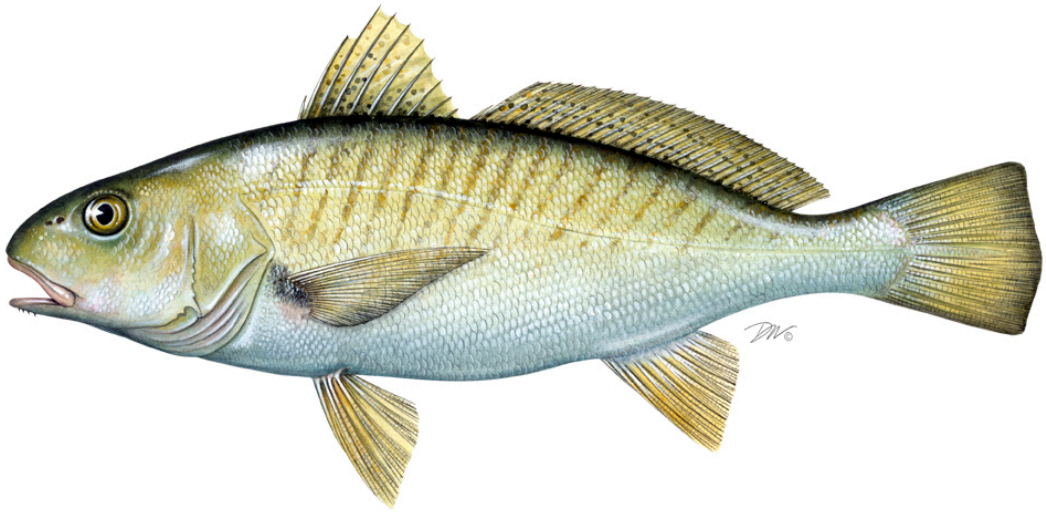
# *Atlantic States Marine Fisheries Commission*

# DRAFT ADDENDUM III TO AMENDMENT 1 TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC CROAKER

***Revisions to Management using the Traffic Light Approach***



**This draft document was developed for Management Board review and discussion. This document is not intended to solicit public comment as part of the Commission/State formal public input process. Comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. If approved, a public comment period will be established to solicit input on the issues contained in the document.**

**October 2019**

**Sustainable and Cooperative Management of Atlantic Coastal Fisheries**

**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 XX, 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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| Step | Date |
|---|---|
| Preparation of Draft Addendum III | May 2019 – Oct 2019 |
| Review and approval of Draft Addendum III by Board for public comment ***Current step*** | Oct 2019 |
| Public review and comment on Draft Addendum III | Oct 2019 – Jan 2020 |
| Board review of public comment on Draft Addendum III and consideration of final approval by the Board and Commission | Feb 2020 |

## 1.0 Introduction

The Fishery Management Plan (FMP) for Atlantic Croaker was adopted in 1987 and included the states from Maryland through Florida (ASMFC, 1987). In 2004, the South Atlantic State/Federal Fisheries Management Board (Board) found the recommendations in the FMP to be vague and initiated an amendment to define management measures necessary to achieve the goals of the FMP. In November 2005, the Board approved Amendment 1 to the Atlantic Croaker FMP (ASMFC, 2005). 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, from Florida through South Carolina; and the mid-Atlantic region, from North Carolina through New Jersey.

Amendment 1 established biological reference points (BRPs) to define an 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 Amendment established that the Board would take action, including a stock rebuilding schedule if necessary, should the BRPs indicate the stock is overfished or overfishing is occurring.

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. The Board was able to revise Amendment 1 through adaptive management, including any regulatory and/or monitoring requirements in subsequent addenda, along with procedures for implementing alternative management programs via conservation equivalency.

Addendum I consolidated the stock into a single, coastwide management unit, following the findings of the 2010 Benchmark Stock Assessment (ASMFC, 2010), and established a procedure for approval of peer-reviewed BRPs through Board action (ASMFC, 2011).

In August 2014, the Board approved Addendum II to the Atlantic Croaker FMP (ASMFC, 2014). Addendum II established the Traffic Light Approach (TLA) as the new precautionary management framework to evaluate fishery trends and develop management actions. The TLA was originally developed as a management tool for data-poor fisheries. The name comes from assigning a color (red, yellow, or green) to categorize relative levels of population indicators. When a population characteristic improves, the proportion of green in the given year increases. When a population characteristic declines, the proportion of red in the given year increases. Harvest and abundance thresholds of 30% and 60% red were established in Addendum II, representing moderate and significant concern for the fishery. If thresholds for both population characteristics meet or exceed a threshold for a three year period, then management action is enacted.

The purpose of Addendum III is to revise the TLA to better reflect changes in the Atlantic croaker fishery and redefine triggered management actions.

## 2.0 Overview

### 2.1 Statement of the problem

In 2017, a benchmark stock assessment was conducted for Atlantic croaker. This assessment was not recommended for management use due in part to conflicting trends from abundance and harvest time series. These types of trends are also used to monitor the Atlantic croaker fishery on an annual basis through the TLA. Strong declines in harvest and reports of poor fishing have prompted concern, however management action has not been triggered through the TLA because declines have not been observed in abundance indices. These conflicting signals suggest that the current abundance indices used in the TLA may not adequately represent coastwide adult abundance and that the TLA may not be sensitive enough to trigger management action when changes to the fishery occur.

### 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 The 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 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. 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 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 offers a way of determining if any management response is necessary.

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 will annually run the TLA and provide the results to the PRT for the annual FMP Review. The TC and PRT will utilize the best available data and modify the TLA as needed through the annual review and update.

### *2.2.2 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 (ASMFC, 2010).

One of the reasons that the 2017 stock assessment did not pass peer review was due to conflicting signals in harvest and abundance metrics. 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 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.

