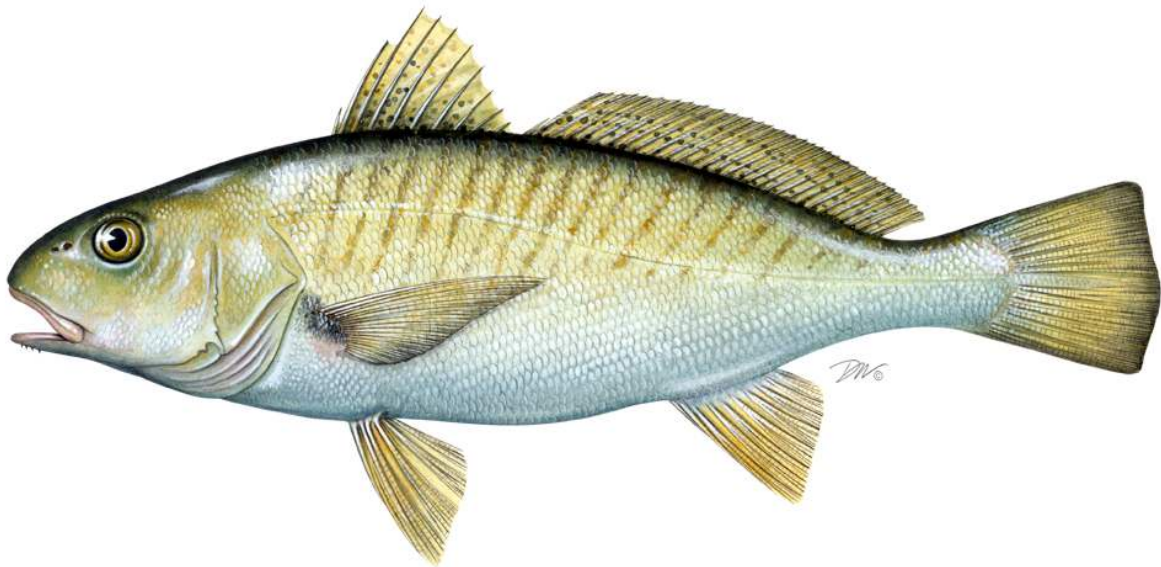


**ATLANTIC STATES MARINE FISHERIES COMMISSION**  
**REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN**

**FOR ATLANTIC CROAKER**  
***(Micropogonias undulatus)***

**2020 FISHING YEAR**



Prepared by the Plan Review Team  
Approved August 2021



*Sustainable and Cooperative Management of Atlantic Coastal Fisheries*

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## I. Status of the Fishery Management Plan

<u>Date of FMP Approval:</u>	Original FMP – October 1987
<u>Amendments:</u>	Amendment 1 – November 2005 (implemented January 2006) Addendum I – March 2011 Addendum II – August 2014 Addendum III – February 2020
<u>Management Areas:</u>	The Atlantic coast distribution of the resource from New Jersey through Florida
<u>Active Boards/Committees:</u>	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). In 2004, the South Atlantic State/Federal Fisheries Management Board (Board) found the recommendations in the FMP 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 (TC) to conduct the first coastwide stock assessment of the species to prepare for 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 development of an amendment and, in November 2005, approved [Amendment 1 to the Atlantic Croaker FMP](#) (ASMFC 2005b). The amendment was fully implemented by January 1, 2006.

The goal of Amendment 1 was 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 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 =  $0.75 \times F_{MSY}$  (estimated to be 0.29); SSB threshold =  $0.7 \times SSB_{MSY}$  (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 resulted in an overfished status determination, and an F estimate above the F threshold resulted in an overfishing status determination. 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 (Table 1). 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.

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 as a coastwide unit, rather than the two management units established within Amendment I. In approving Addendum I, the Board endorsed consolidating 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.

In August 2014, the Board approved [Addendum II to the Atlantic Croaker FMP](#). The Addendum 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. Harvest and abundance thresholds of 30% and 60% were established in Addendum II, representing

moderate and significant concern for the fishery. If thresholds for both population characteristics achieve or exceed a threshold for a three year period, then management action is enacted.

