.45	112.69	619.96
Average length (mm TL)	123.47	109.82	115.96	112.93	115.08
Minimum length (mm TL)	17	10	24	10	28
Maximum length (mm TL)	250	217	215	221	285
Observed Time (h)	127.41	126.23	127.77	124.05	118.24
CPUE (croaker/h)	245.79	222.30	123.14	60.52	347.78
Geometric mean	9.96	7.06	3.36	3.99	13.98

c. Copy of regulations that were in effect, including a reference to the specific compliance criteria as mandated in the FMP.

4.1 Recreational Fisheries Management Measures

4.1.1 Recreational Bag and Size Limits – In 2013, Georgia's size limit was 8 inches and the bag limit was twenty-five (25) fish per angler (DNR Rule 391-2-4-.04).

4.2 Commercial Fisheries Management Measures - Trawlers fishing for shrimp for human consumption were exempt from the creel and possession limits for Atlantic croaker (DNR Rule 391-2-4-.04(5d)). A commercial fishing license is required to sell finfish (O.C.G.A. 27-4-110).

4.2.4 Commercial Gear Restrictions - Hook and line and trawl gear are the only feasible methods for direct harvest of Atlantic croaker in Georgia as gill nets have been banned in state waters since the 1950's, except for shad. There is no directed commercial fishery for Atlantic croaker using either gear.

4.2.6 Data Collection and Reporting Requirements - Georgia is in full compliance with the ACCSP data collection and reporting requirements. Seafood dealers are required to maintain a record and report seafood purchased for commercial harvests in Georgia. Records must be submitted to the Department by the 10th day of the month subsequent to fishing (O.C.G.A. 27-4-110 and 136 and DNR Rule 391-2-4-.09). Harvesters are required to maintain a logbook of fishing activity but at this time, are not required to report that activity (O.C.G.A. 27-4-118).

4.2.6.1 Vessel Registration System - Any commercial vessel fishing in Georgia waters is required to purchase either a trawler or non-trawler boat license, dependent on fishing practices (O.C.G.A 27-2-8).

4.3 For-Hire Fisheries Management Measures

4.3.1 Bag and Size Limits and 4.3.2 Maximum Size Limit - Georgia for-hire and charter boats, if licensed as commercial fishermen, may harvest and sell their catch, as would other commercial fishermen, however they are restricted to a recreational limits.

4.3.3 Data Collection and Reporting Requirements - If a for-hire captain sells his catch in Georgia, he is subject to the same reporting requirements as dealers and harvesters as noted above.

d. Harvest broken down by commercial (by gear type where applicable) and recreational, and non-harvest losses (when available).

Commercial: No Georgia dealers reported Atlantic croaker landings in 2013.

Recreational: Since the year 2000, CRD has been the state sub-contractor for the intercept survey within the NMFS Marine Recreational Information Program (MRIP). In 2013, survey clerks interviewed 1,396 anglers. It is estimated that there were 690,632 angler trips (PSE 11.4) in Georgia during 2013. Expanded data are presented in Table 5. Information pertaining to geographical distribution of Georgia anglers was not yet available at the time of reporting. During 2012, coastal Georgia residents accounted for 44.2% (132,508 PSE 12.1) of the total anglers and non-coastal residents accounted for 31.6% (94,660 PSE 16.8) while out of state anglers accounted for the remaining 24.2% (72,437 PSE 19.1). Harvest data from 2004 to 2013 are presented in Table 6.

Table 5. Atlantic croaker (#fish) expanded NMFS data for Georgia, 2013

		Number of Angler Trips		A +B1 + B2 Released + Harvest		B2 Released Alive		A+B1 Harvest	
FISHING AREA	MODE	Total	PSE	Total	PSE	Total	PSE	Total	PSE
INLAND	CHARTER	14,174	16.3	10,414	20.4	10,345	20.5	69	94.5
	PRIVATE	347,623	14.1	211,555	37.3	191,467	40.9	20,088	41.1
	SHORE	142,482	28.7	73,846	25.6	57,797	30.9	16,049	38.3
INLAND Total		**504,279**	12.7	**295,815**	27.4	**259,609**	31.0	**36,206**	28.4
OCEAN (<= 3 MI)	CHARTER	3,498	24.0	0		0		0	
	PRIVATE	12,245	57.4	845	93.6	0		845	93.6
	SHORE	140,148	31.5	56,655		38,800	52.9	17,854	57.2
OCEAN (<= 3 MI) Total		**155,891**	28.7	**57,500**	39.9	**38,800**	52.9	**18,700**	54.8
OCEAN (> 3 MI)	CHARTER	3,367	22.3	8	99.4	0		8	99.4
	PRIVATE	26,825	31.8	0		0		0	
OCEAN (> 3 MI) Total		**30,192**	28.4	**8**	99.4	**0**		**8**	99.4
Grand Total		**690,362**	11.4	**353,324**	23.8	**298,409**	27.8	**54,914**	26.5

Table 6. Recreational harvest (# fish) from 2004 to 2013

Year	Hook & Line	Gill Net	Pound Net	Otter Trawl	Purse Seine
2004	38,599	NA	NA	NA	NA
2005	39,561	NA	NA	NA	NA
2006	34,081	NA	NA	NA	NA
2007	45,068	NA	NA	NA	NA
2008	38,246	NA	NA	NA	NA
2009	82,269	NA	NA	NA	NA
2010	35,635	NA	NA	NA	NA
2011	44,044	NA	NA	NA	NA
2012	38,402	NA	NA	NA	NA
2013	54,914	NA	NA	NA	NA

IV. Planned management programs for the current calendar year

a. Summarize regulations that will be in effect. (Copy of current regulations if different from 3c.)

New regulations will be in effect for Atlantic croaker in 2014 (DNR Rule 391-2-4-.04). There will no longer be a minimum size limit, previously 8 inches, but the twenty-five fish bag limit will remain in place for recreational fisheries. A commercial fishing license is required in order to sell Atlantic croaker but there is no quantity limit for food shrimp trawlers.

b. Summarize monitoring programs that will be performed.

Monitoring described in Section III will continue throughout 2014.

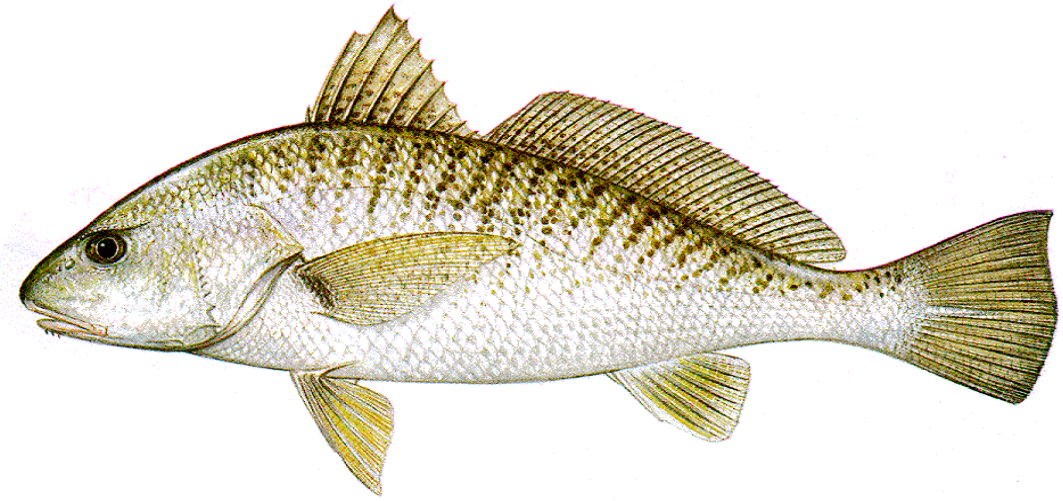
c. Highlight any changes from the previous year.

There were no changes from the previous year.

V. Law Enforcement Reporting Requirements

Under the GA DNR Rule 27-4-2-10 interstate agreement, law enforcement officers are tasked with monitoring creel limits in state and federal waters. There were no substantial issues concerning Atlantic croaker that occurred within the 2013 fishing year.

The 2014 Atlantic States Marine Fisheries Commission Compliance Report for Atlantic croaker, *Micropogonius undulates,* on Florida's Atlantic coast



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I. INTRODUCTION

Atlantic croaker (*Micropogonius undulates*) occur in the Atlantic coastal waters from the Gulf of Maine to Argentina. This species is one of the most abundant inshore fish along the US Atlantic coast supporting important recreational and commercial fisheries especially from New York to North Carolina. On Florida's Atlantic coast, Atlantic croaker are seldom found south of the Indian River Lagoon.