### *2.2.3 Management Response to Assessment Not Recommended for Management Use*

Following the failed assessment in 2017, the Board tasked the Atlantic Croaker Technical Committee (TC) with exploring potential updates to improve the TLA. The TC developed five recommendations (ASMFC, 2018a), 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).
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 metric, incorporation of age and length information, and establishment of a new reference time period are already allowed under Addendum II. Addendum III would maintain

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, the use of regional metrics and the change to the triggering mechanism are beyond the scope of Addendum II. Thus, they are considered for incorporation through Addendum III.

The Board also tasked the Atlantic Croaker and Spot Plan Development Team (PDT) with exploring potential responses to management triggers that could result after incorporation of these updates (ASMFC, 2018b). 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 metrics, a reduction in harvest would not necessarily be expected to 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 TLAs for Atlantic croaker through 2018 using the analysis of Addendum II (Figure 1) and those of Draft Addendum III (Figures 2 and 3).

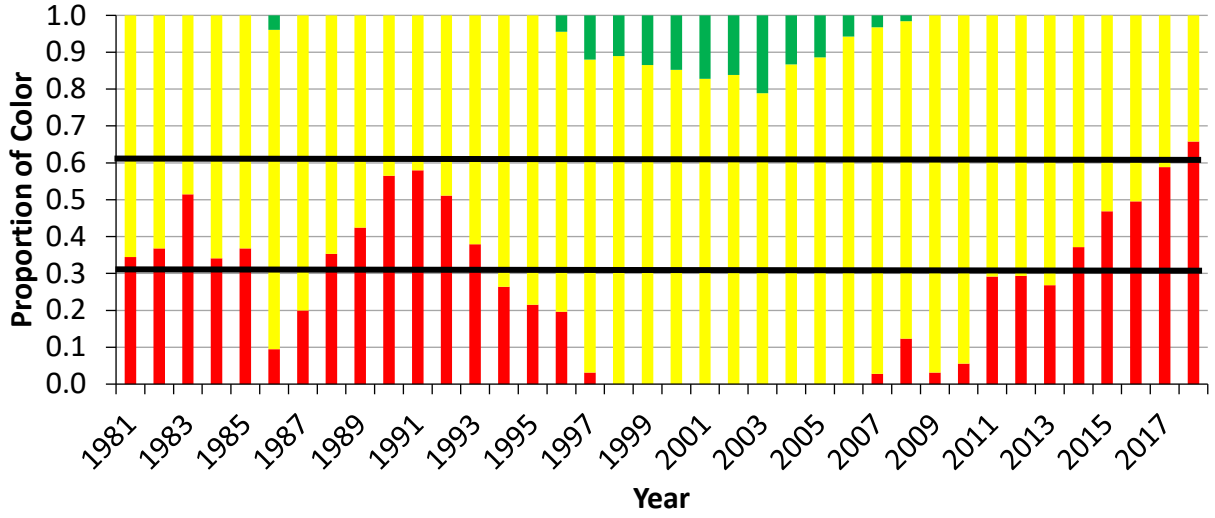



Figure 1. Addendum II Composite TLA using commercial landings and recreational harvest for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference years 1996 – 2008).

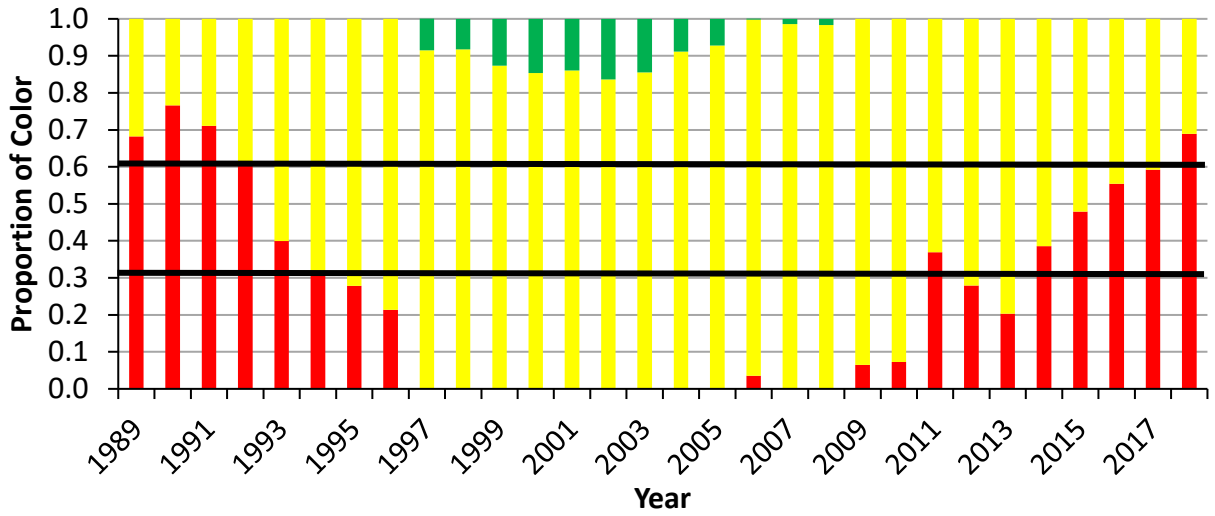



Figure 2. Draft Addendum III Mid-Atlantic (NJ-VA) Regional Composite TLA using commercial landings and recreational harvest for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference years 2002 – 2012).