The TLA framework replaces the management triggers stipulated in Addendum I, which dictated that action should be taken if recreational and commercial landings dropped below 70% of the previous two year average. Those triggers were limited in their ability to illustrate long-term declines or increases in stock abundance. In contrast, the TLA approach is capable of better illustrating trends in the fishery through changes in the proportion of green, yellow, and red coloring. A 2018 TC report recommended several updates to the current TLA approach (ASMFC 2018). The Board initiated an Addendum III to incorporate these updates.

In February 2020 the Board approved [Addendum III to Amendment 1](#) of the Atlantic Croaker FMP. This addenda adjusted the TLA to incorporate additional fishery-independent indices, age information, use of regional characteristics, and changes to the management triggering mechanisms. Management triggers and responses include bag limits for the recreational fishery and percentage harvest reductions from a 10 year average for the commercial fishery. The response will be defined by which percent threshold (30% or 60%) that was exceeded in any of the 3 out of 4 terminal years.

Addenda III did not add or change any management measures or requirements, unless management-triggering mechanisms are tripped. The only pre-existing requirement is for states to submit an annual compliance report by July 1<sup>st</sup> 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**

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

The conclusions of the 2010 stock assessment (ASMFC 2010), which is the most recent assessment that was recommended by peer review for management use, were that Atlantic croaker was not experiencing overfishing and biomass had increased and fishing mortality decreased since the late 1980s. The 2010 assessment was unable to confidently determine stock status, particularly with regards to biomass, due to an inability to adequately estimate removals from discards of the South Atlantic shrimp trawl fishery. 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 discards 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 primary 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 recent abundance indices have shown increases while harvest has declined to some of the lowest levels on record. One factor thought 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.

In response, the Atlantic Croaker TC recommended several changes to the annual TLA through [Addendum III](#). The addendum added indices from the Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAAP) and the South Carolina Department of Natural Resources (SCDNR) Trammel Net Survey into the adult composite characteristic index. In addition, all surveys used revised adult abundance indices and not have an established reference period of 2002-2012. Regional metrics were also used to characterize the fisheries north and south of the Virginia-North Carolina state line. The ChesMMAAP and the NEFSC surveys will be used to characterize abundance north of the state line, and SCDNR Trammel Net and SEAMAP surveys will be used to characterize abundance south of the state line.

### III. Status of the Fishery

***This report includes updated recreational estimates from the Marine Recreational Information Program's transition to the mail-based Fishing Effort Survey (FES) on July 1, 2018. Past recreational estimates have been calibrated to the FES and, therefore, are different from those shown in FMP Reviews and state compliance reports prior to 2018.***

Total Atlantic croaker harvest from New Jersey through the east coast of Florida in 2020 is estimated at 5 million pounds (Tables 2 and 3, Figure 1). This represents a 30% increase in total harvest from 2019 (3.8 million pounds). The commercial and recreational fisheries harvested 16% and 83% of the 2020 total, respectively. This represents a large shift from the previous 10 year average split, of 52% and 47%, respectively, from 2010 to 2019. For 2020 recreational harvest data, many states had to have some data imputed from prior years due to interruptions in sampling from COVID-19 (Table 4).

Atlantic coast commercial landings of Atlantic croaker exhibit a cyclical pattern, with low harvests in the 1960s to early 1970s and the 1980s to early 1990s, and high harvests in the mid-to-late 1970s and the mid-1990s to early 2000s (Figure 1). Commercial landings increased from a low of 3.7 million pounds in 1991 to 28.6 million pounds in 2001; however, landings have declined every year since 2010 to 806,000 pounds in 2020, the lowest of the time series (1950-2020). This represents a 58% decrease from 2019. Within the management unit, the majority of 2019 commercial landings came from North Carolina (70%) and Virginia (18%).

