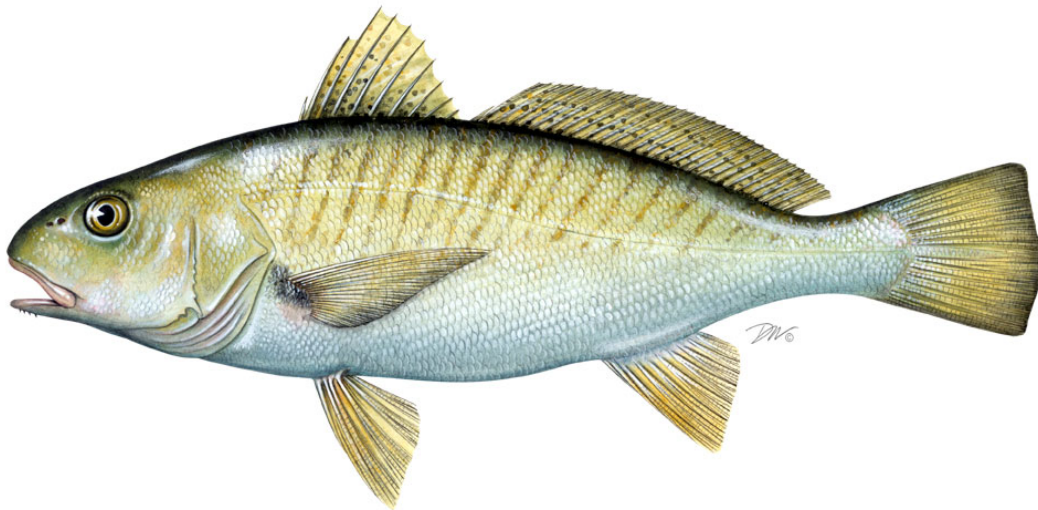


Draft Addendum for Public Comment

Atlantic States Marine Fisheries Commission

**DRAFT ADDENDUM III TO AMENDMENT 1 TO THE INTERSTATE
FISHERY MANAGEMENT PLAN FOR ATLANTIC CROAKER FOR
PUBLIC COMMENT**

Revisions to Management using the Traffic Light Approach



October 2019



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

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Public Comment Process and Proposed Timeline

In May 2019, the South Atlantic State/Federal Fisheries Management Board initiated the development of an addendum to the Interstate Fishery Management Plan (FMP) for Atlantic Croaker to incorporate updates to the annual Traffic Light Analyses and associated management. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of Atlantic croaker, the addendum process and timeline, and a statement of the problem. This document also provides management options for public consideration and comment.

The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is **January 10, 2020 at 5:00 p.m.** Comments may be submitted at state public hearings or by mail, email, or fax. If you have any questions or would like to submit comment, please use the contact information below.

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Commission's Process and Timeline

May 2019	South Atlantic Board Tasks PDT to Develop Draft Addendum III
May 2019 – October 2019	PDT Develops Draft Addendum III for Public Comment
October 2019	South Atlantic Board Reviews Draft Addendum III and Considers Its Approval for Public Comment
November 2019 – January 10, 2020	Board Solicits Public Comment and States Conduct Public Hearings
February 2020	Board Reviews Public Comment, Selects Management Options and Considers Final Approval of Addendum III
TBD	Provisions of Addendum III are Implemented

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1.0 INTRODUCTION

The Atlantic States Marine Fisheries Commission (ASMFC) is responsible for managing Atlantic croaker (*Micropogonias undulatus*) in state waters (0-3 miles from shore) under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, and has done so through an interstate fishery management plan (FMP) since 1987. Atlantic croaker are currently managed under Amendment 1 to the FMP and Addenda I-II. The states of New Jersey through Florida have a declared interest in the fishery and are responsible for implementing management measures consistent with the interstate FMP as members of the South Atlantic State/Federal Fisheries Management Board (Board).

Addendum II established the Traffic Light Approach (TLA) as a precautionary management framework to evaluate fishery trends and develop management actions. The TLA was originally developed as a management tool for data-poor fisheries, and its application to Atlantic croaker is described in further detail in *Section 2.2.2*.

In recent years, the Atlantic croaker fishery has experienced significant declines in harvest, while such declines have not been evident in fishery-independent survey abundance indices used in the TLA. Furthermore, a 2017 stock assessment was not recommended for management use, due partially to conflicting signals between harvest and fishery-independent indices. These conflicting signals indicate the harvest and fishery-independent characteristics may not be representing comparable aspects or components of the stock, thus making management advice from the TLA unclear.

In response to the recent TLA and assessment results, a 2018 report from the Atlantic Croaker Technical Committee (TC) recommended five updates to the TLA. Additionally, a 2018 report from the Atlantic Croaker and Spot Plan Development Team (PDT) discussed how the management responses required by Addendum II could be updated to better reflect stock characteristics and develop more achievable management goals. Draft Addendum III addresses the recommendations of the TC and PDT by incorporating TC-recommended updates to the TLA analysis and proposing changes to the TLA triggers and management program.

2.0 OVERVIEW

2.1 Statement of the Problem

The TLA has been used since 2014 to monitor the Atlantic croaker population. The lack of a recent assessment approved for management use makes this approach the prominent source of management advice. While strong declines in harvest and reports of poor fishing have prompted concern, management action has not been triggered through the TLA because similar declines have not been observed in abundance indices. These conflicting signals suggest the current abundance indices used in the TLA may not adequately represent coastwide adult abundance and the TLA may not be sensitive enough to trigger management action when changes to the fishery occur that should trigger action. Additionally, current management lacks

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specificity in measures implemented if management action is triggered and attainability by requiring a percent increase in abundance be achieved through a percent reduction in harvest derived from the TLA analysis. Draft Addendum III incorporates TC-recommended updates to improve the TLA analysis and proposes alternatives to the current management triggers and responses.

2.2 Background

Atlantic croaker are small sciaenid forage species that support commercial and recreational fisheries in the Mid and South Atlantic regions. Atlantic croaker 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. Atlantic croaker feed on planktonic organisms as post-larvae and young of the year, and as juveniles and adults they prey on bottom dwelling organisms such as worms and crustaceans. Atlantic croaker reach maturity by approximately age two and can live up to 17 years, but more commonly live no longer than 10 years.

2.2.1 Stock Status and Assessment

The most recent stock assessment, conducted in 2017, upon peer review was not recommended for management use. Therefore, current stock status is unknown, although the Peer Review Panel did not indicate problems in the Atlantic croaker fishery that would require immediate management action. The Peer Review Panel did recommend continued evaluation of the fishery using the annual TLA.