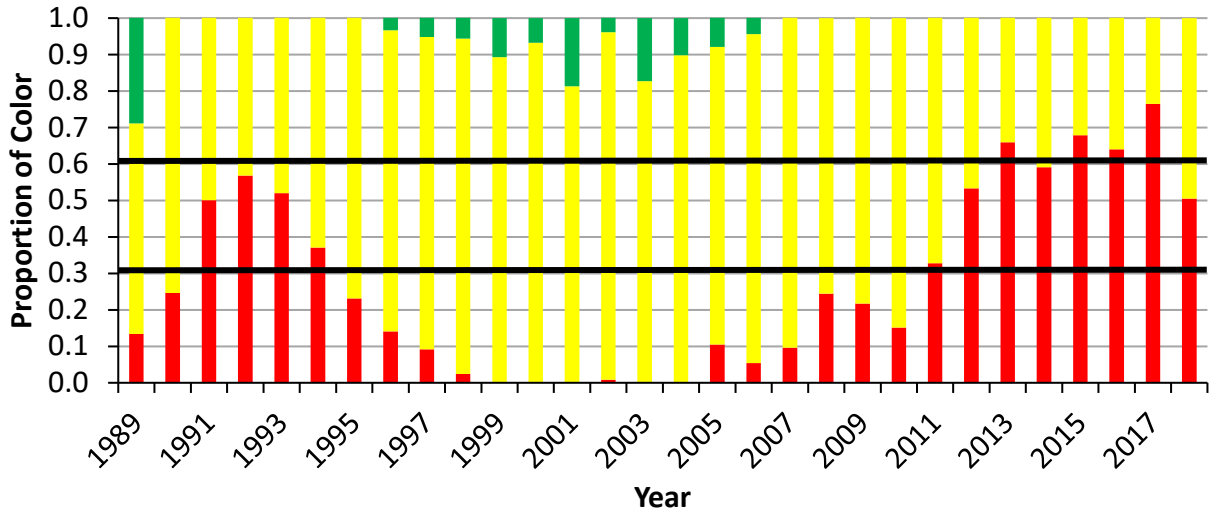



Figure 3. Draft Addendum III South Atlantic (NC-FL) Regional Composite TLA using commercial landings and recreational harvest for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference years 2002 – 2012).

The following figures show composite abundance characteristic TLAs for Atlantic croaker through 2018 using the analysis of Addendum II (Figure 1) and those of Draft Addendum III (Figures 2 and 3). Fishery-independent surveys used in each analysis are listed in the figure captions.

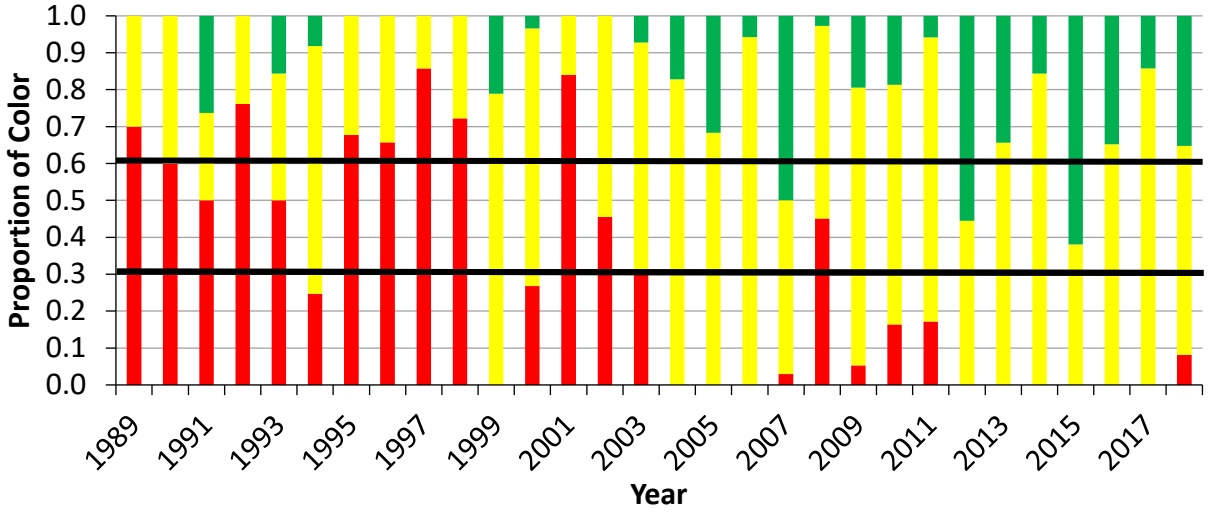



Figure 4. Addendum II Composite TLA using fishery-independent survey indices (NEFSC Trawl Survey and SEAMAP) for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period years 1996 – 2008).

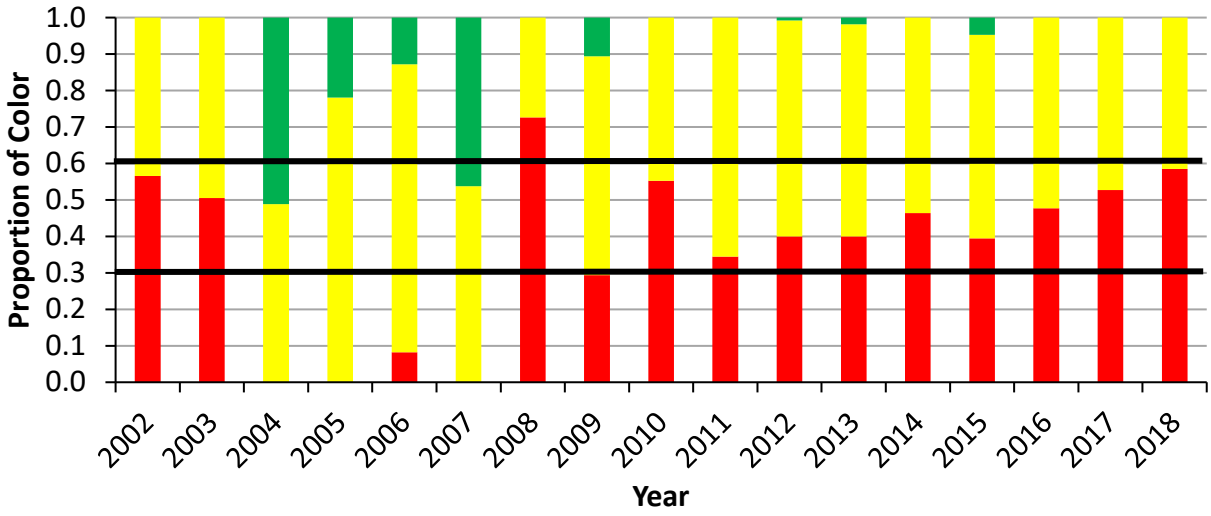



Figure 5. Draft Addendum III Mid-Atlantic (NJ-VA) Regional Composite TLA using fishery-independent survey indices (NEFSC Trawl Survey and ChesMMAP) for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period years 2002 – 2012).