There are no regulations directed at Atlantic croaker in Florida. However, the ban of entangling gears in Florida enacted during the mid-1990s may have had direct effects on Atlantic croaker harvests by commercial fishermen. This report provides with an account of the response to such regulations of Atlantic croaker recreational and commercial fisheries on Florida's Atlantic coast in 2013. Because of the lack of Florida-specific management regulations for Atlantic croaker, information in this respect is compared with those documented in ASMFC (2005).

The total harvests of Atlantic croaker for various fishery sectors in 2013 amounted to 275,977 pounds (Table 1; Fig. 1). They represented 135% of the 1995-2012 average harvest. In general, total harvests of Atlantic croaker on Florida's Atlantic coast varied without trend since 1995, averaging about 207,563 pounds annually.

The proportion of Atlantic croaker harvested by the recreational fishery varied without trend over years at above 55% (Fig. 1). Since 1995, that proportion varied between 57 (in 2010) and 96%. Head boat-fishery was nearly nonexistent during 1985-2013.

II. REQUEST FOR *De Minimis* STATUS

To determine whether the State of Florida met the *de minimis* requirements for Atlantic croaker fisheries on the Atlantic coast, the commercial landings for 2010-2012 or 2010-2013 and the recreational harvests (Type A+B1, pounds) for 2011-2013 were used (Table 2). The Atlantic coast wide commercial landings came from the Atlantic Coastal Cooperative Statistics Program (ACCSP)'s Data Warehouse. The commercial landings from Florida's Atlantic coast came from the state of Florida's Marine Fisheries Information System or "trip tickets" (TTK) program. The Atlantic coast wide and Florida's Atlantic coast recreational landings (Type A+B1) were taken from the NMFS' MRIP/MRFSS.

The average of Atlantic croaker recreational harvests on Florida's Atlantic coast for 2011–2013 represented 7% of the 2011–2013 coast wide average recreational harvests. The average of Atlantic croaker commercial landings on Florida' s Atlantic coast during 2010-2012 and 2010-2013 represented 0.43% and 0.47%, respectively, of the 2010-2013 coast wide average commercial landings. The Florida Fish and Wildlife Conservation Commission (FWC) requests continuation of Florida' s *de minimis* status for the Atlantic croaker commercial fishery on the east coast of Florida.

III. PREVIOUS CALENDAR YEAR'S FISHERY AND MANAGEMENT PROGRAM

A. Activity and Results of Fishery Dependent Monitoring Program

Commercial Fishery

Description of 2013 Fishery

The commercial fishery data came from the State of Florida's TTK system. The landings for 2013 were preliminary and are subject to change.

Preliminary Atlantic croaker commercial landings in 2013 amounted to 71,573 pounds from 1,707 trips. They represented 97% of the 2012 landings (Fig. 2; Table 3). The Atlantic croaker commercial landings declined steadily since 1988 but varied without trend, at low levels, during 1995-2005 (average=23,000 pounds$\times$year^{-1}). The number of trips varied without trends prior to 1995 and during 1995-2005, averaging 3200 trips$\times$year^{-1} and 1376 trips$\times$year^{-1}, respectively. Both the commercial landings and numbers of trips increased slightly since 2006.

In 2013, the commercial landings and trips were lowest in February, April/May, and July/August (Fig. 3).

The number of primary fishermen (i.e., those who landed more than 100 pounds a year) varied between 97 and 175 during 1987-1994. Since 1995, they varied between 23 and 85 fishermen. Their preliminary estimate in 2013 was 73. No fisherman landed more than 10,000 pounds a year since 1995. Between 1995 and 2013, primary fishermen represented 10-31% of all fishermen, made 34-66% of trips, and contributed for 66-95% of landings. In 2013, these percentages were 26%, 55%, and 95%, respectively.

Based on dealer records for 2013, the share of Atlantic croaker landed on the east coast of Florida was 65% for the federal EEZ, 30% for inland waters, and 5% for the state territorial sea, where 30%, 57%, and 13% of trips were made, respectively. Atlantic croaker landed in 2013 (Table 4; Fig. 4) were caught using cast nets (7%), gillnets (47%), hook-and-lines (27%), and trawls (24%). Cast-netting, gillnetting, and hook-and-lining accounted for 39%, 27%, and 30% of trips made in 2012, respectively (Table 4; Fig. 5).

Trip Limit and Quota Compliance

There are no commercial trip or vessel limit and annual commercial quota established for Atlantic croaker on the east coast of Florida either by FWC or by the Atlantic States Marine Fisheries Commission (ASMFC). However, the limitation on the use of entangling gears since 1995 resulted in substantial reductions of annual Atlantic croaker commercial landings on the east coast of Florida in subsequent years (Fig. 2).

Size Limit

There is no minimum size limit for Atlantic croaker caught by commercial fishermen on the east coast of Florida. However, compared with the size limit for Maryland (9 inches or 228. 6 mm TL; ASMFC, 2005), the size distributions of Atlantic croaker measured in the commercial fishery on the Atlantic coast of Florida during 1992-2013 indicate that most fish sizes were above 228.6 mm except in 1997, 2000-2002, and 2007 (Fig. 6). In 2013, only 17 fish have been measured and all were larger than 228.6 mm TL. However, this observation cannot be regarded as representative of the fishery because the sample size was small and the fish were mainly sampled from landings by hook-and-lines.

Recreational Fishery

Description of 2013 Fishery

Estimates of the recreational fishery data came from the NMFS' MRFSS website. The evaluation of the compliance with the bag and size limits was not made because there are no regulations for specifically managing Atlantic croaker recreationally harvested on the east coast of Florida. Moreover, the lack of intercept data in 2013 did not allow updating non-website recreational fishery statistics in that year.

The time series of Atlantic croaker recreational harvests, standardized numbers of trips (estimated by dividing the total number of fish caught – Type A+B1+B2 – each year by the annual standardized total catch rates, derived themselves from a GLM for catch rates), and directed trips made on Florida's Atlantic coast broadly followed a similar pattern (Fig. 7; Table 5).

The recreational harvests (Type A+B1) of Atlantic croaker on the east coast of Florida averaged about 2,436,500 fish and 1,265,900 pounds annually during 1982-1987. They stabilized at annual averages of about 399,500 fish and 209,200 pounds thereafter. The lowest recreational harvests of Atlantic croaker over 1982-2013 were observed during 1996-1998 and 2002-2003. In 2013, the anglers' harvest of Atlantic croaker on Florida's Atlantic coast was estimated at a number of 407,905 weighing approximately 203,954 pounds. The number and weight of Atlantic croaker harvested in 2013 were 24% and 21% larger than the average harvests during 1996-2012 (i.e., 328,363 fish and 168,840 pounds). The ratio of released fish to fish kept by anglers trended up over years, varying between 0.06 and 2.4 fish released for 1 fish kept (Fig. 8). Since 1999, more than or nearly one fish was released alive for every Atlantic croaker kept by anglers. In 2013, the ratio "fish released alive/fish kept" was 0.94.

Size and Bag limits

There are no management regulations about the size and bag limits for the recreational fishery directed at Atlantic croaker on the east coast of Florida. The annual median sizes of fish did not show clear trend (Fig. 9). However, except in 1985, they were well above the size limits documented in ASMFC (2005).

Head boat fishery

Description of 2013 Fishery

The head-boat fishery for Atlantic croaker on the Atlantic coast of Florida has been insignificant (Fig. 1; Table 1). In 2013, this fishery landed about 577 fish weighing 450 pounds.

Size and Bag limits

There are no management regulations about the size and bag limits for Atlantic croaker caught by the head-boat fishery on the east coast of Florida. Biological samples from this fishery have been available during 1972-2013, but a few or no Atlantic croaker have been measured each year on Florida's Atlantic coast (Table 6). The few Atlantic

croaker measured for the head-boat fishery on Florida's Atlantic coast exceeded Maryland's size limit of 9 inches in the most recent years.

B. Activity and Results of Fishery Independent Monitoring (FIM) Program

The FWC-Fish and Wildlife Research Institute (FWRI)'s FIM program initiated sampling activities on estuarine, bay and coastal systems of the Florida Atlantic at northern Indian River Lagoon in 1990, southern Indian River Lagoon in 1997 and northeast Florida (Jacksonville study area) in 2001. The sampling gears commonly used were a 21.3-m center bag seine, a 6.1-m otter trawl and a 183-m haul seine. These gears were designed to collect, respectively, juvenile and sub-adult fishes (especially young-of-the-year, YOY) in shallow areas (< 1.8 m), juvenile, sub-adult and adult fish in deep waters (1–7.6 m) and sub-adult and adult fish in shallow waters (< 2.5 m) along shorelines. Additional sampling methods and strata are provided in various FWC/FWRI FIM annual data summary reports.