From 1981-2020, recreational landings of Atlantic croaker from New Jersey through Florida have varied by count between 5.6 million fish and 36.2 million fish and by weight between 1.8

million pounds and 18.9 million pounds (Tables 5 and 6, Figure 2). Landings generally increased from 1990 until 2003, after which they showed a declining trend through 2019. The 2020 landings are estimated at 10.6 million fish and 4.1 million pounds, a 91% increase in number of fish and a 121% in fish weight. Virginia was responsible for 58% of the 2020 recreational landings, in numbers of fish, followed by Florida (25%). It is important to note that due to the COVID-19 pandemic, some MRIP data was imputed to fill in missing data. The percent contribution of imputed data ranged from 0% for Maryland up to 70% for New Jersey (Table 4).

The number of recreational releases generally increased over the time series until 2013 when releases steadily declined, until reaching a five year high in 2020 (Figure 2). The percentage of released recreational catch has shown a slight increasing trend from the 1990s until 2020. In 2020, anglers released 31.7 million fish, an increase from the 19.6 million fish released in 2019 but slightly less than 2019 of the overall percentage of total fish caught. Anglers released an estimated 75% of the recreational croaker catch in 2020, slightly lower than the highest percentage on record in 2019 at 78% (Figure 2).

#### **IV. Status of Assessment Advice**

A statistical catch-at-age (SCA) model was used in the 2010 Atlantic croaker stock assessment (ASMFC 2010). This model combines 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 benchmark stock assessment conducted in 2017 was not recommended for management use due to uncertainty in biomass estimates resulting from conflicting signals among abundance indices and catch time series as well as sensitivity of model results to assumptions and model inputs. 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. Currently, a Traffic Light Approach (TLA) is used to monitor the stock and make management decisions in lieu of an approved stock assessment. The TLAs can be found [here](#).

#### **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. New Jersey, Delaware, Maryland, Potomac River Fisheries Commission (PRFC), Virginia, North Carolina, South Carolina, and Georgia conduct fishery-dependent (other than catch and effort data) monitoring programs. All states and jurisdictions conduct fishery-independent monitoring programs along the Atlantic coast from New Jersey to Florida.

The Northeast Fishery Science Center (NEFSC) performs a randomly stratified groundfish survey along the U.S. east coast. Atlantic croaker are one of the main species caught throughout much

of the survey area and, since the surveys started in 1972, it provides a long term data set. Since 1994, there has been an increase in annual catch variability. The NEFSC survey was not carried out in 2020 due to the COVID-19 pandemic.

## **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. Addendum II was approved August 2014 and established the TLA management framework for Atlantic croaker in order to better illustrate long-term trends in the fishery. Addendum III was approved February 2020 and adjusted management through the TLA by incorporating additional fishery-independent indices, age information, use of regional characteristics, and changes to the management-triggering mechanisms.

### *Traffic Light Approach*

#### 2020 Harvest Metrics

The Mid-Atlantic harvest metric has triggered at 60% red threshold in three of the four terminal years (2018-2020; Figure 3) and the South Atlantic harvest metric has triggered at 30% red threshold in all four terminal years (2017-2020; Figure 4). This is the second consecutive year the harvest metric in both region has triggered at least at the 30% threshold. Due to the impacts of COVID-19 and survey recalibration, there were significant impacts on data availability. See the 2020 TLA report for a more detailed discussion.

#### 2020 Abundance Metrics

While the adult abundance metrics could not be accurately calculated due to missing 2020 data, Addendum III specifies TLA trigger based on the four terminal years so assumptions can still be made regarding abundance. For the Mid-Atlantic, two of the four terminal years triggered at 30% red (2017-2018) while two of the four are unknown (2019-2020; Figure 5). The Mid-Atlantic adult abundance metric did trigger at the 30% threshold during the 2019 TLA. For the South Atlantic, three of the four terminal years (2017-2019) did not trigger at any level and therefore the 2020 data would not change status regardless of its value (Figure 6). The South-Atlantic adult abundance metric did not trigger during the 2019 TLA.

#### Conclusions

The harvest triggered in both the Mid-Atlantic (60% threshold) and South Atlantic (30% threshold) in 2020 indicating continued concern. The abundance did not trigger at any level for

the South Atlantic and although the last two years are undetermined for the Mid-Atlantic due to missing 2020 data; the two years that are available are below the 60% threshold. Regardless, the previous TLA indicated that the Mid-Atlantic triggered at 30%. Addendum III requires management action taken in 2021 to remain in place for a minimum of three years (through and including the 2023 season). The Atlantic croaker remains triggered at the 30% threshold and the TC recommended maintaining management enacted in 2021.