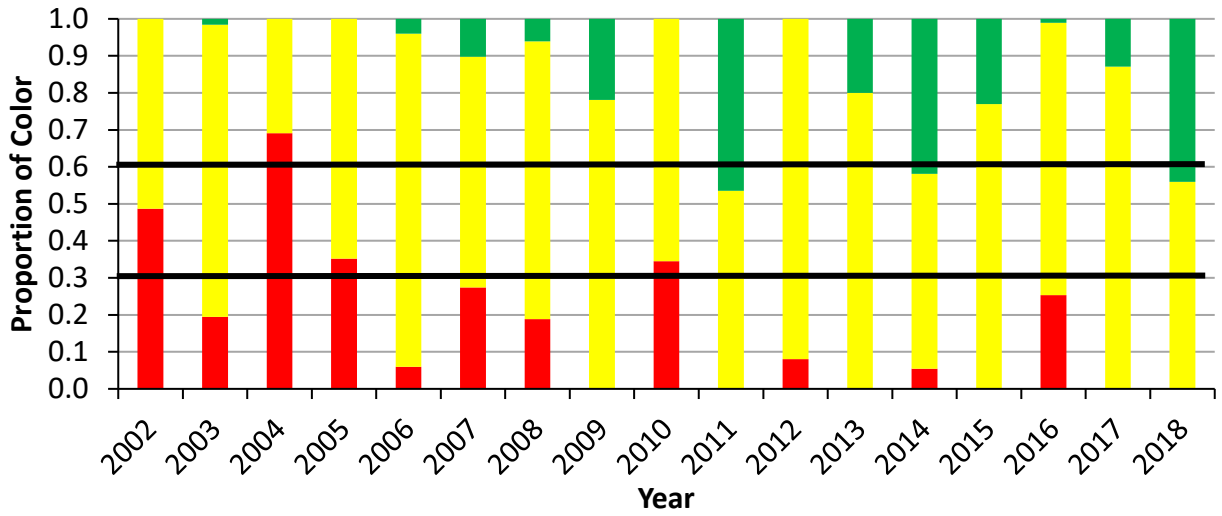



Figure 6. Draft Addendum III South Atlantic (NC-FL) Regional Composite TLA using fishery-independent survey indices (SEAMAP and SCDNR Trammel Net Survey) for Atlantic croaker with management thresholds of 30% and 60% proportion red (reference period years 2002 – 2012).

**3.0 Draft Management Program**

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

**3.1 Issue 1: Management Trigger Based on Proportion Red Options**

Option A. If red proportions for both population characteristics (adult abundance and harvest) in a specific regional or a coastwide TLA meet or exceed the proportion of a threshold for the three terminal years, then management action will be taken.

Option B. If red proportions for both population characteristics (adult abundance and harvest) in a specific regional or a coastwide TLA meet or exceed the proportion of a threshold for any three of the four terminal years, then management action will be taken. (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 will be no coastwide management requirements. States regulations restricting Atlantic croaker harvest are encouraged to be maintained.

If management action is triggered according to *Section 3.1*, the following coastwide requirements will take effect:

### *3.2.1 Issue 2: Recreational Management Trigger Response Options*

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

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

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 will be the bag limit in effect multiplied by the number of people allowed on the vessel. If no coastwide bag limit is in effect, then this use is not limited by this addendum.

### *3.2.2 Issue 3: Commercial Management Trigger Response Options*

**30% Threshold** *(single option)*

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 will be required to institute seasons that reduce commercial harvest by 1% of the average state commercial harvest from the previous 10 years. States may establish differential seasons by gear or area, as long as seasons are established and the 1% reduction for the entire state commercial harvest is achieved.

**60% Threshold**

Option A. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) will be required to institute seasons that reduce commercial harvest by 5% of the average state commercial harvest from the previous 10 years.

Option B. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) will be required to institute seasons that reduce commercial harvest by 10% of the average state commercial harvest from the previous 10 years.

Option C. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) will be required to institute seasons that reduce commercial harvest by 20% of the average state commercial harvest from the previous 10 years.

All seasonal restrictions established as required responses to TLA triggers must be reviewed 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, the Board may task the TC to determine an alternative reduction to the recreational or commercial fisheries. The TC will 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 Evaluation of Fishery Response to Management Measures

Management measures set in response to any trigger will 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 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.

## 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 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. 2005. 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.

ASMFC. 2011. Addendum I to Amendment 1 to the Atlantic Croaker Fishery Management Plan.

ASMFC. 2014. Addendum II to Amendment 1 to the Interstate Fishery Management Plan for Atlantic Croaker.

ASMFC. 2018a. Memorandum 18-8: Recommended Updates to the Annual Traffic Light Analyses for Atlantic Croaker and Spot.