The last benchmark stock assessment for Atlantic croaker recommended for management use by a peer review was conducted in 2010. Unlike previous assessments it evaluated the resource as a single coastwide stock. The assessment indicated that the resource was not experiencing overfishing, biomass had increased, and age-structure had expanded since the late 1980s. However, it could not determine stock status given uncertain model estimates due to limited data on shrimp trawl discards and fishing mortality. Improvements on estimation of these discards were made in the 2017 assessment, allowing the potential for shrimp trawl discards to be included as supplemental information with the annual TLA. Annual monitoring of shrimp trawl fishery discards is important because these represent a considerable proportion of Atlantic croaker removals, ranging from 7% to 78% annually during 1988-2008, according to the 2010 assessment. Estimates of shrimp trawl discards updated for the 2014 assessment, which were noted by the Peer Review Panel as being derived using current and supported methods, suggest the proportion of removals attributable to this component of the fishery may be higher.

One of the reasons that the 2017 stock assessment was not approved for management use was due to conflicting signals in harvest and abundance characteristics. Theoretically, increases in adult abundance should result in more fish available to be caught by the fishery; thus, fishing would be more efficient (greater catch per unit effort) and harvest would increase in a pattern similar to adult abundance. However, several of the most recent abundance indices have shown

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increases while harvest has declined to some of the lowest levels on record. One factor that has been identified to contribute to overestimates of adult abundance is an increase in the number of juveniles misclassified as adults in surveys that historically have typically caught adults.

2.2.2 Traffic Light Approach as Applied to Atlantic Croaker

The TLA was originally developed as a precautionary management framework for data poor fisheries whereby reference points could be developed that would allow for some level of evaluation and management of the fishery, particularly in the absence of or between stock assessments. 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. Examples of indicators include growth and reproduction parameters, abundance and stock biomass estimates, recreational harvest, commercial landings, or fishing mortality. Additionally, the indicators can be combined to form composite characteristics within similar categories (e.g. biological, population estimates, or combined fisheries harvest). 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 average for a reference time period and the yellow/red boundary is set at 60% of the reference period average, which would indicate a 40% decline (Halliday et al., 2001). 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.

Proportions of green and red for an individual component (e.g. recreational harvest) are calculated based on summary statistics for a predefined reference period. Annual values are compared to the reference period average to determine whether they are higher, lower, or the same. If the value is greater than the reference period average, a linear model is used to estimate the proportion green, such that greater values have a higher proportion green. If the value is less than the average, a linear model estimates the proportion red, such that lesser values have a higher proportion red. Yellow proportions are calculated as one minus the proportion green minus the proportion red and will be 100% yellow if the value equals the reference period average. Since an increasing percentage of red reflects a decreased value (e.g. harvest or abundance) below the reference period average, the proportion red offers a way of determining if any management response is necessary.

The color proportions in a composite index are averages of the color proportions for the individual components combined to make up the composite index. For example, if there are two components (e.g. recreational and commercial harvest) combined for the composite index, the proportion red is the average of the proportion red for both components, the proportion green is the average of the proportion green for both components, and the proportion yellow is the average of the proportion yellow for both components.

As an example of how to interpret TLA figures, consider year 2018 of Figure 1 (*Section 2.2.4*) which depicts the coastwide composite harvest characteristic of the Addendum II TLA. Table 1

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lists specific values considered for this characteristic and year. The reference period is 1996-2008, with average annual harvests during this time period being 24.5 million pounds and 14.9 million pounds for the commercial and recreational sectors, respectively. In 2018, commercial harvest was 4.2 million pounds. This value is less than the reference period average. Therefore, a linear regression was used to calculate the percent red based on how much less the 2018 value is than the reference period average, resulting in 67.2% red, 32.8% yellow, and 0% green. In 2018, recreational harvest was 3.0 million pounds. This value is less than the reference period average. Therefore, a linear regression was used to calculate the percent red based on how much less the 2018 value is than the reference period average, resulting in 64.2% red, 35.8% yellow, and 0% green. Averaging of sector harvest characteristic values for each color results in the final composite characteristic percentages: 65.7% red, 34.3% yellow, and 0% green.

Table 1. Commercial and recreational harvests and Traffic Light Approach (TLA) percentages for the 2018 Atlantic croaker harvest characteristics (commercial, recreational, and composite), using the 1996-2008 reference period.

1996-2008 Coastwide Average Commercial Harvest	24,545,916 pounds
2018 Coastwide Commercial Harvest	4,192,442 pounds
2018 Commercial Harvest TLA Percentages (Red, Yellow, Green)	67.2%, 32.8%, 0%
1996-2008 Coastwide Average Recreational Harvest	14,885,189 pounds
2018 Coastwide Recreational Harvest	3,006,258 pounds
2018 Recreational Harvest TLA Percentages (Red, Yellow, Green)	64.2%, 35.8%, 0%
2018 Composite Harvest TLA Percentages (Red, Yellow, Green)	65.7%, 34.3%, 0%

For Atlantic croaker, the TLA is used to provide management guidance in between stock assessments. It has two components, a harvest characteristic, comprised of commercial landings and recreational harvest data, and an abundance characteristic, comprised of fishery-independent abundance indices. The TC annually runs the TLA and provides the results to the PRT for the annual FMP Review. To utilize the best data available, the TC and PRT are able to modify the TLA as needed through annual reviews and updates.

2.2.3 Recommended Changes to the TLA and Management Responses

Following the 2017 assessment, the Board tasked the TC with exploring potential updates to improve the TLA. The TC developed five recommendations, which are listed below and are being considered for implementation through this addendum.

1. Incorporation of indices from the Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP) and the South Carolina Department of Natural Resources (SCDNR) Trammel Net Survey into the adult composite characteristic index, in addition to the currently used indices from the Northeast Fishery Science Center (NEFSC) Multispecies Bottom Trawl Survey and Southeast Area Monitoring and Assessment Program (SEAMAP).

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2. Use of revised adult abundance indices from the surveys mentioned above, in which age-length keys and length composition information are used to estimate the number of adult (age 2+) individuals caught by each survey.
3. Use of regional metrics to characterize the fisheries north and south of the Virginia-North Carolina state border. The ChesMMAP and NEFSC surveys would be used to characterize abundance north of the border, and the SCDNR Trammel Net and SEAMAP surveys would be used to characterize abundance south of the border.
4. Change/establish the reference time period for all surveys to be 2002-2012.
5. Change the triggering mechanism to the following: Management action will be triggered according to the current 30% red and 60% red thresholds if both the abundance and harvest thresholds are exceeded in any 3 of the 4 terminal years.

Some of these changes, such as the selection of fishery-independent surveys used for the abundance characteristic, incorporation of age and length information, and establishment of a new reference time period are already allowed under Addendum II. Addendum III would retain the TC's ability to alter the TLA as needed to best represent trends in Atlantic croaker harvest and abundance, including selection of surveys and methods to analyze and evaluate these data. However, changes to the triggering mechanism are beyond the scope of Addendum II. Thus, they are proposed in this addendum.