Indices of abundance (IOAs) data for juvenile (YOY) Atlantic croaker (< 51 mm standard length, SL) were available from 21.3-m seine and 6.1-m trawl samples. They were examined to assess recruitment along Florida's east coast (northeast Florida and the northern Indian River Lagoon). Habitats in these estuaries suitable for recruitment of Atlantic croaker were primarily sampled from December-April, a period considered as general recruitment season for Florida's east coast. IOAs data for large juvenile and sub-adult/adult Atlantic croaker (SL: 6-10 inches, i.e. >149 mm SL; White and Chittenden, 1977) were collected using 183-m haul seines in the previous estuarine systems and also in the Southern Indian River Lagoon. These indices were derived by including all fish that were greater than 149 mm SL collected between May and October. For the YOY IOAs, analyses covered 2002-2013. IOAs for fish at least 149 mm SL were derived over 2001-2013, just to standardize both the time periods and the gears used between the three labs located along Florida's Atlantic coast (i.e., Jacksonville, Indian River, and Tequesta).

Standardized catch rates for juvenile Atlantic croaker were estimated using a Generalized Linear Model (GLIM) with either the Poisson or Negative binomial error distribution to analyze observed abundance data. The median value for the distribution (generated through Monte Carlo simulations) of the back-transformed values of LSMs provided annual indices. The same GLIM approach was used to derive IOAs for adult Atlantic croaker caught each month in the 183-m haul seines.

IOAs for YOY Atlantic croaker suggested strong year-classes in 2005 and 2010 (Figs. 10 and 11; Table 8). IOAs for sub-adult/adult Atlantic croaker trended upward during 2001-2011 and dropped thereafter (Fig. 12; Table 8).

C. Copy of regulations that were in effect, including a reference to the specific compliance criteria as mandated in the FMP.

N/A – Atlantic croaker is not a regulated saltwater species in Florida. However, it is generally believed that the limitation on the use of entangling gears in state waters and the requirement on the possible use of nets measuring up to 500 sq ft with stretched-mesh size up to 2 inches have substantially affected any harvest by commercial fishermen.

D. Harvest broken down by commercial and recreational and non-harvest losses.

See Table 1 and Figure 1 for the cumulative harvest of Atlantic croaker on the Atlantic coast of Florida by fishery.

See Table 3 and Figure 2 for the commercial landings and effort and Table 4 and Figures 4 and 5 for commercial landings and effort by gear type.

See Table 5 and Figure 7 for recreational harvests in numbers and weight.

E. Review of Progress in implementing habitat recommendations.

N/A

IV. PLANNED MANAGEMENT PROGRAMS FOR THE CURRENT YEAR

No management programs are planned for the current year.

ACKNOWLEDGENMENT - Dr. Richard Paperno developed the fishery-independent indices of relative abundance for young-of the-year and sub-adult/adult Atlantic croaker on the Atlantic coast of Florida.

5.0 LITERATURE CITED

ASMF, 2005. Amendment 1 to the interstate fishery management plan for Atlantic croaker. Fishery Management Report 41. 92 p.

White, M. L. and M.E. Chittenden, Jr. 1977. Age determination, reproduction and population dynamics of the Atlantic croaker, *Micropogonias undulatus*. Fish. Bull., US 75:109-123.

Table 1 - Summary of Atlantic croaker harvests (pounds) by fishery sector on the Atlantic coast of Florida, 1985-2013. The recreational harvests are fish kept by anglers (Type A+B1). The 2013 landings were preliminary and are subject to change.

	Commercial landings (lbs)	Recreationl landings (Type A + B1; lbs)	Head boat landings (lbs)	Total lbs
1985	153,803	684,449		838,252
1986	173,531	2,783,651		2,957,182
1987	217,932	1,005,052	23	1,223,007
1988	140,033	316,899	12	456,944
1989	95,021	268,335	16	363,372
1990	104,402	127,526		231,928
1991	56,739	460,454		517,193
1992	79,040	407,671	172	486,883
1993	52,031	180,517	35	232,583
1994	96,018	337,474	1	433,493
1995	22,879	301,918		324,797
1996	26,045	50,038		76,083
1997	36,577	113,095	1	149,673
1998	26,418	141,755		168,173
1999	26,824	231,694	2	258,520
2000	37,953	242,914	6	280,873
2001	14,831	320,487	8	335,326
2002	17,191	117,880		135,071
2003	16,348	79,397		95,745
2004	11,413	156,395	1	167,809
2005	16,520	121,320		137,840
2006	30,272	112,512		142,784
2007	27,028	159,077	8	186,113
2008	31,560	223,121	52	254,733
2009	32,313	222,239	36	254,589
2010	36,960	56,023	31	93,013
2011	44,932	194,848	140	239,920
2012	74,023	292,365	269	366,656
2013	71,573	203,954	450	275,977

Table 2-Annual recreational (Type A+B1) and commercial landings (lbs) used to determine the *de minimis* status for Florida with regard to Atlantic croaker fisheries on Florida's Atlantic coast. The commercial landings for 2013 were preliminary. Florida's and coastwide recreational landings in 2013 were preliminary.

	Coastwide commercial landings (lbs)	Florida's commercial landings (lbs	Coastwide recreational landings (Type A+B1, lbs)	Florida's recreational landings (Type A+B1, lbs)
2010	16,142,882	36,960		
2011	11,857,629	44,932	2,837,034	194,847
2012	11,509,469	74,023	3,017,384	292,365
2013	9,375,451	71,573	4,001,843	203,953
Average	12,221,358	51971*	3,285,420	230,388
		56872**		
(Florida's average landings/coastwide average landings)x100		0.43%***		7.01%
		0.47%****		

* Estimated using landings reported during 2010-2012. ** Estimated using landings reported during 2010-2013.
Estimated using averages of coastwide and Florida's commercial landings during 2010-2012 * Eistimated using averages of coastwide commercial landings during 2010-2013 and of Florida's commercial landings during 2010-2013.

Table 3 - Commercial landings and number of trips for Atlantic croaker on the east coast of Florida, 1985-2013. Estimates for 2013 were preliminary and are subject to change.

	Landings (lbs)	Trips
1985	153,803	3,163
1986	173,531	3,351
1987	217,932	3,505
1988	140,033	2,968
1989	95,021	2,865
1990	104,402	3,407
1991	56,739	3,188
1992	79,040	4,074
1993	52,031	2,405
1994	96,018	3,170
1995	22,879	1,262
1996	26,045	1,391
1997	36,577	1,441
1998	26,418	1,120
1999	26,824	1,433
2000	37,953	1,640
2001	14,831	1,163
2002	17,191	1,400
2003	16,348	1,653
2004	11,413	1,305
2005	16,520	1,331
2006	30,272	1,578
2007	27,028	1,704
2008	31,560	2,100
2009	32,313	2,215
2010	36,960	1,685
2011	44,932	1,781
2012	74,023	2,069
2013	71,573	1,707

Table 4 - Florida's Atlantic coast commercial landings (pounds) and trips made by gear type for Atlantic croaker, 1984-2013. The 2013 estimates were preliminary and are subject to change.

Landings

	CAST NET	GIG/SPEAR	GILL NET	HOOK AND L	OTHER	TRAMMEL	TRAWL	UNKNOWN	Grand Total
1984								5653	5653
1985								153803	153803
1986								173531	173531
1987								217932	217932
1988								140033	140033
1989								95021	95021
1990								104402	104402
1991	1064		10016	2762	343	2702	380	39472	56739
1992	3897		47194	4290	76	16777	946	5860	79040
1993	2897	6	27290	5468	363	12983	1953	1071	52031
1994	1738	5	34239	5226	159	4180	49335	1136	96018
1995	6059		6454	6833	225	460	2802	46	22879
1996	15606	2	92	5414	438		4433	60	26045
1997	15366	4	1406	11574	1		7946	280	36577
1998	8250		3397	14426	9		160	176	26418
1999	7723		1349	16362	121		645	625	26824
2000	11073	11	1396	23169	776		974	554	37953
2001	6856	56	300	6511	378		660	71	14831
2002	5080	2	161	11219	634		95		17191
2003	10749	13	63	5445	15		64		16348
2004	7022		175	3752	458		7		11413
2005	9044		1715	2154	3364		244		16520
2006	7924	8	9351	10104	422		2463		30272
2007	6527		10718	6049	1098		2637		27028
2008	14574	35	4959	5432	2526		4034		31560
2009	11711	82	9090	4548	2388		4494		32313
2010	10020	122	15488	6206	3590		1534		36960
2011	8082	13	26085	6766	1632		2355		44932
2012	10429	116	37815	14708	191	208	10556		74023
2013	4692	5	30290	19128	631		16828		71573