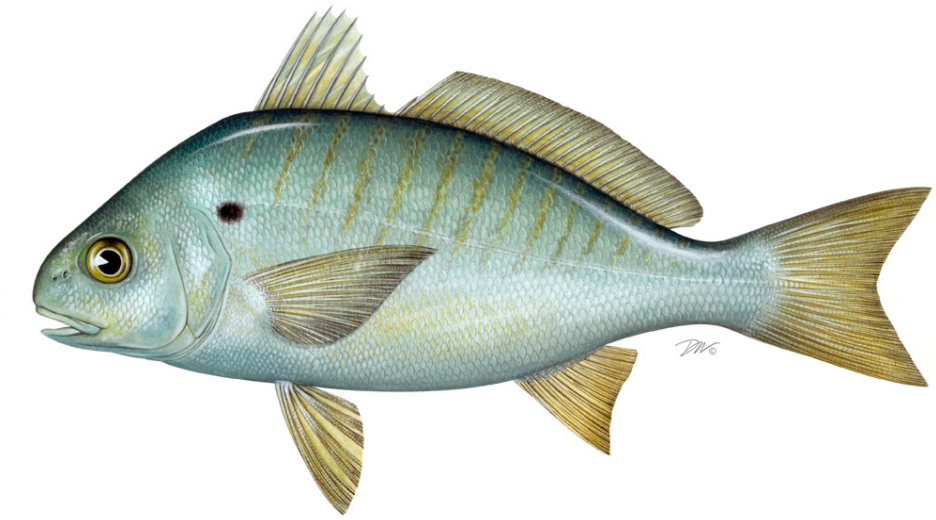
ASMFC. 2018b. Memorandum 18-73: Recommendations for Management Response to Triggers from Updated Traffic Light Analyses.

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.

# *Atlantic States Marine Fisheries Commission*

# DRAFT ADDENDUM III TO THE OMNIBUS AMENDMENT TO THE INTERSTATE FISHERY MANAGEMENT PLANS FOR SPANISH MACKEREL, SPOT, AND SPOTTED SEATROUT

***Revisions to Spot Management using the Traffic Light Approach***



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**October 2019**

**Sustainable and Cooperative Management of Atlantic Coastal Fisheries**

**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 Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout to incorporate updates to the annual Traffic Light Analyses and associated management for spot. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of spot, 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 XX, 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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| Step | Date |
|---|---|
| Preparation of Draft Addendum III | May 2019 – Oct 2019 |
| Review and approval of Draft Addendum III by Board for public comment | Oct 2019 |
| Public review and comment on Draft Addendum III ***Current step*** | Oct 2019 – Jan 2020 |
| Board review of public comment on Draft Addendum III and consideration of final approval by the Board and Commission | Feb 2020 |

## 1.0 Introduction

The Fishery Management Plan (FMP) for Spot was adopted in 1987 and included the states from Delaware through Florida (ASMFC, 1987). In reviewing the early plans created under the Interstate Fisheries Management Plan process, the Commission found the Spot FMP to be in need of evaluation and possible revision.

In August 2009, the Board initiated the Omnibus Amendment for Spot, Spotted Seatrout and Spanish Mackerel (Omnibus Amendment). The goal of the Omnibus Amendment was to update all three plans with requirements specified under the Atlantic Coastal Fisheries Cooperative Management Act (1993) and the Interstate Fishery Management Program Charter (1995). In August 2011, the Management Board approved the Omnibus Amendment, which did not set specific management measures for Spot but did align management of the species with the requirements of ACFCMA.

In August 2014, the Board approved Addendum II to the Omnibus Amendment. Addendum II established the Traffic Light Approach (TLA) as the new precautionary management framework to evaluate fishery trends and develop management actions. The TLA was originally developed as a management tool for data-poor fisheries. The name comes from assigning a color (red, yellow, or green) to categorize relative levels of population indicators. When a population characteristic improves, the proportion of green in the given year increases. When a population characteristic declines, the proportion of red in the given year increases. Harvest and abundance thresholds of 30% and 60% red were established in Addendum II, representing moderate and significant concern for the fishery. If thresholds for both population characteristics meet or exceed a threshold for a two year period, then management action is enacted.

The purpose of Addendum III is to revise the TLA to better reflect changes in the spot fishery and redefine triggered management actions.

## 2.0 Overview

### 2.1 Statement of the problem

In 2017, a benchmark stock assessment was conducted for spot. This assessment was not recommended for management use due in part to conflicting trends from abundance and harvest time series. These types of trends are also used to monitor the spot fishery on an annual basis through the TLA. Strong declines in harvest and reports of poor fishing have prompted concern, however management action has not been triggered through the TLA because declines have not been observed in abundance indices. These conflicting signals suggest that the current abundance indices used in the TLA may not adequately represent coastwide adult abundance and that the TLA may not be sensitive enough to trigger management action when changes to the fishery occur.

## 2.2 Background

Spot are a small sciaenid forage species that support commercial and recreational fisheries in the Mid and South Atlantic regions. Spot 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. Spot 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. Spot reach maturity by approximately age two and are considered a short-lived species, rarely living beyond six years.

### *2.2.1 The Traffic Light Approach as Applied to Spot*

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. 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 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 offers a way of determining if any management response is necessary.

For spot, 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 will annually run the TLA and provide the results to the PRT for the annual FMP Review. The TC and PRT will utilize the best available data and modify the TLA as needed through the annual review and update.

### *2.2.2 Stock Status and Assessment*

While state level stock assessments for spot have been conducted over the years, a coastwide benchmark assessment has not been approved for management use. The most recent coastwide assessment, conducted in 2017, was not recommended for management use by the

Peer Review Panel. Therefore, current stock status is unknown, although the Peer Review Panel did not indicate problems in the spot fishery that would require immediate management action. The Peer Review Panel did recommend continued evaluation of the fishery using the annual TLA.

One of the reasons that the 2017 stock assessment did not pass peer review was due to conflicting signals in harvest and abundance metrics. 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 increases while harvest has declined to some of the lowest levels on record. One factor that has contributed to overestimates of adult abundance is an increase in the number of juveniles misclassified as adults in surveys that historically have typically caught adults.

### *2.2.3 Management Response to Assessment Not Recommended for Management Use*

Following the failed assessment in 2017, the Board tasked the Spot Plan Review Team (PRT) with exploring potential updates to improve the TLA. The PRT developed five recommendations (ASMFC, 2018a), 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 North Carolina Division of Marine Fisheries (NCDMF) Pamlico Sound Survey, Program 195, 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).
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 1+) 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 NCDMF Program 195 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 2 of the 3 terminal years.