#### *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 it qualifies 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. Addendum III, depending on the level of management action triggered, has exemptions for *de minimis* states when measures a triggered at the 30% level (see above for the TLA description). If the TLA tigers at the 60% level, then all states, including *de minimis*, must implement management measures.

In the annual compliance reports, the following states requested *de minimis* status: New Jersey (commercial and recreational), Delaware (recreational and commercial fishery), South Carolina (commercial fishery), Georgia (commercial fishery). The commercial and recreational *de minimis* criteria for 2020 are based on 1% of the average coastwide 2017-2019 landings in each fishery. The Delaware, South Carolina, and Georgia commercial fisheries all qualify for *de minimis* status, but landings are confidential.

#### *Changes to State Regulations*

In 2020, the TLA triggered management measures at the 30% level, or moderate concern. Non *de minimis* states were required to implement management measures that instituted a 50 fish recreational bag limit and reduce the commercial harvest by 1% of the average state commercial harvest from the previous 10 years. If the state had more restrictive measures in place, they did not need to make any changes. All proposed management changes were reviewed by the Technical Committee and approved by the Board. Below is a list of states that are implementing measures in 2021:

- Virginia: 50 fish bag limit, charter allowance, and commercial fishery season closure from January 1 to January 15. Approved on March 23, 2021.
- North Carolina: 50 fish bag limit and a commercial fishery season closure from December 16 to December 31. Proclamation authority.
- Florida: 50 fish bag limit and a commercial vessel limit of 1,200 pounds in state waters. Will be voted on in August 2021.

#### *Atlantic Croaker Habitat*

In winter of 2017, the ASMFC Habitat Committee released *Atlantic Sciaenid Habitats: A Review of Utilization, Threats, and Recommendations for Conservation, Management, and Research*,

which outlines the habitat needs of Atlantic croaker at different life stages (egg, larval, juvenile, adult). This report also highlights threats and uncertainties facing these ecological areas and identifies Habitat Areas of Particular Concern. It can be found online at:

[http://www.asmfc.org/files/Habitat/HMS14\\_AtlanticSciaenidHabitats\\_Winter2017.pdf](http://www.asmfc.org/files/Habitat/HMS14_AtlanticSciaenidHabitats_Winter2017.pdf).

### *Bycatch Reduction*

Atlantic croaker is subject to both direct and indirect fishing mortality. Historically, croaker ranked as one of the most abundant bycatch species of the south Atlantic shrimp trawl fishery, resulting in the original FMP's recommendation 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, reducing croaker bycatch from this fishery (ASMFC 2010). However, bycatch and discard monitoring from the shrimp trawl fishery have historically been inadequate, resulting in a major source of uncertainty for assessing this stock, as well as other important Mid- and South Atlantic species. Most of the discarded croaker are age-0 and thus likely have not yet reached maturity (ASMFC 2010). The North Carolina Division of Marine Fisheries conducted a two-year study, published in 2015, to collect bycatch data from state shrimp trawlers (Figure 7). It found that Atlantic croaker represent between 34-49% of the total observed finfish bycatch by weight in estuarine waters and between 20-42% in ocean waters. The at-net mortality for Atlantic croaker was found to be 23% (Brown 2015). These data will be valuable for incorporating estimates of removals in future stock assessments.

Atlantic croaker are also discarded from other commercial fishing gears, primarily due to market pressures and few restrictions on croaker harvest at the state level. The National Oceanic and Atmospheric Administration (NOAA) Fisheries 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 2010 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 is also a major component of the scrap/bait fishery. Landings from this fishery are not reported at the species level, except in North Carolina, which has a continuous program in place to sample these landings and enable estimation of croaker scrap landings for use in the stock assessment. As part of the 2010 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 fisheries producing the highest scrap/bait landings (ASMFC 2010). 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.

South Carolina has also begun a state monitoring program to account for bait landings. The state initiated a bait harvester trip ticket program for all commercial bait harvesters licensed in South Carolina. The impetus for this program is to track bait usage of small sciaenid species (croaker, spot, and whiting) as well as other important bait species.