After considering the recommended changes to the TLA, the Board tasked the Atlantic Croaker and Spot PDT with exploring potential responses to management triggers that could result after incorporation of these updates. The PDT noted that there are currently no coastwide management requirements for Atlantic croaker. Additionally, due to the strong association of Atlantic croaker abundance with environmental variables, their exhibition of cyclical abundance trends, and the apparent disconnect between Addendum II harvest and abundance characteristics, a reduction in harvest would not necessarily result in a proportional increase in abundance. Therefore, the PDT recommended establishment of base management measures that would reduce fishing impacts to not exacerbate periods of low abundance. Additionally, with the recommended updates incorporating regional TLAs, the PDT noted that this approach was developed to increase survey coverage throughout the stock, but Atlantic croaker are still a single, coastwide stock. Therefore, any management triggers resulting from regional TLAs should incorporate some form of response throughout the management unit.

2.2.4 Population Characteristics

The following figures show composite harvest characteristic TLA analyses for Atlantic croaker through 2018 using the methods of Addendum II (Figure 1) and those of Draft Addendum III (Figures 2 and 3). Changes to analyses being incorporated through Draft Addendum III are shown in bold font in the captions for Figures 2 and 3, including use of regional information and a different reference time period.

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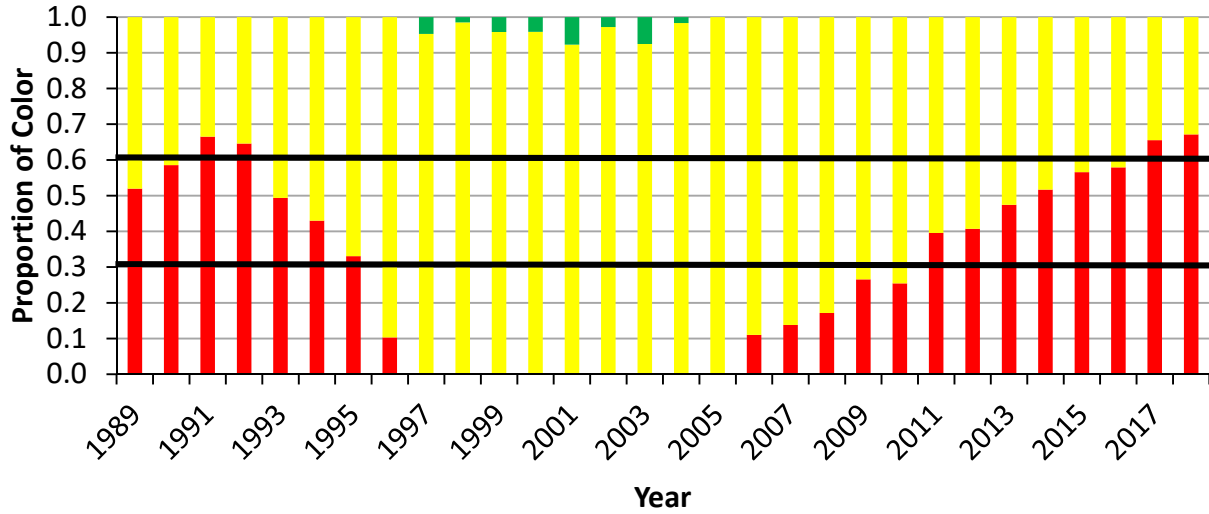


Figure 1. Addendum II Composite TLA analysis using commercial landings and recreational harvest for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period 1996 – 2008).

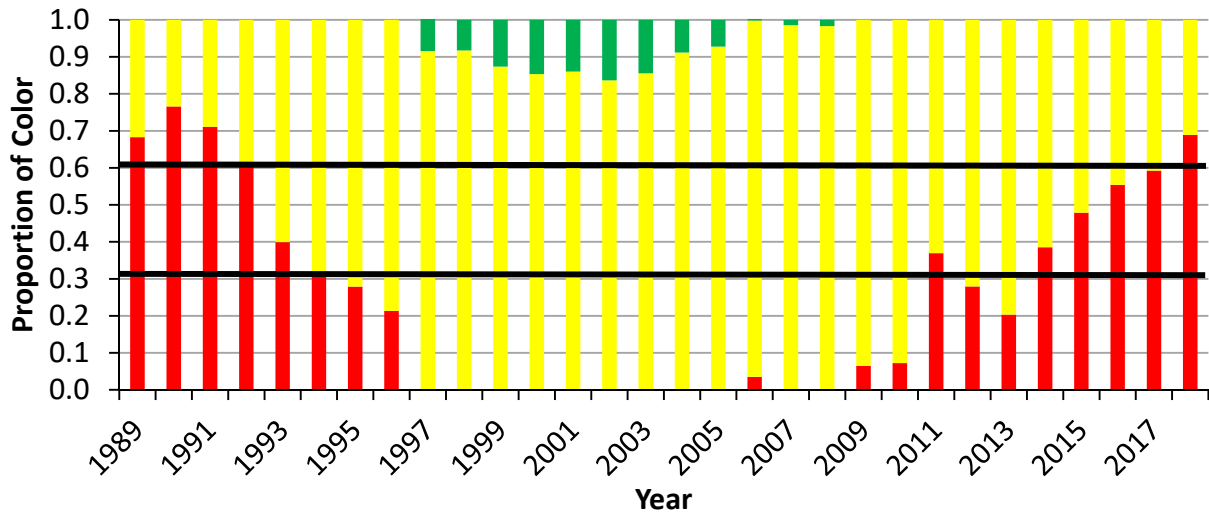


Figure 2. Draft Addendum III **Mid-Atlantic (NJ-VA) Regional** Composite TLA analysis using commercial landings and recreational harvest for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period 2002 – 2012).