Some of these changes, such as the selection of fishery-independent surveys used for the abundance metric, incorporation of age and length information, and establishment of a new reference time period are already allowed under Addendum II. However, the use of regional

metrics and the change to the triggering mechanism are beyond the scope of Addendum II. Thus, they are considered for incorporation through Addendum III. Addendum III would also establish a Spot Technical Committee (TC) and provide it the ability to alter the TLA as needed to best represent trends in spot harvest and abundance, including selection of surveys and methods to analyze and evaluate these data.

The Board also tasked the Atlantic Croaker and Spot Plan Development Team (PDT) with exploring potential responses to management triggers that could result after incorporation of these updates (ASMFC, 2018b). The PDT noted that there are currently no coastwide management requirements for spot. Additionally, because of a lack of information on environmental impacts on spot abundance or harvest and the apparent disconnect between Addendum II harvest and abundance metrics, a reduction in harvest may not necessarily be expected to 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 and sensitivity, but spot 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 TLAs for spot through 2018 using the analysis of Addendum II (Figure 1) and those of Draft Addendum III (Figures 2 and 3).

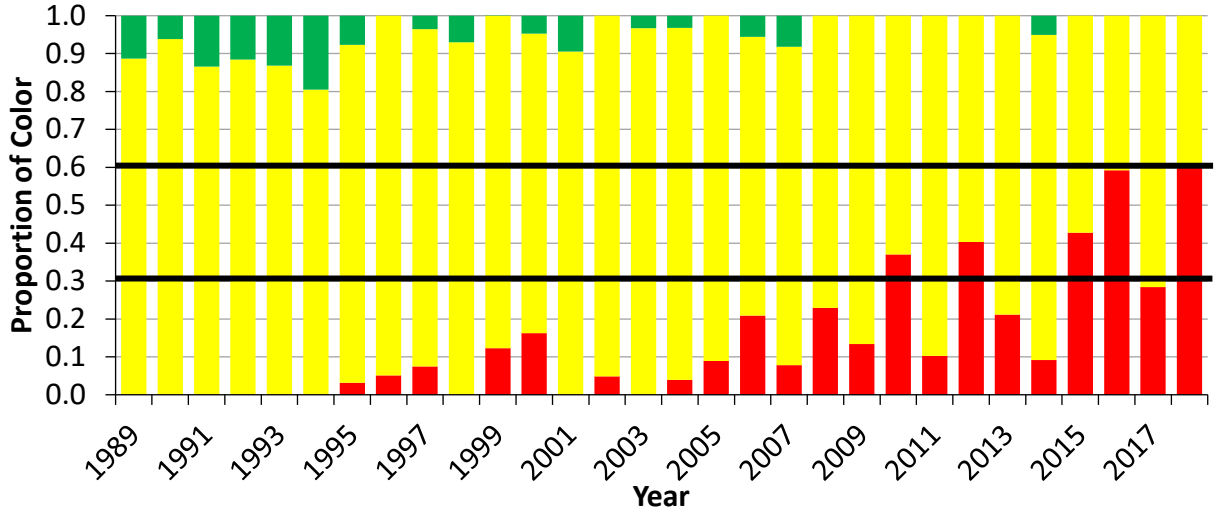


Figure 1. Addendum II Composite TLA using commercial landings and recreational harvest for spot with management thresholds of 30% and 60% proportion Red (reference years 1989 – 2012).

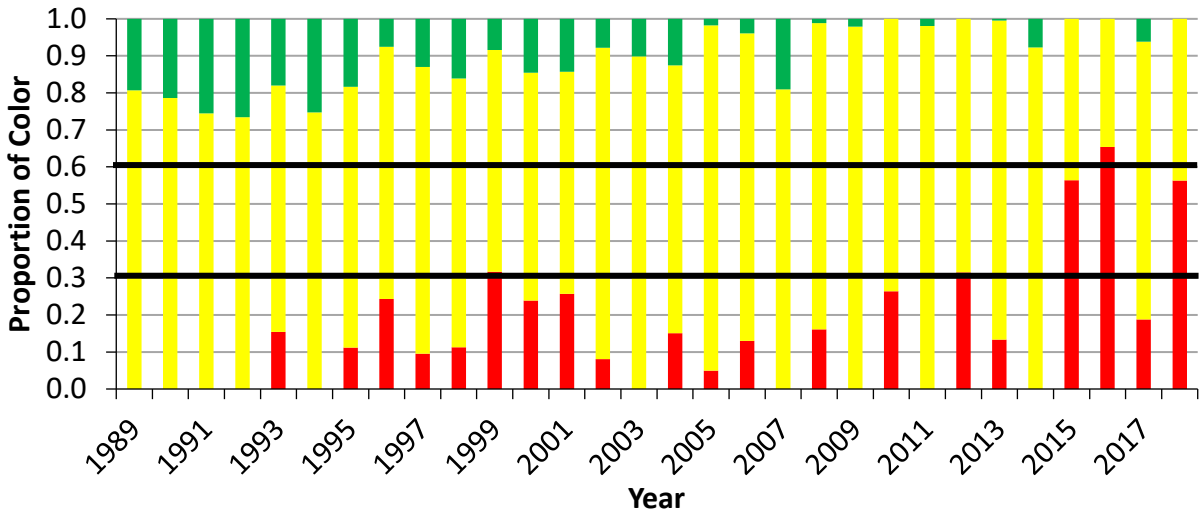


Figure 2. Draft Addendum III Mid-Atlantic (NJ-VA) Regional Composite TLA using commercial landings and recreational harvest for spot with management thresholds of 30% and 60% proportion red (reference years 2002 – 2012).