Several states have implemented other commercial gear requirements that further reduce bycatch and bycatch mortality, while others continue to encourage the use of the BRD devices. NOAA Fisheries 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 percentage of Atlantic croaker released alive by recreational anglers has generally increased over time. Discard mortality was estimated to be 10% for the 2010 stock assessment (ASMFC 2010). The use of circle hooks and appropriate handling techniques can help reduce mortality of released fish.

## **VII. Implementation of FMP Compliance Requirements for 2020**

The PRT found no inconsistencies among states with regard to the requirements of Amendment 1 and Addendum III.

## **VIII. Recommendations**

### **Management and Regulatory Recommendations**

- Consider approval of the *de minimis* requests from New Jersey, Delaware, South Carolina, and Georgia for their commercial fisheries.
- Consider approval of the *de minimis* requests from New Jersey and Delaware for their recreational fisheries.
- Research into the impacts of climate change on the range of the species.

### **Research and Monitoring Recommendations**

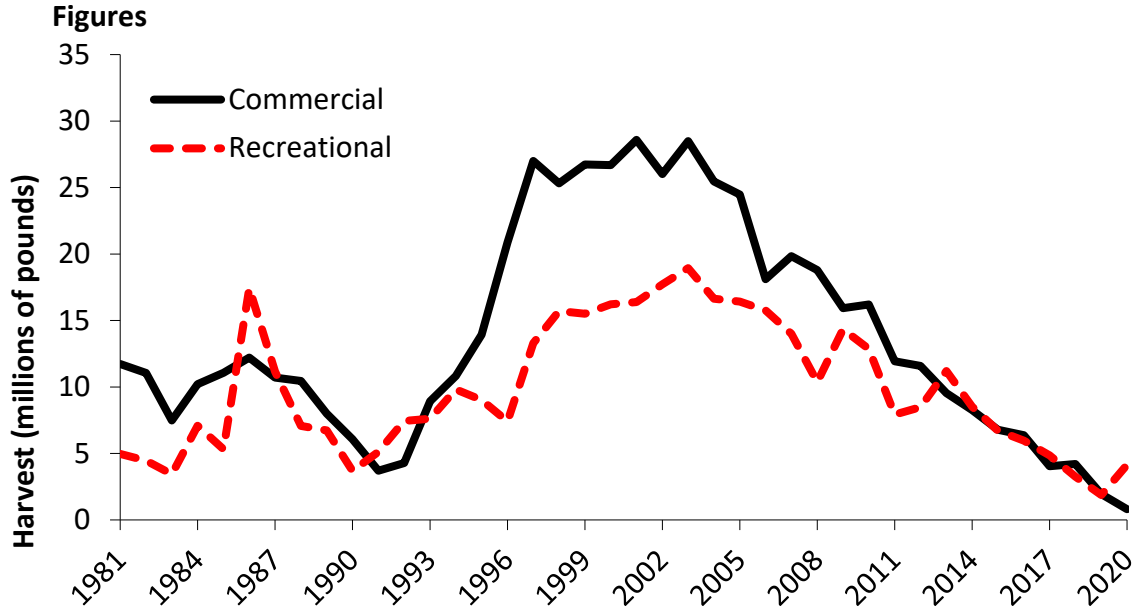
Additional research and monitoring recommendations can be found in the 2016 Atlantic Croaker Stock Assessment Peer Review Report [here](#) under Term of Reference 8.