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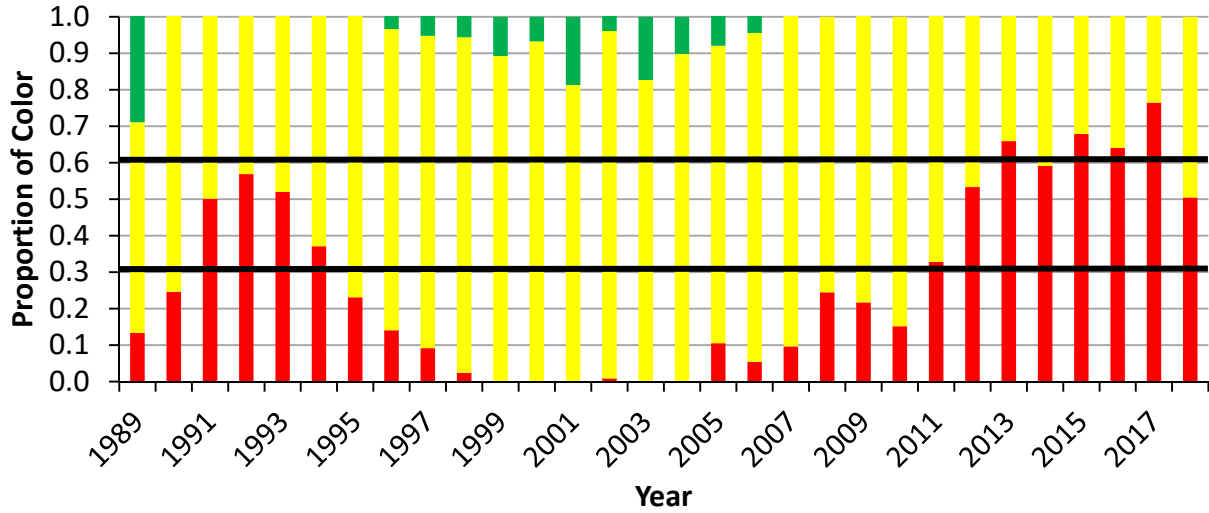


Figure 3. Draft Addendum III **South Atlantic (NC-FL) Regional** Composite TLA analysis using commercial landings and recreational harvest for Atlantic croaker with management thresholds of 30% and 60% proportion red (**reference period 2002 – 2012**).

The following figures show composite abundance characteristic TLA analyses for Atlantic croaker through 2018 using the methods of Addendum II (Figure 4) and those of Draft Addendum III (Figures 5 and 6). Changes to analyses being incorporated through Draft Addendum III are shown in bold font in the captions for Figures 5 and 6, including use of age and regional information and a different reference time period.

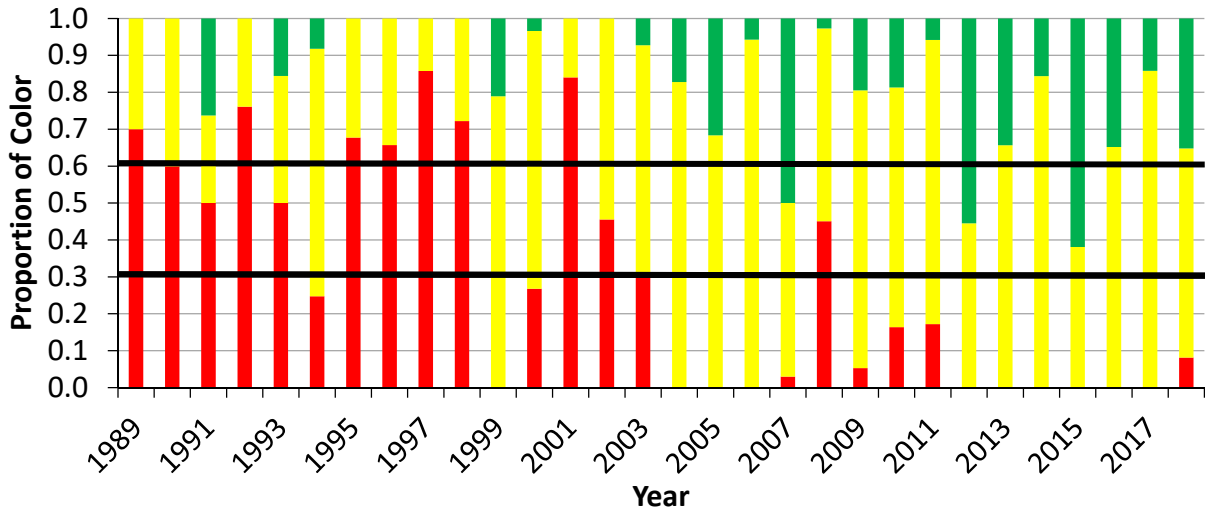


Figure 4. Addendum II Composite TLA analysis using fishery-independent survey indices (NEFSC Trawl Survey and SEAMAP) for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference years 1996 – 2008).

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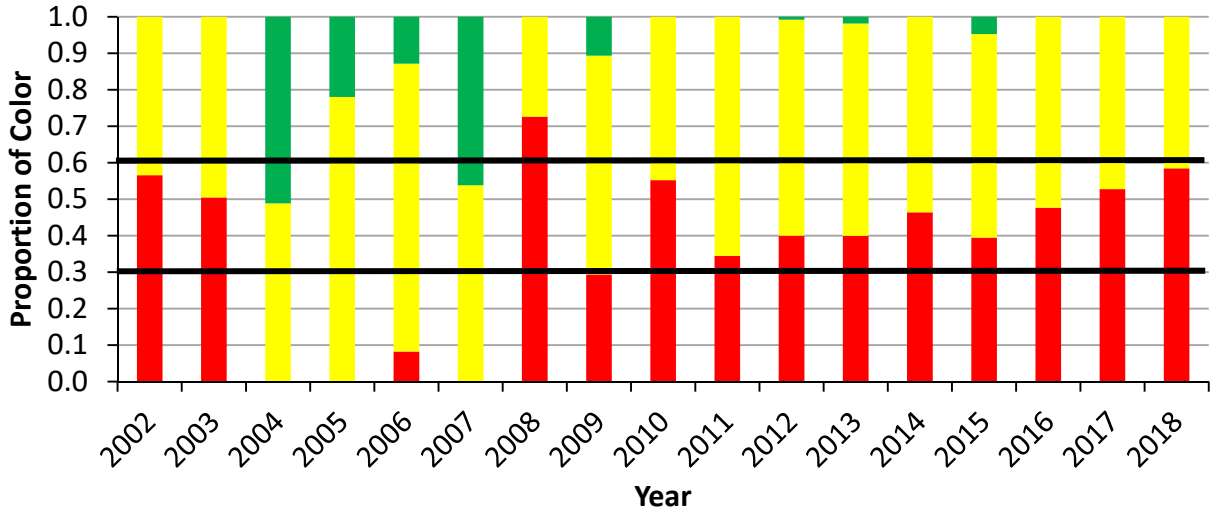


Figure 5. Draft Addendum III **Mid-Atlantic (NJ-VA) Regional** Composite TLA analysis using **age-specified** fishery-independent survey indices (NEFSC Trawl Survey and **ChesMMAP**) for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period 2002 – 2012).