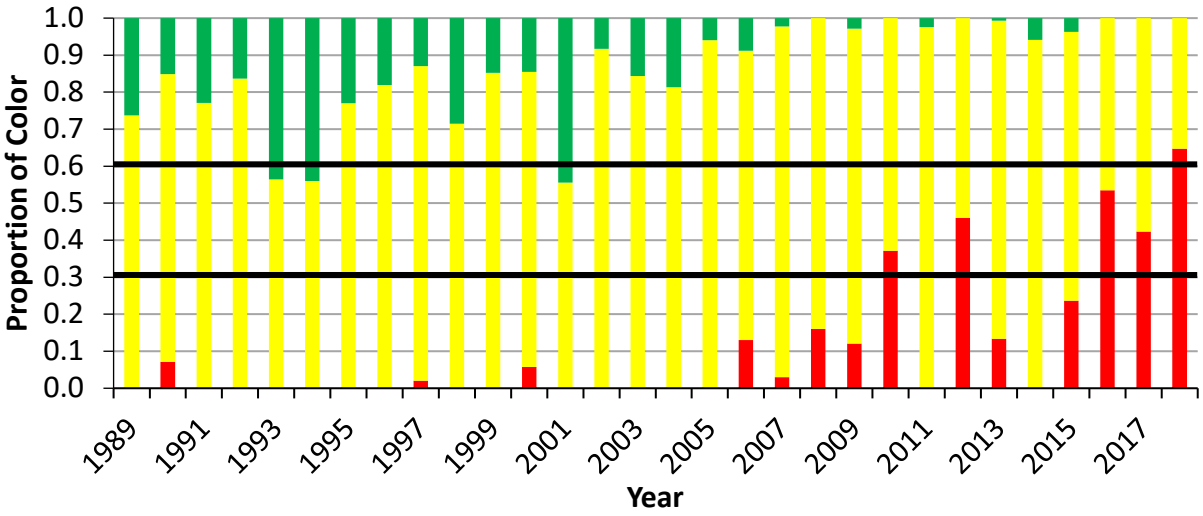


Figure 3. Draft Addendum III South Atlantic (NC-FL) Regional Composite TLA using commercial landings and recreational harvest for spot with management thresholds of 30% and 60% proportion red (reference years 2002 – 2012).

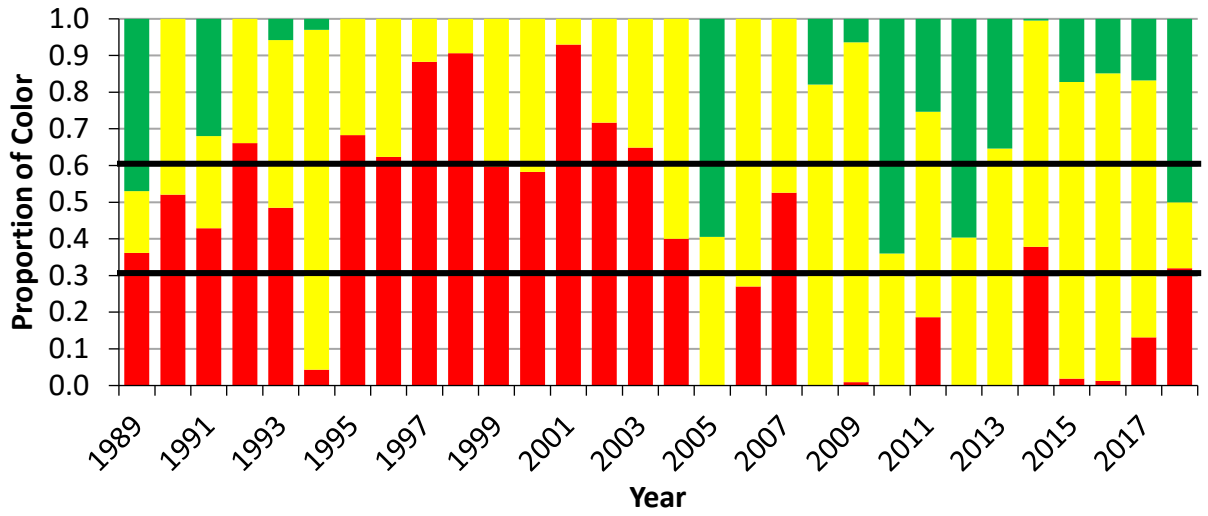


Figure 4. Addendum II Composite TLA using fishery-independent survey indices (NEFSC Trawl Survey and SEAMAP) for spot with management thresholds of 30% and 60% proportion red (reference period years 1989 – 2012).

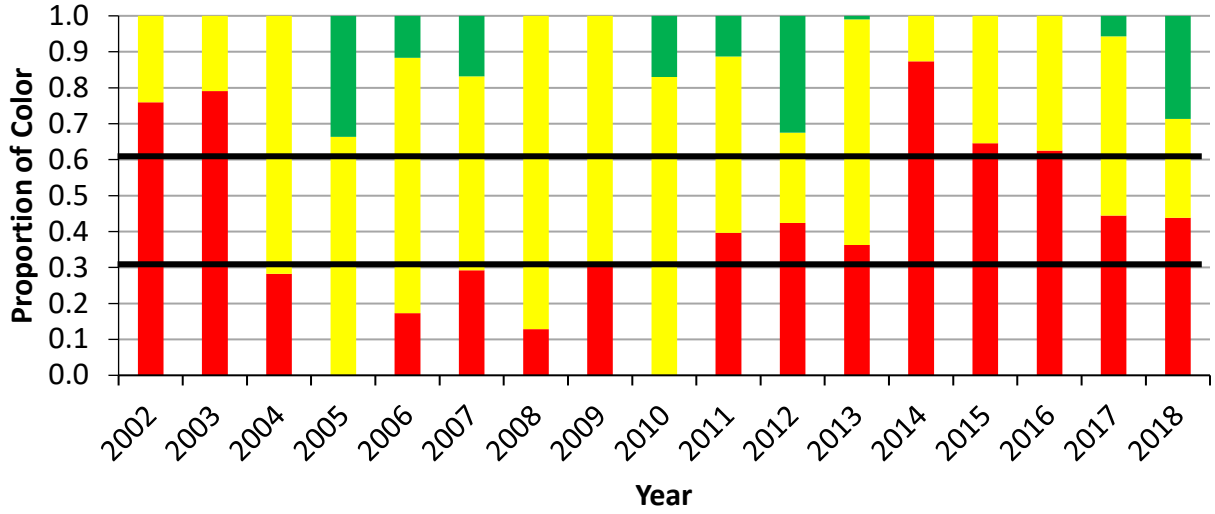


Figure 5. Draft Addendum III Mid-Atlantic (NJ-VA) Regional Composite TLA using fishery-independent survey indices (NEFSC Trawl Survey and ChesMMAP) for spot with management thresholds of 30% and 60% proportion red (reference period years 2002 – 2012).