Trips

	CAST NET	GIG/SPEAR	GILL NET	HOOK AND L	OTHER	TRAMMEL	TRAWL	UNKNOWN	Grand Total
1984								361	361
1985								3163	3163
1986								3351	3351
1987								3505	3505
1988								2968	2968
1989								2865	2865
1990								3407	3407
1991	50		616	94	47	294	18	2069	3188
1992	158		2140	130	5	1381	24	236	4074
1993	262	1	1065	153	10	837	24	53	2405
1994	277	1	2204	124	18	373	126	47	3170
1995	441		531	163	20	67	31	9	1262
1996	1171	1	14	166	3		27	9	1391
1997	958	1	71	335	1		61	14	1441
1998	615		92	395	1		10	7	1120
1999	689		80	579	5		54	26	1433
2000	853	8	55	650	21		37	16	1640
2001	738	3	30	344	25		17	6	1163
2002	929	2	15	412	32		10		1400
2003	1296	6	5	339	5		2		1653
2004	989		13	288	14		1		1305
2005	931		123	239	31		7		1331
2006	984	1	259	283	35		16		1578
2007	936		401	290	52		25		1704
2008	1417	4	288	310	50		31		2100
2009	1438	5	426	281	44		21		2215
2010	1031	4	293	294	53		10		1685
2011	967	4	328	415	49		18		1781
2012	892	5	556	569	24	3	20		2069
2013	668	4	464	509	20		42		1707

Table 5 - Estimated MRFSS/MRIP numbers and pounds of Atlantic croaker harvested, released alive and caught and estimated standardized total catch rates, standardized and directed numbers of trips made by recreational anglers on the Atlantic coast of Florida (1982-2013). The standardized CPUE and trips were not estimated for 2013 because there were no intercept data in 2013.

Years	Harvests (A+B1, numbers)	released (B2, numbers)	Harvests (A+B1; lbs)	caught (A+B1+B2; #)	Standardized CPUE	Standardized trips	Directed Trips
1982	1,682,619	188,276	754,955	1,870,896	2.4222	772,388	62,800
1983	1,148,228	379,021	510,597	1,527,248	1.5231	1,002,756	172,647
1984	2,781,743	236,432	1,856,600	3,018,173	1.9932	1,514,242	126,249
1985	1,306,955	1,146,583	684,449	2,453,537	2.8040	875,017	66,335
1986	5,118,552	318,511	2,783,651	5,437,064	3.0494	1,782,979	68,591
1987	2,580,728	1,770,697	1,005,052	4,351,424	2.5471	1,708,386	189,881
1988	685,778	200,630	316,899	886,408	2.2483	394,263	62,295
1989	359,417	72,821	268,335	432,238	2.2259	194,189	59,298
1990	304,065	168,143	127,526	472,208	2.4609	191,884	14,199
1991	1,030,115	647,824	460,454	1,677,940	2.9636	566,188	93,467
1992	754,596	251,342	407,671	1,005,939	2.6408	380,921	17,683
1993	304,067	138,875	180,517	442,942	2.1455	206,447	13,017
1994	599,032	331,735	337,474	930,768	2.4016	387,558	21,034
1995	438,076	141,732	301,918	579,808	2.2312	259,859	11,516
1996	116,575	126,299	50,038	242,875	1.6826	144,346	16,952
1997	235,430	116,276	113,095	351,706	2.3181	151,725	3,244
1998	234,361	152,744	141,755	387,105	2.3868	162,186	6,049
1999	403,982	967,894	231,694	1,371,874	2.8445	482,291	16,319
2000	455,871	428,132	242,914	884,002	2.5717	343,742	18,684
2001	426,264	282,461	320,487	708,726	2.4905	284,571	21,968
2002	177,752	217,054	117,880	394,805	1.9651	200,906	21,522
2003	165,459	192,357	79,397	357,815	2.0266	176,555	18,609
2004	415,570	253,951	156,395	669,521	2.5359	264,019	56,626
2005	302,784	293,692	121,320	596,477	2.0805	286,703	32,103
2006	172,586	187,562	112,512	360,147	2.0071	179,437	11,898
2007	310,130	321,559	159,077	631,690	2.2102	285,803	30,669
2008	449,054	596,450	223,121	1,045,504	2.1899	477,431	35,245
2009	438,209	406,822	222,239	845,031	2.7332	309,168	40,693
2010	132,664	188,637	56,023	321,301	1.7356	185,124	14,274
2011	476,292	452,669	194,848	928,961	2.1452	433,037	44,945
2012	589,643	641,569	292,365	1,231,212	2.3226	530,090	43,265
2013	586,411	550,130	203,954	1,136,541	-	-	42887

Table 6 – Atlantic croaker samples collected from the head-boat fishery on Florida's Atlantic coast, 1989 – 2013. To compare with Maryland's size limit in the recreational sector, the sample sizes are split into fish of size smaller than 9 inches and of size greater or equal to 9 inches.

	Samples with fish		
Year	<9 inch	>=9 inch	Total
1989	3		3
1990	1	1	2
1992	12		12
1993	8		8
1996		1	1
1999	2	2	4
2000	4	1	5
2001	1	2	3
2002		1	1
2004		1	1
2005		12	12
2006		4	4
2008		10	10
2009	2	7	9
2010	1	18	19
2011	1	26	27
2012		29	29
2013		46	46

Table 8 - Fishery-independent catch in number (No), effort (number of sets), and various statistics derived for the YOY and sub-adult/adult indices of relative abundance (i.e., catch rates, expressed as median numbers of fish per set) for Atlantic croaker on the east coast of Florida.

Florida's East Coast Atlantic croaker IOAS - YOY, 2002 - 2013
21 - m Bag seines; <51 mm - SL

Year	*No. hauls*	*No. fish*	*Median*	*25th*	*75th*	*min*	*max*
2002	182	1846	4.950	4.186	5.972	2.481	11.949
2003	186	2258	6.053	4.892	7.455	2.177	13.254
2004	198	2623	11.098	9.422	13.377	5.214	22.642
2005	230	20334	35.951	30.510	42.904	18.587	82.677
2006	230	3975	9.163	7.883	10.562	4.654	20.963
2007	230	1171	4.330	3.654	5.144	2.000	8.910
2008	246	5062	10.692	9.250	12.685	5.293	27.212
2009	250	2865	5.939	5.136	7.045	3.073	12.232
2010	250	4555	19.230	16.465	21.991	7.986	40.415
2011	240	1693	7.123	5.860	8.726	2.851	14.713
2012	204	1694	4.185	3.543	4.920	1.774	10.765
2013	205	825	1.958	1.663	2.300	0.882	4.265
Total	**2,651**	**48,901**					

Florida's East Coast Atlantic croaker's IOA - YOY, 2002 - 2013
6.1 - m trawls; < 51 mm - SL

Year	*No. hauls*	*No. fish*	*Median*	*25th*	*75th*	*min*	*max*
2002	148	5296	11.983	10.324	14.112	5.419	30.745
2003	188	8755	12.348	10.949	14.184	6.344	21.952
2004	204	7597	13.471	11.721	15.214	7.016	22.425
2005	205	33387	123.304	108.601	140.855	61.658	234.810
2006	205	10083	35.972	31.832	41.207	20.368	66.491
2007	205	5458	10.067	8.793	11.356	5.567	18.176
2008	205	17945	36.864	32.632	41.355	18.602	62.685
2009	205	5726	19.924	17.327	22.443	11.201	36.989
2010	204	43356	126.654	108.670	145.429	61.745	253.703
2011	205	5790	13.869	12.325	15.946	8.712	27.230
2012	205	6847	13.385	11.720	15.416	7.384	23.541
2013	205	4925	8.507	7.503	9.537	4.722	15.448
Total	**2,384**	**155,165**					

Florida's East Coast Atlantic croaker's IOA for sub-adults/adults, 2001-2013
183 - m Haul seines; > 149 mm - SL

Year	*No. hauls*	*No. fish*	*Median*	*25th*	*75th*	*min*	*max*
2001	271	286	0.644	0.546	0.787	0.297	1.481
2002	278	662	1.196	0.985	1.462	0.535	2.723
2003	282	724	1.937	1.632	2.298	0.830	4.226
2004	283	509	1.495	1.240	1.826	0.620	3.023
2005	280	516	1.706	1.429	2.007	0.621	4.726
2006	282	657	1.319	1.136	1.527	0.537	3.041
2007	282	742	1.740	1.485	2.071	0.796	4.127
2008	270	904	2.105	1.738	2.533	0.952	6.188
2009	255	677	1.858	1.596	2.199	0.829	4.099
2010	258	696	1.906	1.540	2.277	0.883	4.759
2011	257	1647	4.770	3.848	5.747	2.156	11.588
2012	258	406	1.120	0.913	1.328	0.541	2.357
2013	258	109	0.292	0.235	0.352	0.127	0.744
Total	**3,514**	**2,741**					