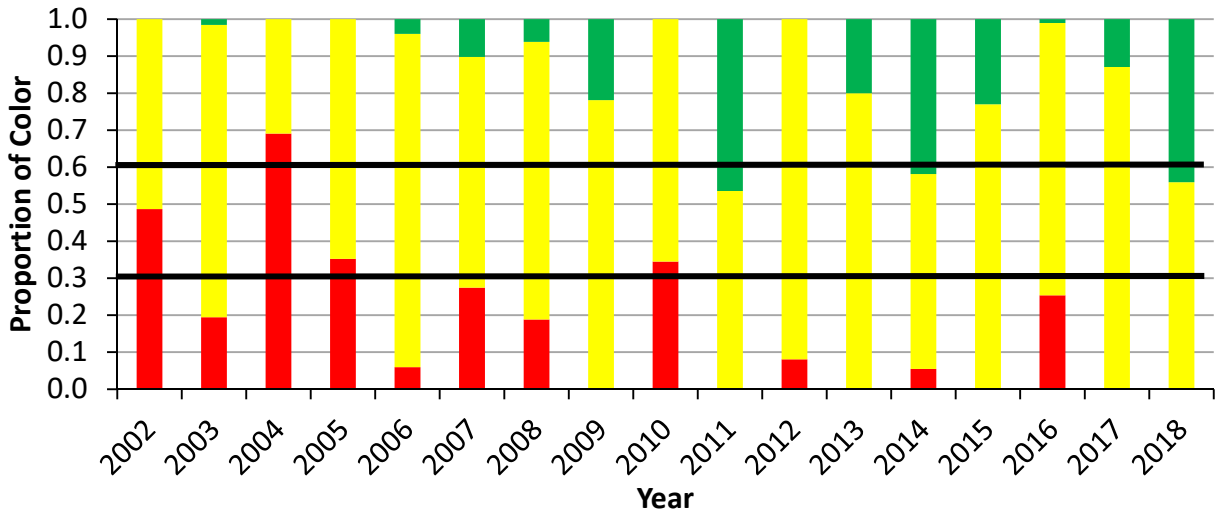


Figure 6. Draft Addendum III **South Atlantic (NC-FL) Regional** Composite TLA using **age-specified** fishery-independent survey indices (SEAMAP and **SCDNR Trammel Net Survey**) for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period 2002 – 2012).

3.0 PROPOSED MANAGEMENT PROGRAM

Changes to the management program would replace Section 3.0 of Addendum II to Amendment 1 to the Atlantic Croaker FMP.

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The following issues consider options for the TLA management triggering mechanism (Issue 1) and required management responses for the recreational (Issue 2) and commercial (Issue 3) fisheries. Recommended updates to the TLA analyses including additional fishery-independent survey indices, use of age information, use of regional characteristics, and changing the reference time period, will be incorporated into the TLA as part of this addendum, but are not considered with alternatives in the following issues as they apply the most current scientific advice, which is allowed under Addendum II. Draft Addendum III also retains the TC's ability to alter the TLA as needed to best represent trends in Atlantic croaker harvest and abundance.

3.1 Issue 1: Management Trigger Based on Proportion Red Options

Status quo is not included in either of the following options due to the incorporation of regional characteristics, which is based on the most current scientific advice. Option A is closest to status quo, as it retains the Addendum II trigger timeframe.

Option A. If red proportions for both population characteristics (adult abundance and harvest) in a regional, with both characteristics being for the same region, or a coastwide TLA meet or exceed the proportion of a threshold for the three terminal (most recent) years, then management action would be required.

Option B. If red proportions for both population characteristics (adult abundance and harvest) in a regional, with both characteristics being for the same region, or a coastwide TLA meet or exceed the proportion of a threshold for any three of the four terminal years, then management action would be required. (TC recommendation from *Section 2.2.3*)

Thresholds for both options 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

3.2 Management Response to Triggers

If management action has not been triggered according to *Section 3.1*, there are no coastwide management requirements, in accordance with Amendment 1. States regulations restricting Atlantic croaker harvest are encouraged to be maintained.

Per the PDT recommendations and direction of the Board, TLA-triggered management response options were developed to reduce fishing impacts to not exacerbate periods of low abundance. As the TLA does not offer advice on overfished or overfishing status, resulting management responses are not designed to stop overfishing or recover an overfished stock. Such status designations should be evaluated through a stock assessment and responded to accordingly. Additionally, while projected reductions to previous harvests are incorporated into the management responses, due to the lack of a coastwide quota and uncertainty of the fishery's behavioral response to triggered management measures, it is recognized that projected harvest

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reductions based on past fishery performance may not necessarily be achieved through triggered management measures. Furthermore, due to large numbers of removals from this population as bycatch through the South Atlantic shrimp trawl fishery (the majority of annual total removals), it is also recognized that directed harvest reductions may not result in large increases to abundance. However, these measures would reduce the probability of directed harvest inhibiting growth of the Atlantic croaker stock and provide baseline information for any future consideration of coastwide management measures.

Recreational response alternatives include bag limits while commercial alternatives include percentage reductions through quantifiable measures such as seasons, trip limits, or size limits. In developing these different regulatory responses, the PDT considered sector differences in gears, fishing behavior, and state regulations already in place.

If management action is triggered according to *Section 3.1*, the Draft Addendum proposes the following coastwide requirements (NOTE: the public is asked to identify its preferred option for both the recreational and commercial sectors):

3.2.1 Issue 2: Recreational Management Trigger Response Options

Option A. (Status Quo) The TC would recommend the appropriate percent reduction in recreational harvest needed and state-by-state measures to achieve the harvest reduction for approval by the Board. This allows the states to meet the individual needs of their 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.

Option B. If management action is triggered by meeting or exceeding the 30% red threshold, all recreational non-*de minimis* states would be required to institute a bag limit of no more than 50 Atlantic croaker per person. If management action is triggered by meeting or exceeding the 60% threshold, all states (including *de minimis*) would be required to institute a bag limit of no more than 40 Atlantic croaker per person.

Option C. If management action is triggered by meeting or exceeding the 30% red threshold, all recreational non-*de minimis* states would be required to institute a bag limit of no more than 40 Atlantic croaker per person. If management action is triggered by meeting or exceeding the 60% threshold, all states (including *de minimis*) would be required to institute a bag limit of no more than 30 Atlantic croaker per person.

Option D. If management action is triggered by meeting or exceeding the 30% red threshold, all recreational non-*de minimis* states would be required to institute a bag limit of no more than 30 Atlantic croaker per person. If management action is triggered by an exceedance of the 60% threshold, all states (including *de minimis*) would be required to institute a bag limit of no more than 20 Atlantic croaker per person.

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State and coastwide harvest reductions for each of the above options were estimated, based on Marine Recreational Information Program intercept and harvest data from 2009-2018 (Table 2). For trips that exceeded the number of fish allowed by each limit, the number of fish beyond the limit were summed, converted to pounds using average weights, and divided by the total harvest to estimate the percent reductions. Coastwide reductions, depending on the option chosen and which percent red threshold is exceeded (30% or 60%), range from 1.5% (50 fish bag limit) to 17.4% (10 fish bag limit).