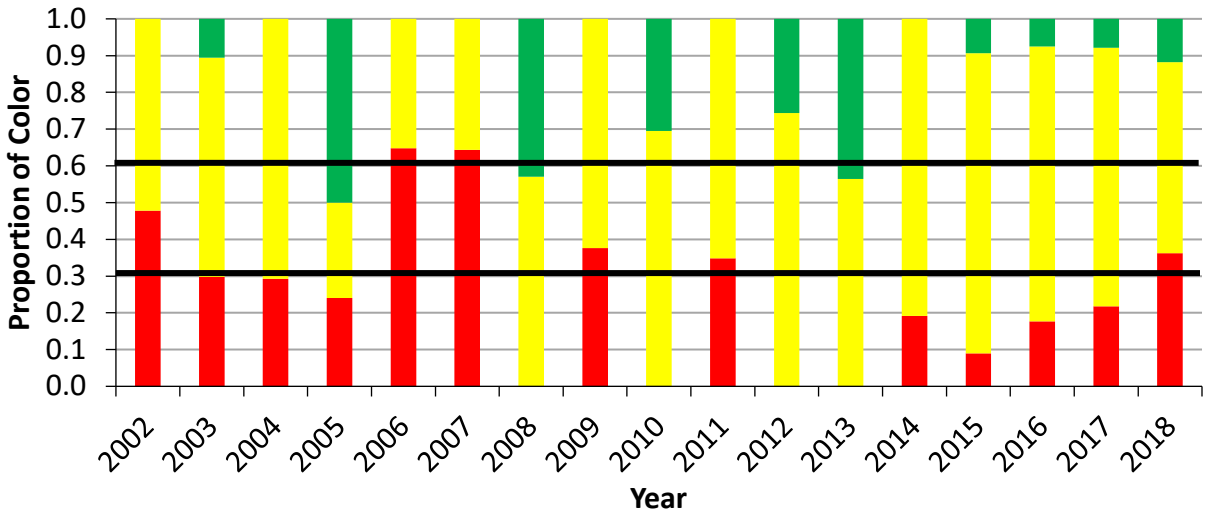


Figure 6. Draft Addendum III South Atlantic (NC-FL) Regional Composite TLA using fishery-independent survey indices (SEAMAP and NCDMF Program 195) for spot with management thresholds of 30% and 60% proportion red (reference period years 2002 – 2012).

**3.0 Draft Management Program**

*Changes to the management program would replace Section 3.0 of Addendum II to the Omnibus Amendment to the Interstate FMPs for Spanish Mackerel, Spot, and Spotted Seatrout.*

**3.1 Issue 1: Management Trigger Based on Proportion Red**

Option A. If red proportions for both population characteristics (adult abundance and harvest) in a specific regional or a coastwide TLA meet or exceed the proportion of a threshold for the two terminal years, then management action will be taken.

Option B. If red proportions for both population characteristics (adult abundance and harvest) in a specific regional or a coastwide TLA meet or exceed the proportion of a threshold for any two of the three terminal years, then management action will be taken. (PRT 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 will be no coastwide management requirements. States regulations restricting spot harvest are encouraged to be maintained.

If management action is triggered according to *Section 3.1*, the following coastwide requirements will take effect:

### *3.2.1 Issue 2: Recreational Management Trigger Response Options*

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

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

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

Recreational for-hire vessels may possess live spot for use as bait. The maximum number of spot allowed to be held onboard for this use will be the bag limit in effect multiplied by the number of people allowed on the vessel. If no coastwide bag limit is in effect, then this use is not limited by this addendum.

### *3.2.2 Issue 3: Commercial Management Trigger Response Options*

**30% Red Threshold** *(single option)*

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

**60% Threshold**

Option A. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) will be required to institute seasons that reduce commercial harvest by 5% of the average state commercial harvest from the previous 10 years.

Option B. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) will be required to institute seasons that reduce commercial harvest by 10% of the average state commercial harvest from the previous 10 years.

Option C. If management action is triggered by meeting or exceeding the 60% red threshold, all states (including *de minimis*) will be required to institute seasons that reduce commercial harvest by 20% of the average state commercial harvest from the previous 10 years.

#### *3.2.3 Technical Committee*

A Spot Technical Committee (TC) will be established to provide scientific and technical advice, as defined in *Section 4.7.4* of the Omnibus Amendment. This advice would include evaluation of plans to implement management actions. All seasonal restrictions established as required responses to TLA triggers must be reviewed by the TC and approved by the Board prior to implementation.

#### *3.2.4 Management Alternatives*

If management action is triggered by an exceedance of the 60% red threshold, the Board may task the TC to determine an alternative reduction to the recreational or commercial fisheries. The TC will 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 Evaluation of Fishery Response to Management Measures

Management measures set in response to any trigger will 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.

## 4.0 Compliance

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

## 5.0 References

Atlantic States Marine Fisheries Commission (ASMFC). 1987. Fishery Management Plan for Spot. Washington (DC): ASMFC. Fisheries Management Report #11. 90 p.

ASMFC. 2011. Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout. Arlington (VA): ASMFC. 161 p.

ASMFC. 2014. Addendum I to the Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout.

ASMFC. 2018a. Memorandum 18-8: Recommended Updates to the Annual Traffic Light Analyses for Atlantic Croaker and Spot.

ASMFC. 2018b. Memorandum 18-73: Recommendations for Management Response to Triggers from Updated Traffic Light Analyses.

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.