## **IX. References**

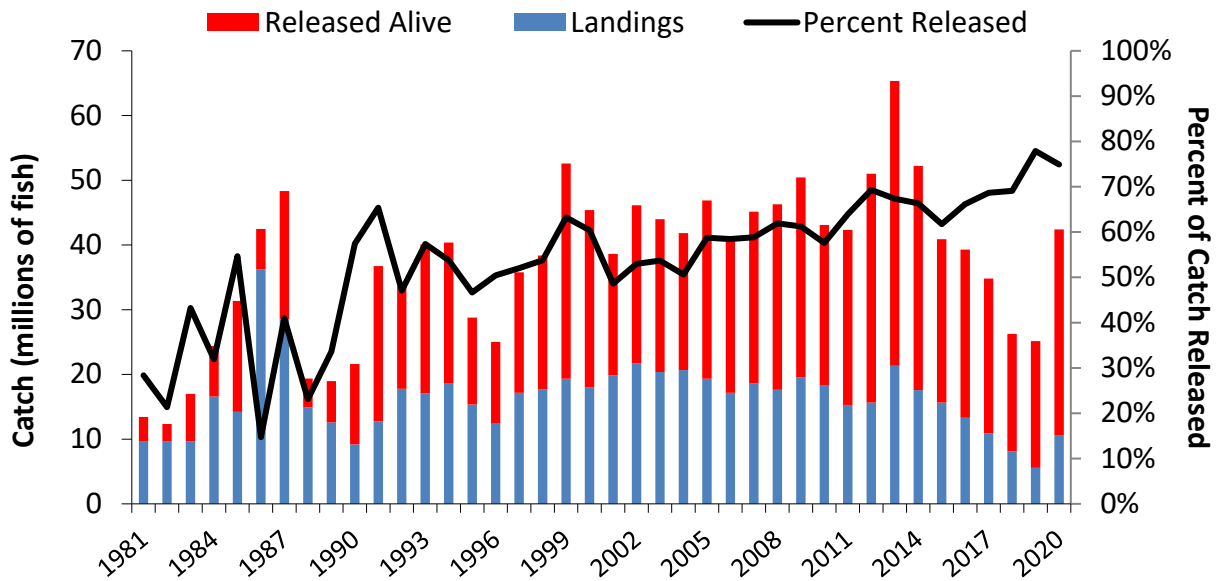
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Kevin Brown. 2015. Characterization of the commercial shrimp otter trawl fishery in the estuarine and ocean (0-3 miles) waters of North Carolina. Morehead City (NC): NCDEQ, Division of Marine Fisheries. Abstract.

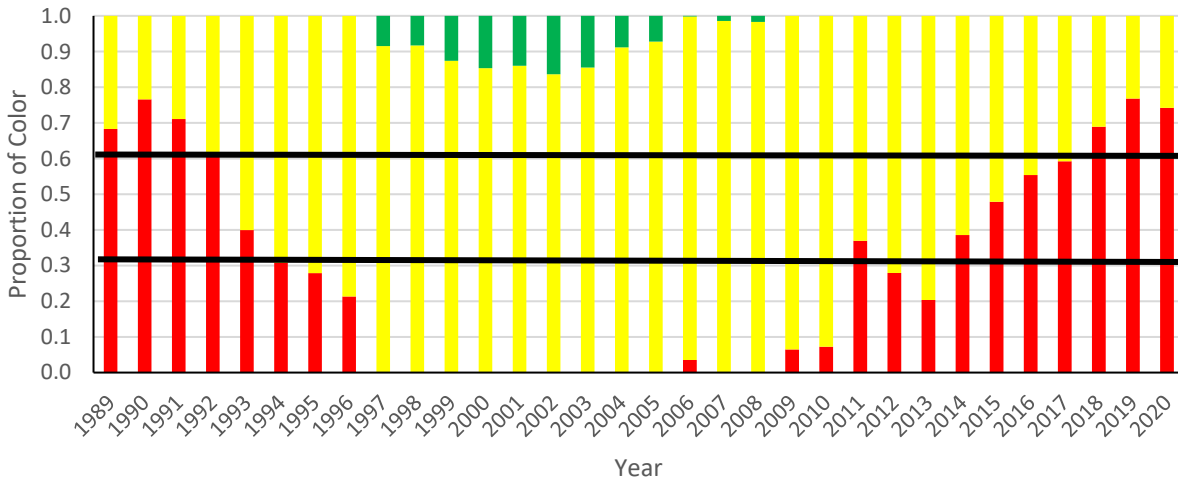
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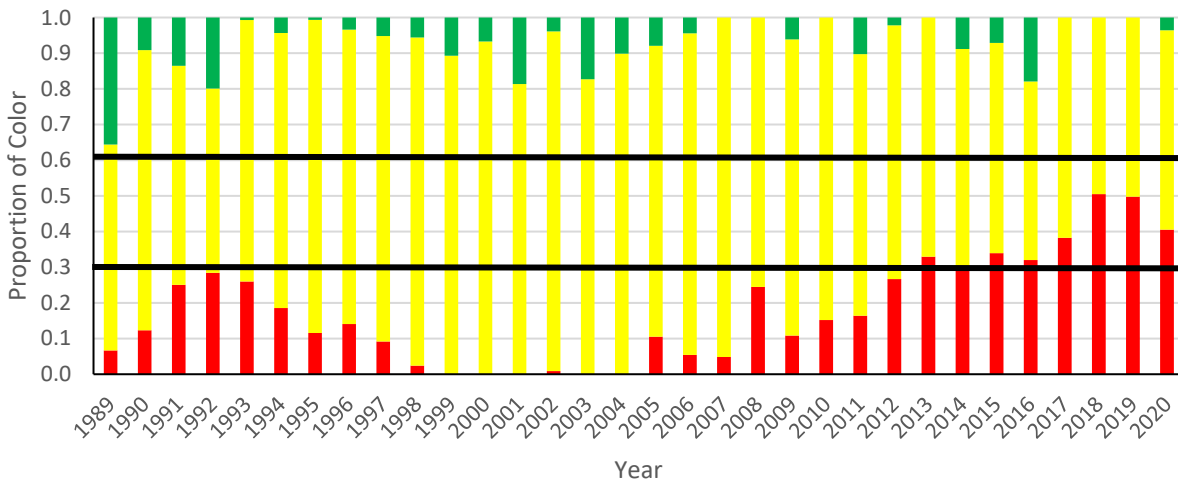
**Figure 1. Atlantic croaker commercial and recreational landings (pounds) from 1981-2020.** (See Tables 2 and 3 for source information. Commercial landings estimate for 2020 is preliminary. Reliable recreational landings estimates are not available prior to 1981. Recreational landings estimates are based on the mail-based Fishing Effort Survey.)