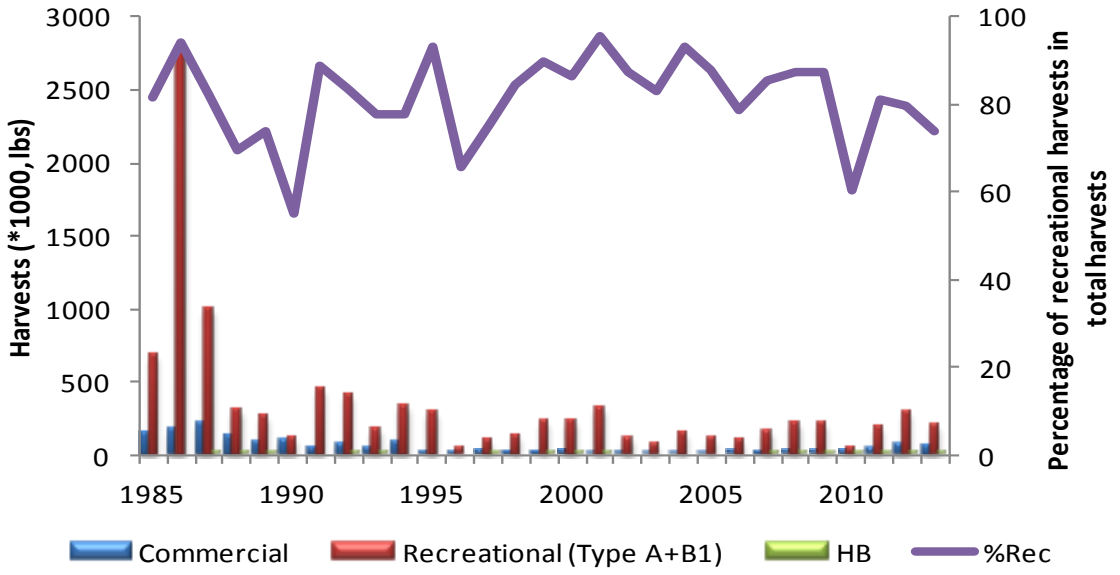

Figure 1 - Total harvests (lbs) and proportions of recreational harvests of Atlantic croaker on Florida's Atlantic coast, 1985-2013. The Recreational harvests are fish kept by anglers (Type A+B1). Harvests for 2013 were preliminary and are subject to change. The contribution of the head boat (HB) fishery in total harvests has been insignificant.

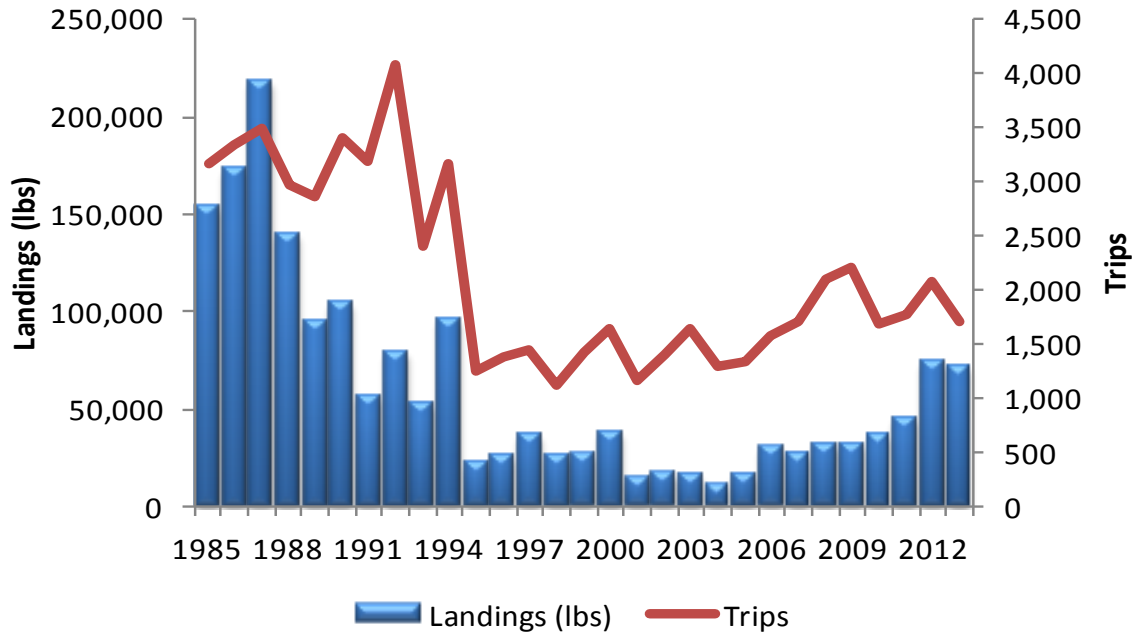

Figure 2 - Commercial landings (lbs) of Atlantic croaker and number of trips reporting Atlantic croaker commercial landings on Florida's Atlantic coast, 1985-2013. The 2013 estimates were preliminary and are subject to change.

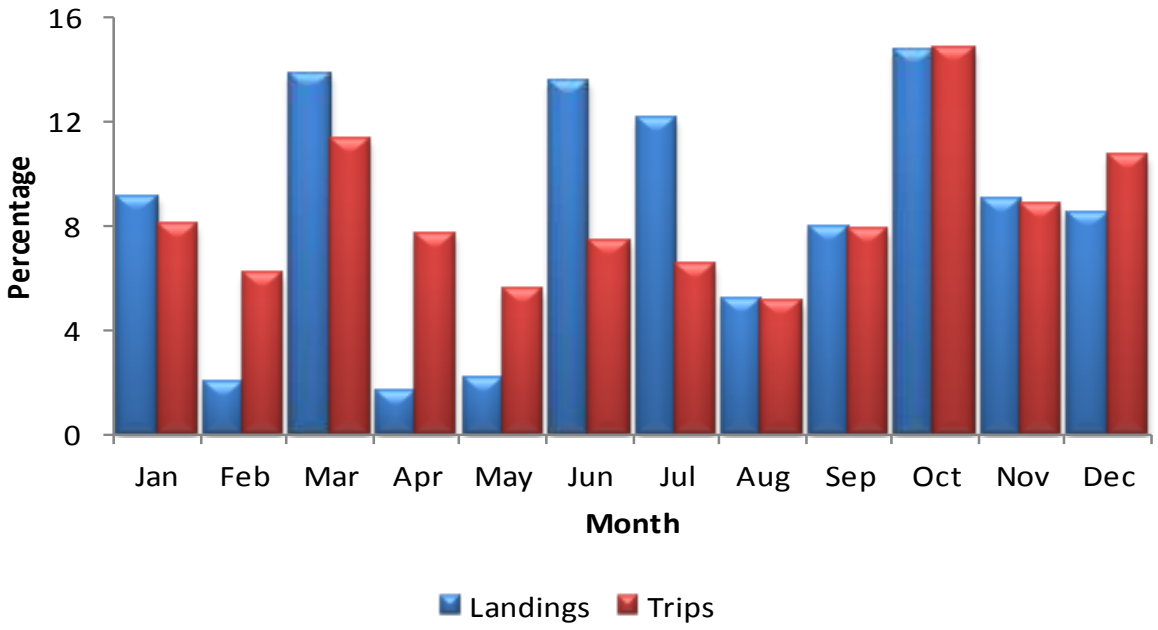

Figure 3 – Monthly percentages of Atlantic croaker commercial landings and trips on the Atlantic coast of Florida in 2013.