Table 2. Estimated state and coastwide reductions from Issue 2 option bag limits, based on Marine Recreational Information Program intercept and harvest data from 2009-2018. Shown reductions assume recreational non-*de minimis* status for all states, although Issue 2 Options A-D do not require bag limits for recreational *de minimis* states when management action is triggered by exceedance of the 30% red threshold.

Bag Limit	Estimated Percent Reductions in Harvest (Pounds) from 2009-18 Averages								
	NJ	DE	MD	VA	NC	SC	GA	FL*	Total
50 fish	0.00%	2.76%	0.00%	2.38%	0.20%	0.00%	0.00%	0.15%	1.49%
40 fish	0.00%	3.42%	0.00%	3.35%	0.35%	0.00%	0.00%	0.49%	2.12%
30 fish	1.07%	4.13%	0.03%	4.79%	0.56%	0.00%	0.00%	1.58%	3.16%
20 fish	4.29%	7.67%	0.65%	8.47%	1.44%	0.30%	1.65%	4.55%	6.03%
10 fish	10.58%	17.39%	8.41%	22.42%	6.95%	2.53%	4.35%	14.78%	17.38%
2009-18 Average Harvest	374,559	190,683	1,320,978	4,976,468	451,391	169,920	94,944	851,963	8,430,905

*Florida only includes Atlantic coast harvest and estimated reduction.

Under any option selected, states would be encouraged to maintain any measures already in place that are more restrictive than those required by this addendum.

De minimis states are those in which enforcement actions would be expected to contribute insignificantly to a coastwide conservation plan. Per *Section 4.4.3* of Amendment 1, states may apply for this status if, for the preceding three years for which data are available, their average commercial or recreational Atlantic croaker landings (by weight) constitute less than one percent of the average coastwide commercial or recreational Atlantic croaker landings for the same period. A state that qualifies for *de minimis* based on their commercial landings would qualify for exemptions in their commercial fishery only, and a state that qualifies for *de minimis* based on their recreational landings would qualify for exemptions in their recreational fishery only.

Recreational for-hire vessels may possess live Atlantic croaker for use as bait. The maximum number of Atlantic croaker allowed to be held onboard for this use prior to beginning a trip, during a trip or after a trip is completed would be the bag limit in effect multiplied by the number of customers allowed on the vessel. During a trip, the number of Atlantic croaker in possession to be harvested could not exceed the bag limit in effect multiplied by number of

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anglers onboard the vessel during the trip (any additional Atlantic croaker in possession, up to the limit stated above, must be those to be used as live bait). In this context, a trip would be defined as a period of time in which fishing is conducted, beginning when the vessel leaves port and ending when the vessel returns to port. If no coastwide bag limit is in effect, then this use would not be limited by this addendum.

Recreational private vessels that possess live Atlantic croaker for use as bait would be subject to personal bag limits of anglers on the vessel, with live fish possessed counting towards the bag limits. If no coastwide bag limit is in effect, then this use would not be limited by this addendum.

3.2.2 Issue 3: Commercial Management Trigger Response Options

Option A. (Status Quo) The TC would recommend the appropriate percent reduction in commercial harvest needed and state-by-state measures to achieve the harvest reduction for approval by the Board. This allows the states to meet the individual needs of their 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.

Option B. Include the following language defining commercial responses to triggers at the 30% and 60% thresholds, with selection of one of Sub-Options B1-B3.

30% Threshold (single option proposed)

If management action is triggered by meeting or exceeding the 30% red threshold, commercial non-*de minimis* states that do not already have a minimum size limit or possession limit would be required to institute quantifiable measures (e.g. season, trip limit, or size limit) that reduce commercial harvest by 1% of the average state commercial harvest from the previous 10 years. States may establish differential measures by gear or area, as long as measures implemented are quantifiable and achieve the required 1% reduction for the entire state commercial harvest.

60% Threshold (choose one of Sub-Options B1-B3)

Sub-Option B1. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) would be required to institute quantifiable measures (e.g. season, trip limit, or size limit) that reduce commercial harvest by 5% of the average state commercial harvest from the previous 10 years.

Sub-Option B2. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) would be required to institute quantifiable measures (e.g. season, trip limit, or size limit) that reduce commercial harvest by 10% of the average state commercial harvest from the previous 10 years.

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Sub-Option B3. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) would be required to institute quantifiable measures (e.g. season, trip limit, or size limit) that reduce commercial harvest by 20% of the average state commercial harvest from the previous 10 years.

All measures established as required responses to TLA triggers would be evaluated to determine if they are both quantifiable and meet the objective reduction by the TC and approved by the Board prior to implementation.

3.2.3 Management Alternatives

If management action is triggered by meeting or exceeding the 60% red threshold and the Board determines more restrictive actions are necessary than those defined in *Sections 3.2.1* or *Section 3.2.2*, the Board may task the TC to determine an alternative reduction to the recreational or commercial fisheries. The TC would recommend the appropriate percent reduction in harvest needed and state-by-state measures to achieve the harvest reduction for approval 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 may include use of a combination of management tools that include size limits, bag/trip limits, seasonal closures, and gear restrictions.

3.3 Issue 4: Evaluation of Fishery Response to Management Measures

Option A. (Status Quo) Management measures set in response to any trigger would remain in place for three years to promote consistent measures and allow for sufficient time to evaluate population response. Once management action has been taken, the thresholds would 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.

Option B. Management measures set in response to any trigger would remain in place for at least three years to promote consistent measures and allow for sufficient time to evaluate population response. Once management action has been taken, the harvest characteristics would no longer be used to trigger management action, as the fishery-dependent data may be influenced by triggered measures. While triggered measures are in effect, a composite regional abundance characteristic, by itself, may trigger action at the next highest level of management response by the proportion red exceeding the next highest threshold in any three of the four terminal years.

After a minimum of three years, once no composite regional abundance characteristics trigger management action at either threshold, triggered measures would no longer be required, and the TC would resume using the harvest characteristics as components of the TLA that would be required to trigger management action.

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If triggered measures have remained in place for a minimum of four years due to proportions of red above a threshold for either of the composite regional abundance characteristics, the TC would, as part of conducting the annual TLA, evaluate trends in abundance to recommend to the Board whether triggered measures should remain in place or more restrictive measures should be considered.

4.0 COMPLIANCE

The management framework contained in *Section 3.0* of Addendum III to Amendment 1 is effective immediately upon its approval.

5.0 LITERATURE CITED

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. 41 p.

6.0 APPENDIX

To aid in public interpretation of TLA figures and results, the following figures depict components of Atlantic croaker TLA characteristics in a linear format with the long-term mean (average) (LTM) of the proposed reference period (2002-2012).