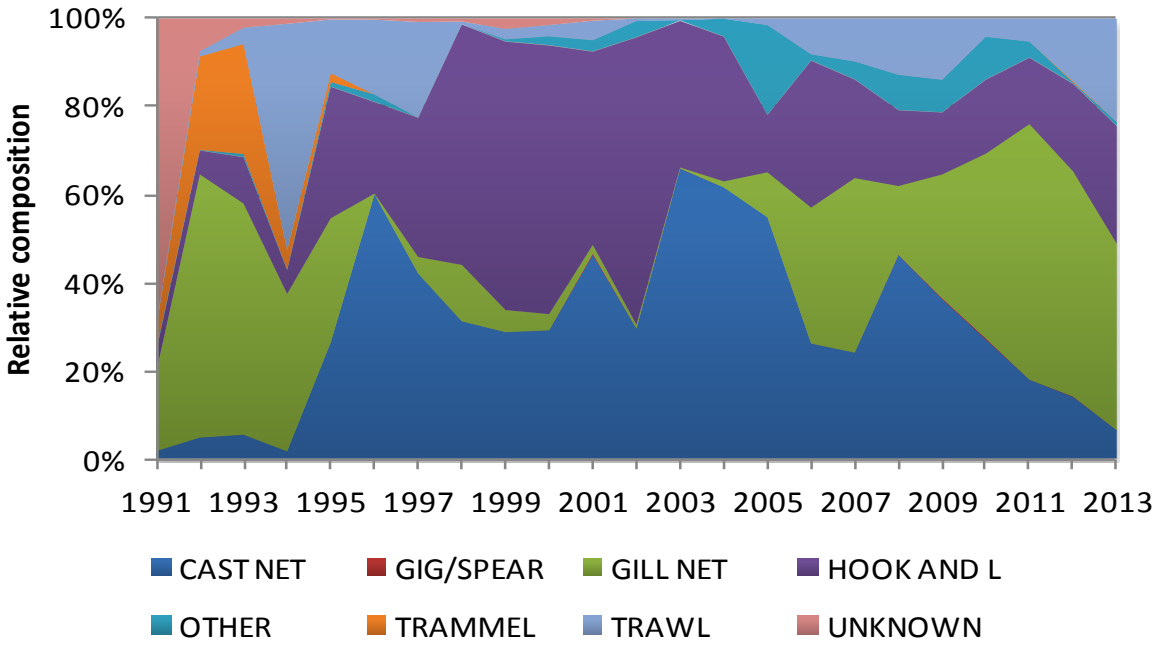

Figure 4 – Composition (%) of Atlantic croaker commercial landings by gear type on Florida's Atlantic coast, 1991–2013. The 2013 commercial landings were preliminary and are subject to change.

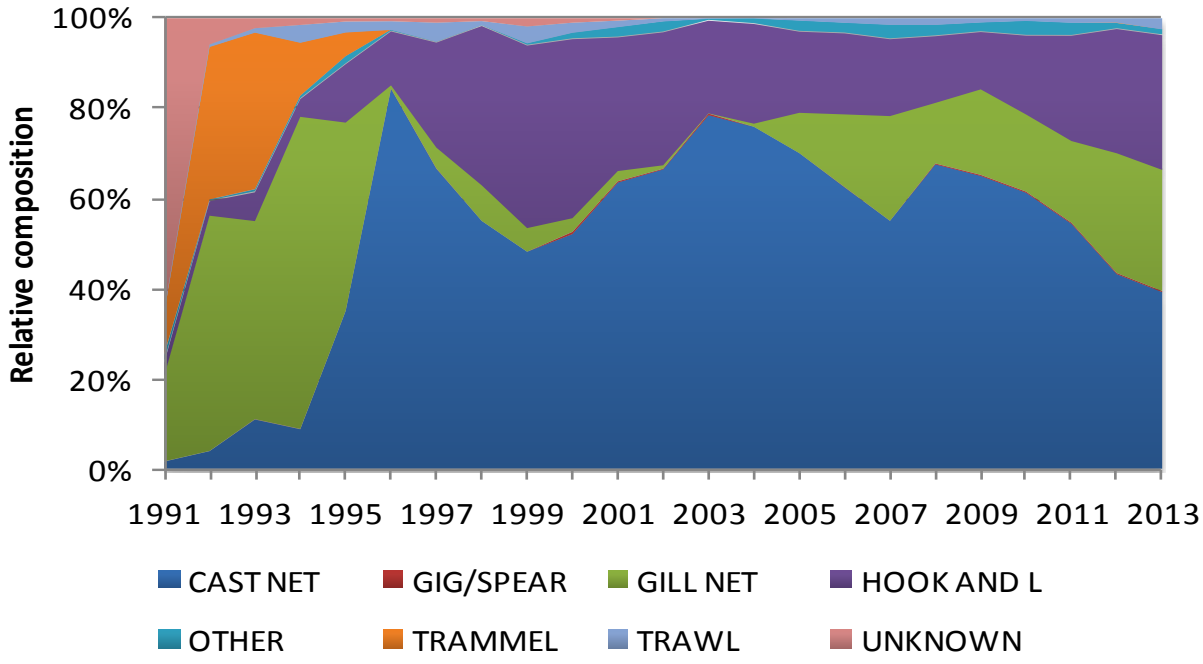

Figure 5- Composition (%) of commercial trips by gear type reporting Atlantic croaker on Florida's Atlantic coast, 1991–2013. The 2013 commercial trip estimates were preliminary and are subject to change.

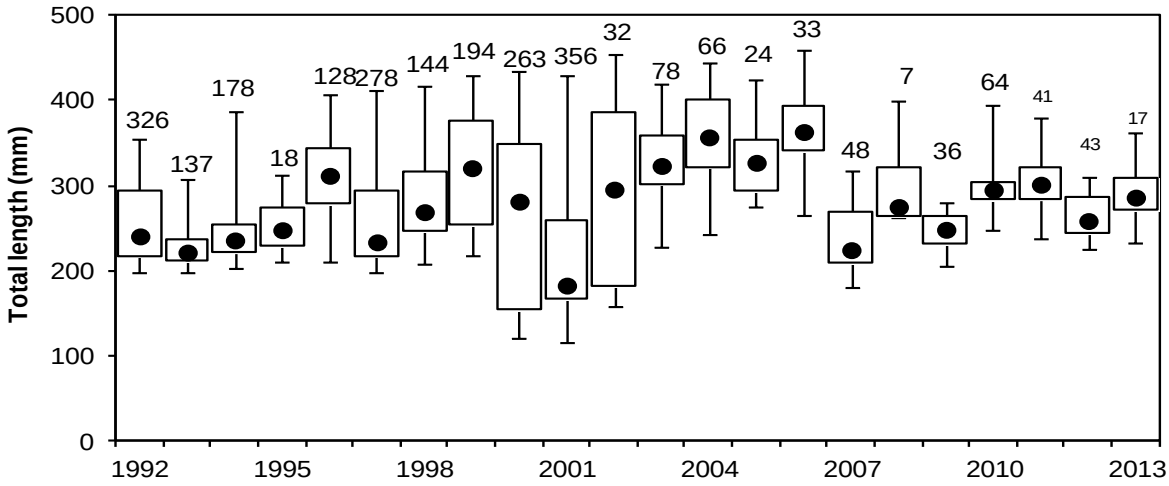

Figure 6 - Size distributions of Atlantic croaker measured in the commercial fishery on the Atlantic coast of Florida, 1992-2013. The dark circle represents the median, the box represents the 25th-75th percentiles and the vertical whiskers extend from 2.5th -97.5th percentiles. Numbers of fish measured are shown above the upper whiskers.

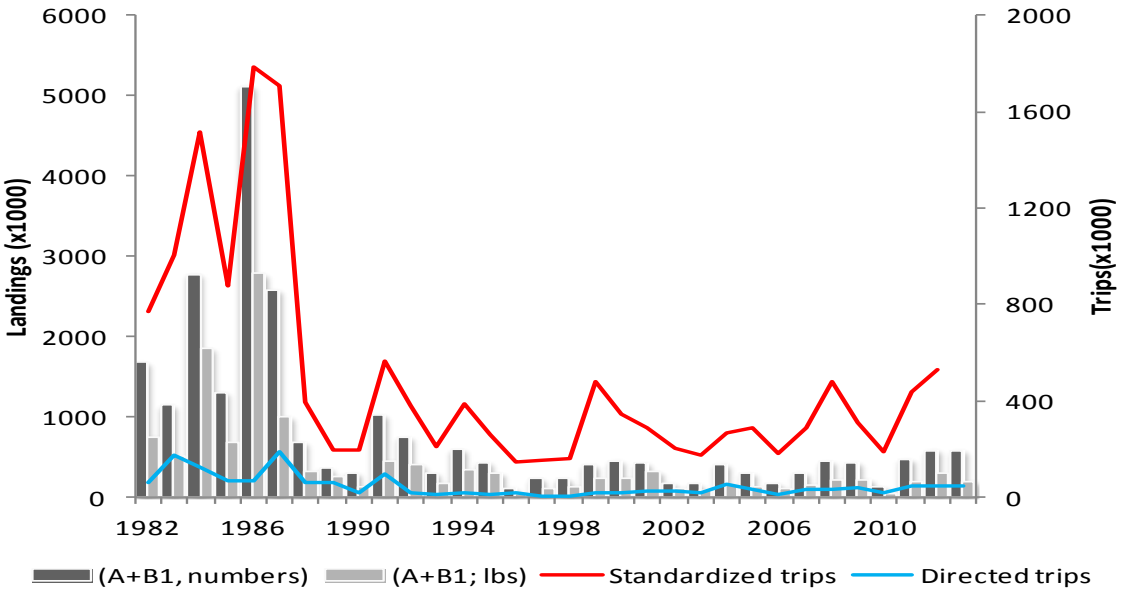

Figure 7 – Time series of the recreational harvests in number and weight (lbs) and of the numbers of standardized and directed angler-trips reporting Atlantic croaker on Florida's Atlantic coast, 1982-2013. The 2013 estimates were preliminary and are subject to change. The 2013 numbers of standardized and directed angler-trips were not estimated because there were no intercept data in 2013.