Commercial and Recreational Harvest

Commercial landings show a general declining trend has occurred since the late 1990s.

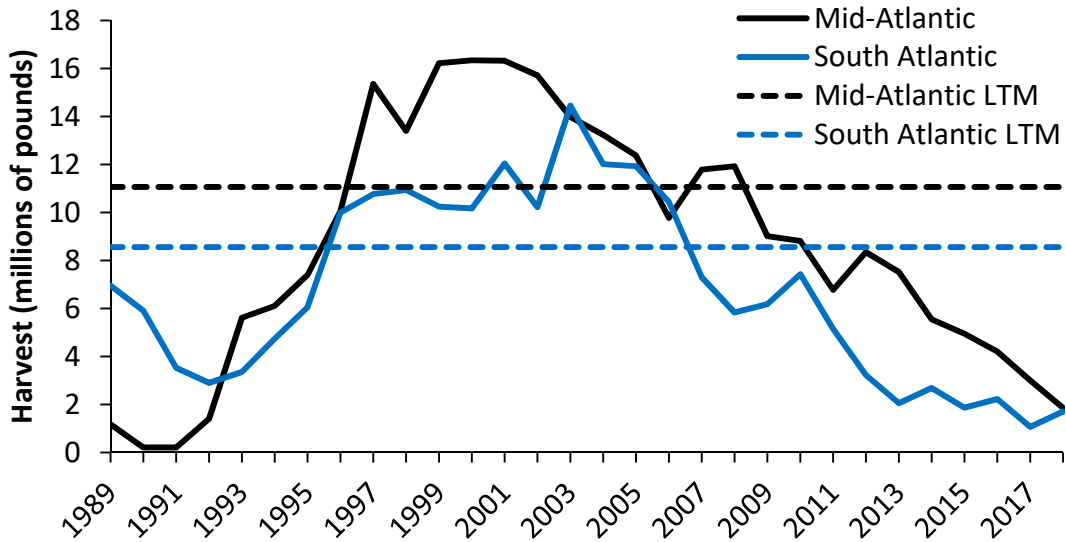


Figure A1. Commercial harvest and the LTM harvest for 2002-2012 in the Mid-Atlantic (NJ-VA) and South Atlantic (NC-FL) regions.

Mid-Atlantic recreational harvest shows an increase to a peak in the early 2000s, followed by a decline with values under its LTM since 2011. South Atlantic recreational harvest declined in the late 1980s and has remained low, varying about its LTM.

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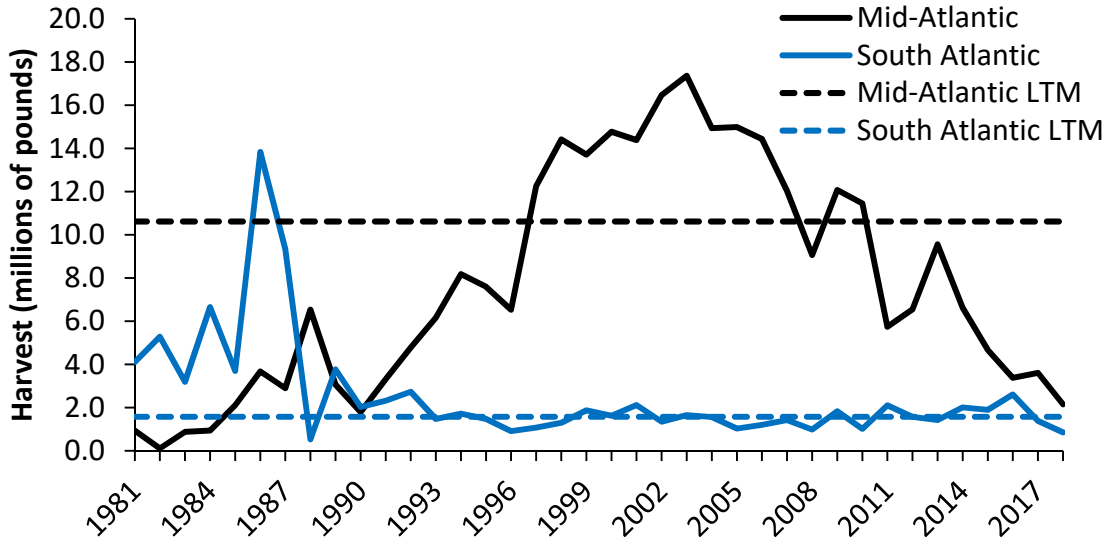


Figure A2. Recreational harvest and the LTM harvest for 2002-2012 in the Mid-Atlantic (NJ-VA) and South Atlantic (NC-FL) regions.

Abundance Indices

Mid-Atlantic

The Northeast Fishery Science Center (NEFSC) Multispecies Bottom Trawl Survey adult index has declined from its peak years (2007-2009), and general index levels have been below the LTM for the last three years.

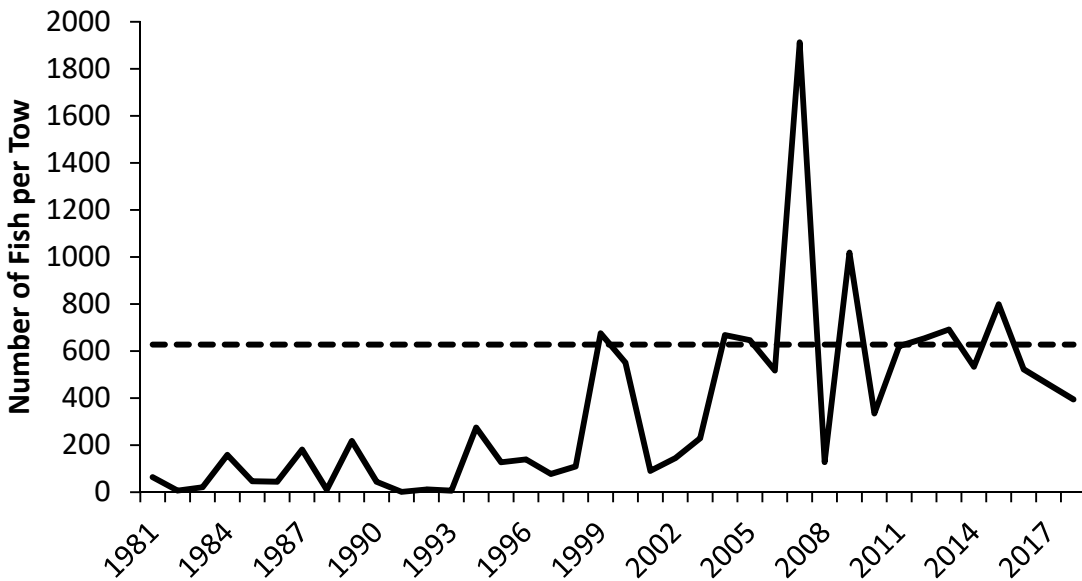


Figure A3. NEFSC adult index (solid line) and the LTM adult index for 2002-2012 (dashed line).