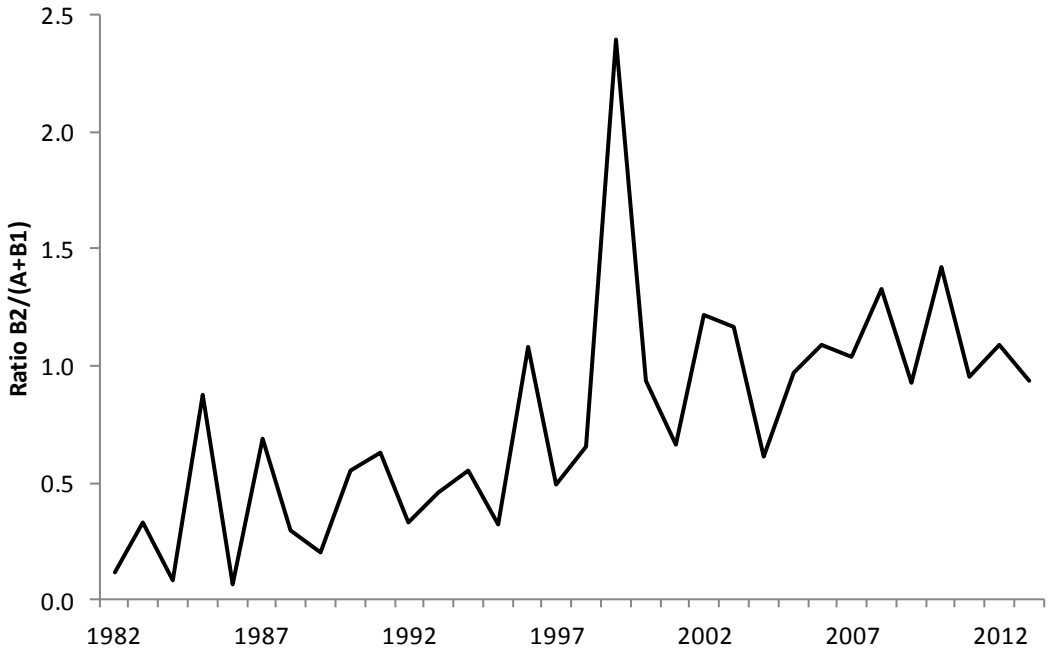

Figure 8 – Variations of the ratio "fish released alive (type B2)/fish kept (Type A+ B1)" for Atlantic croaker recreationally harvested on the east coast of Florida, 1982 – 2013. The ratio in 2013 was preliminary and subject to change.

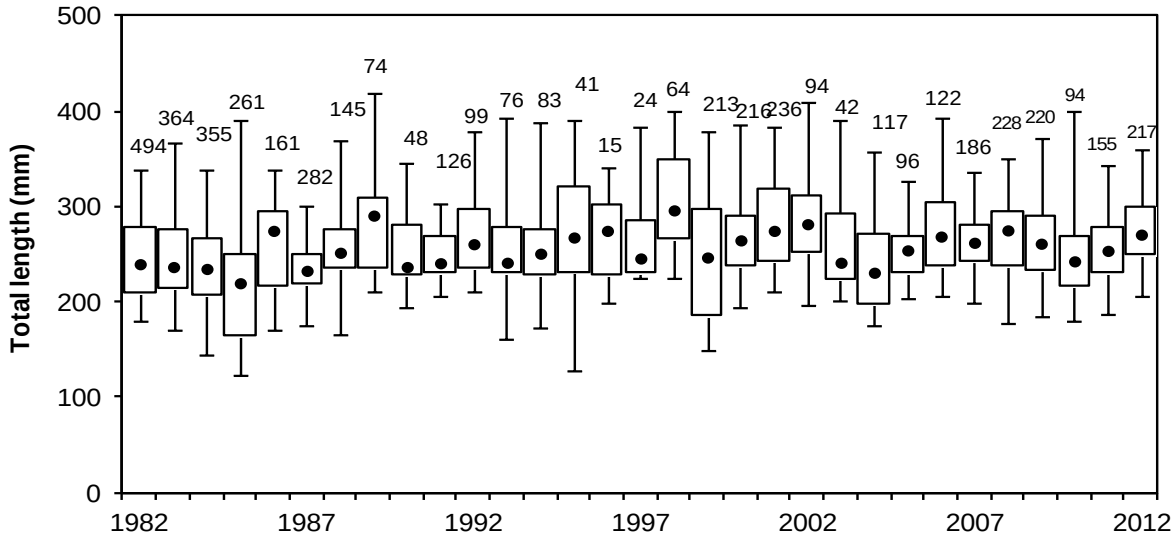

Figure 9 – Size distributions of Atlantic croaker measured in the recreational fishery on the Atlantic coast of Florida, 1982-2012. The dark circle represents the median, the box represents the 25th – 75th percentiles and the vertical whiskers extend from 2.5th -97.5th percentiles. Numbers of fish measured are shown above the upper whiskers. The red line indicates the long-term trend of the median total length. The 2013 size distribution is not shown because there were no intercept data in 2013.

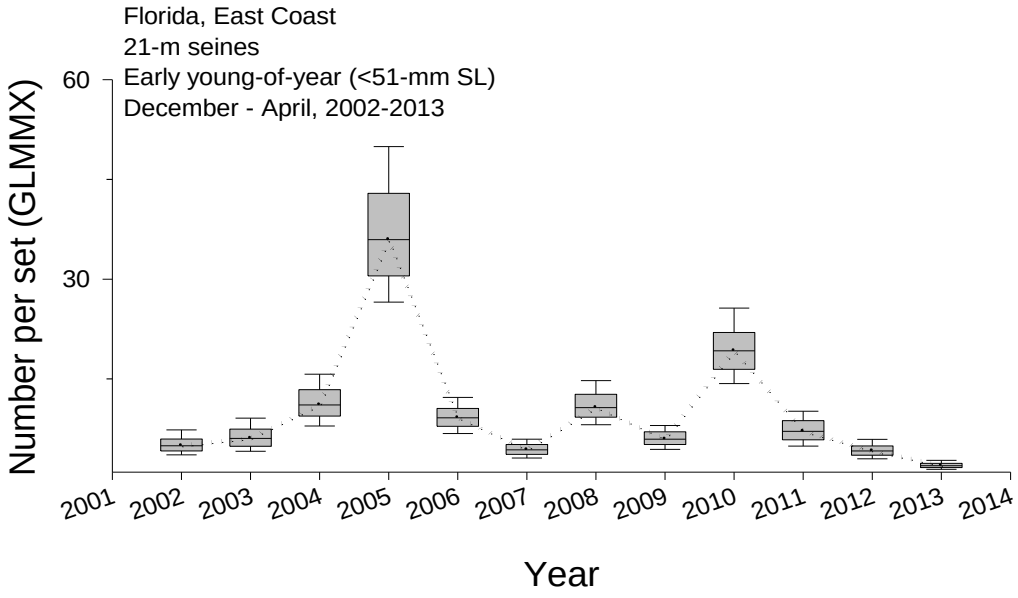

Figure 10 – Indices of relative abundance for young-of-the year Atlantic croaker (<51-mm SL) collected using 21.3-m seines during monthly stratified-random sampling surveys on the east coast of Florida, 2002-2013. The box represents the 25th and 75th percentiles, the vertical line represents the 10th to 90th percentiles, and the horizontal line represents the median estimate

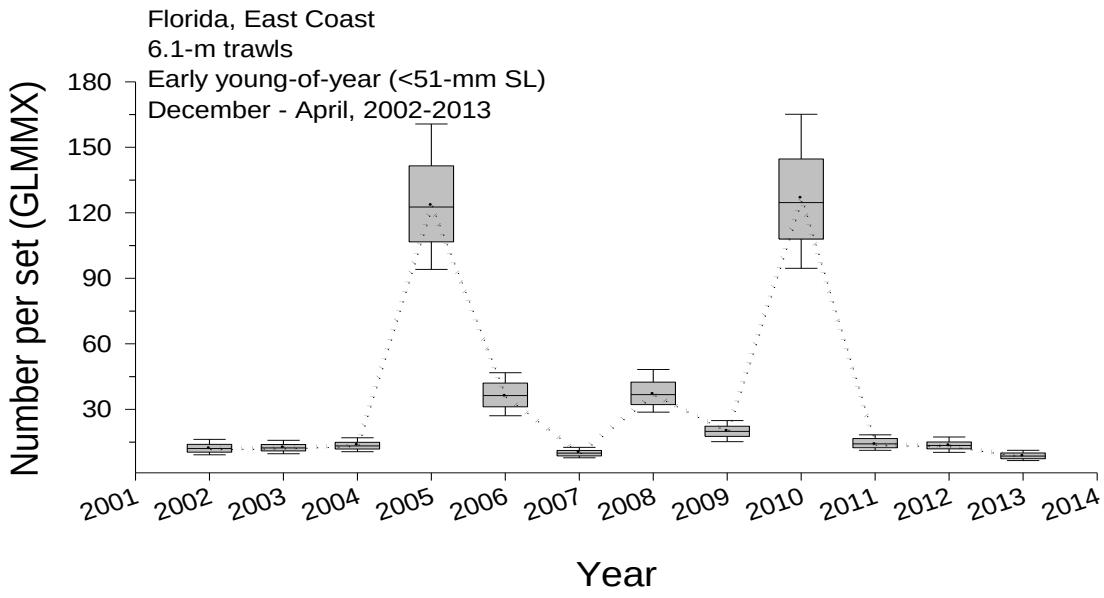

Figure 11 – Indices of relative abundance for young-of-the year Atlantic croaker (<51-mm SL) collected using a 6.1-m trawl during monthly stratified-random sampling surveys on the east coast of Florida, 2002-2013. The box represents the 25th and 75th percentiles, the vertical line represents the 10th to 90th percentiles, and the horizontal line represents the median estimate

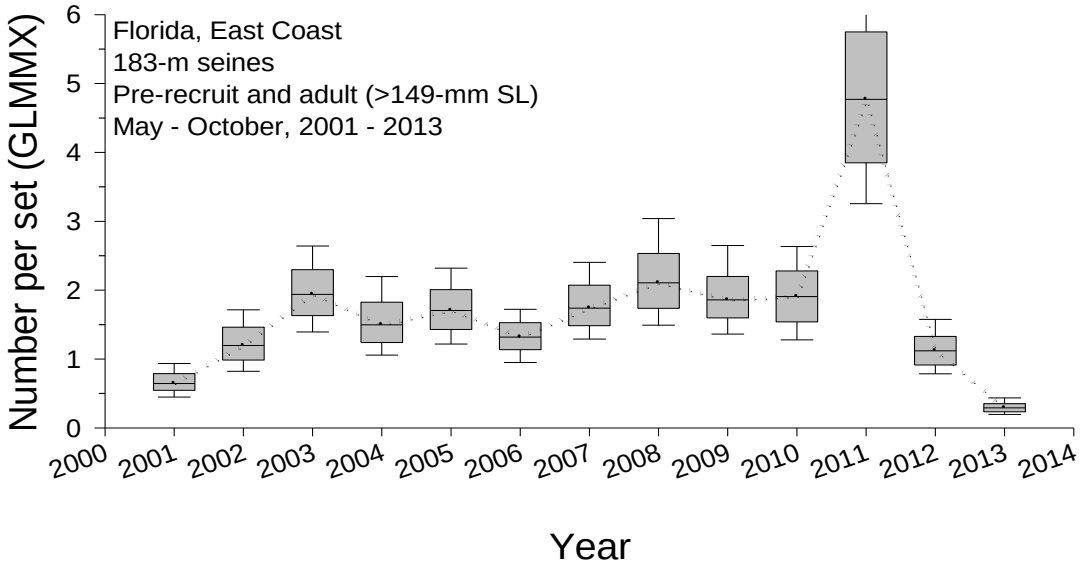

Figure 12 – Indices of relative abundance for large juvenile and sub-adult/adult Atlantic croaker (>149-mm SL) collected using 183-m Haul seines during monthly stratified-random sampling surveys on the east coast of Florida, 2001-2013. The box represents the 25th and 75th percentiles, the vertical line represents the 10th to 90th percentiles, and the horizontal line represents the median estimate.

Atlantic States Marine Fisheries Commission

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MEMORANDUM

July 16, 2014

To: **South Atlantic State-Federal Management Board**

From: **Red Drum Stock Assessment Subcommittee**

RE: **Draft Terms of Reference for 2015 Red Drum Benchmark Stock Assessment**

The next Red Drum Stock Assessment is scheduled to be completed in 2015. In order to meet this deadline, work must begin on the assessment this fall. The Board will need to approve Terms of Reference at the August 2014 South Atlantic Board Meeting. The Red Drum Stock Assessment Subcommittee has recommended the Board consider the following Terms of Reference for the assessment and as well as the SEDAR Peer Review Panel:

Draft Terms of Reference for 2014 Red Drum Benchmark Stock Assessment

1. If possible, identify and prepare new data that could be used to inform the assessment of adult and/or spawning stock trends.
2. Characterize precision and accuracy of fishery-dependent and fishery-independent data considered for the assessment, including the following but not limited to:
    a. Provide descriptions of each data source (e.g., geographic location, sampling methodology, potential explanation for outlying or anomalous data).
    b. Describe calculation and potential standardization of abundance indices.
    c. Discuss trends and associated estimates of uncertainty (e.g., standard errors).
    d. Justify inclusion or elimination of available data sources.
    e. Discuss the effects of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, ageing accuracy, sample size) on model inputs and outputs.
3. Define and justify definition of stock structure.
4. Review recreational fishing estimates and PSEs. Compare historical and current data collection and estimation procedures and describe data caveats that may affect the assessment.
5. Estimate discards and size composition of discards in recreational and commercial fisheries where possible.
6. Evaluate the effects of stock enhancement program contributions on data inputs.
7. Develop models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, and analyze model performance.
    a. Describe stability of model (e.g., ability to find a stable solution, invert Hessian)
    b. Assess estimated selectivity and discuss effects on population parameters.
    c. Justify choice of CVs, effective sample sizes, or likelihood weighting schemes.
    d. Perform sensitivity analyses for starting parameter values, priors, etc. and conduct other model diagnostics as necessary.
    e. Clearly and thoroughly explain model strengths and limitations.

f. Briefly describe history of model usage, its theory and framework, and document associated peer-reviewed literature. If using a new model, test using simulated data.
g. If model structure differs from the model structure used in the previous assessment, preform a continuity run of the previous model and compare estimates. Discuss potential causes of any observed discrepancies.
h. If multiple models were considered, justify the choice of preferred model and the explanation of any differences in results among models.

8. State assumptions made for all models and explain the likely effects of assumption violations on synthesis of input data and model outputs. Examples of assumptions may include (but are not limited to):
    a. Choice of stock-recruitment function.
    b. Choice to use (or estimate) constant or time-varying M and catchability.
    c. Choice of a plus group.
    d. Constant ecosystem (abiotic and trophic) conditions.
9. Characterize uncertainty of model estimates and biological or empirical reference points.
10. Perform retrospective analyses, assess magnitude and direction of retrospective patterns detected, and discuss implications of any observed retrospective pattern for uncertainty in population parameters (e.g., F, SSB), reference points, and/or management measures.
11. Recommend stock status as related to reference points (if available). For example:
    a. Is the sSPR above or below the 30% sSPR threshold?
12. Other potential scientific issues:
    a. If possible, assess any temporal changes in distribution or stock structure. Discuss potential causes of any changes.
    b. Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies.
13. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.
14. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology. Highlight improvements to be made by next benchmark review.
15. Recommend timing of next benchmark assessment and intermediate updates, if necessary relative to biology and current management of red drum.

Terms of Reference for SEDAR Peer Review Panel

1. Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:
    a. Presentation of data source variance (e.g., standard errors).
    b. Justification for inclusion or elimination of available data sources,
    c. Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging accuracy, sample size),
    d. Calculation and/or standardization of abundance indices.
    e. Estimation of discards and size composition of discards.

2. Evaluate the definition of stock structure used in the assessment. Is the definition appropriate given the biology and management of red drum?

3. Evaluate the methods and models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, including but not limited to:
    a. Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of red drum?
    b. If multiple models were considered, evaluate the analysts' explanation of any differences in results.
    c. Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M, stock-recruitment relationship, choice of time-varying parameters, plus group treatment).

4. Evaluate the diagnostic analyses performed, including but not limited to:
    a. Sensitivity analyses to determine model stability and potential consequences of major model assumptions
    b. Retrospective analysis

5. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.

6. If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.

7. Recommend best estimates of stock biomass, abundance, and exploitation from the assessment for use in management, if possible, or specify alternative estimation methods.

8. Evaluate the choice of reference points and the methods used to estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures.

9. Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.

10. Recommend timing of the next benchmark assessment and updates, if necessary, relative to the life history and current management of red drum.

11. Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of

reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.

If you have any questions, please contact me at krootes-murdy@asmfc.org or (703) 842-0740.

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