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The Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP) adult index shows a general long-term decline since the series peak in 2004.

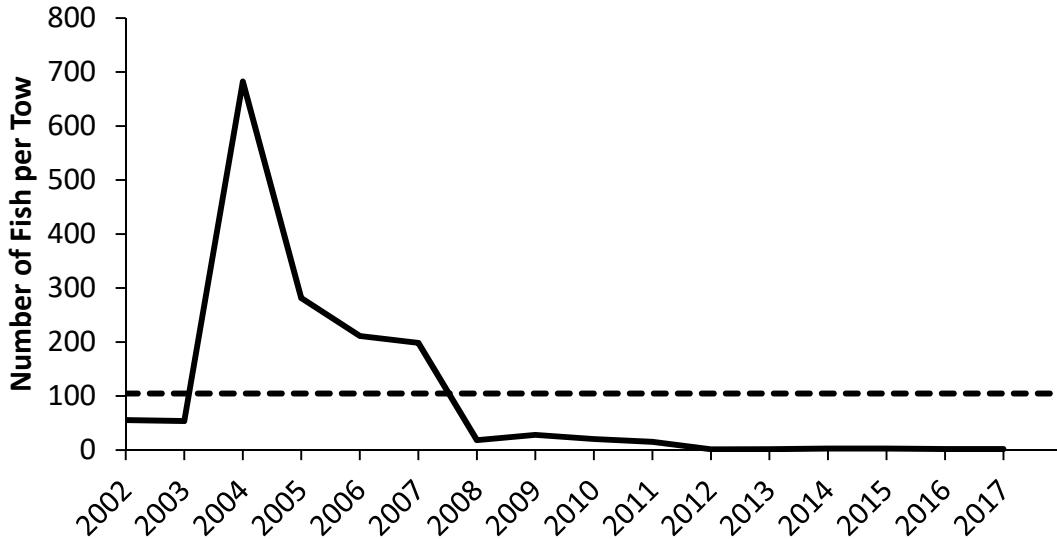


Figure A4. ChesMMAP adult index (solid line) and the LTM adult index for 2002-2012 (dashed line).

South Atlantic

The Southeast Area Monitoring and Assessment Program (SEAMAP) adult index shows a general increasing trend since the early 2000s.

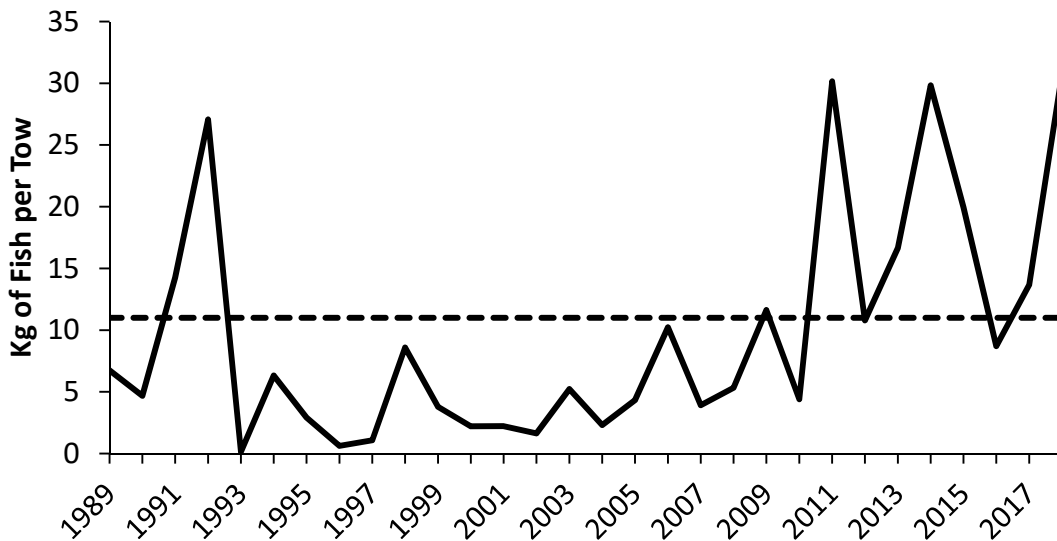


Figure A5. SEAMAP adult index (solid line) and the LTM adult index for 2002-2012 (dashed line).

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The South Carolina Department of Natural Resources (SCDNR) Trammel Net Survey index shows a general declining trend since 2009 with annual values above and below the LTM.

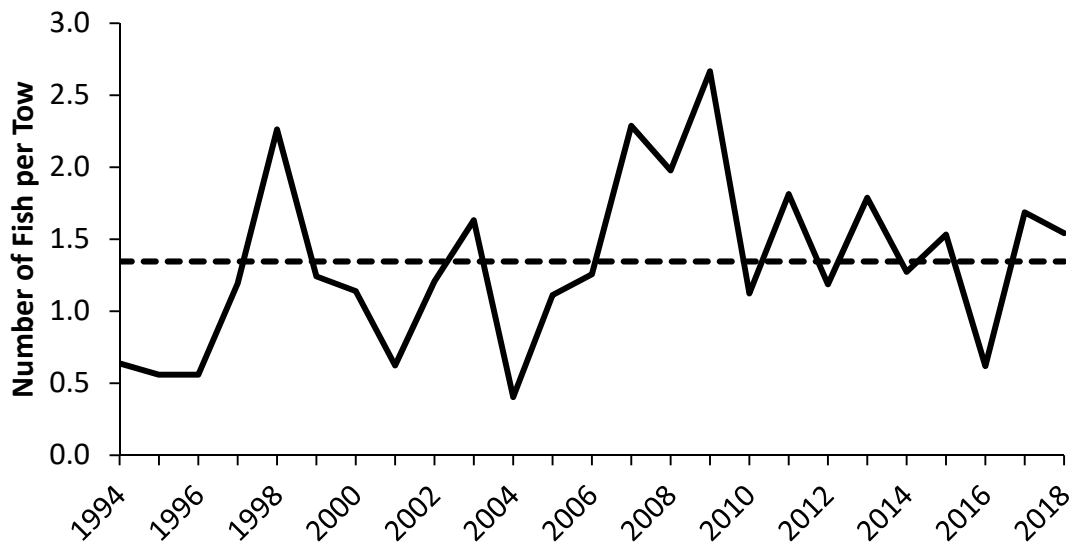


Figure A6. SCDNR adult index (solid line) and the LTM adult index for 2002-2012 (dashed line).