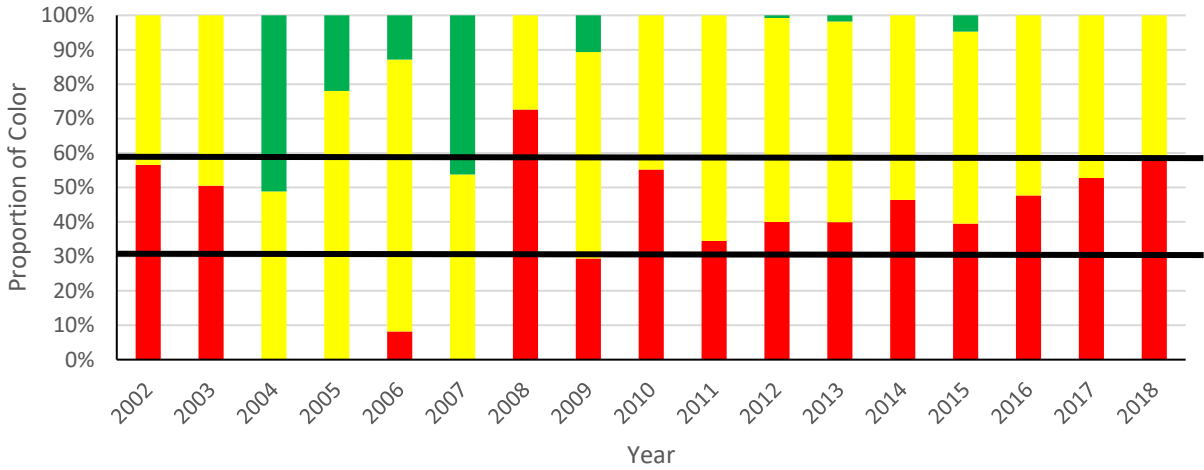
**Figure 2. Recreational catch (landings and alive releases, in numbers) and the percent of catch that is released, 1981-2020, based on the mail-based Fishing Effort Survey calibration.** (See Tables 4 and 5 for values and source information.)



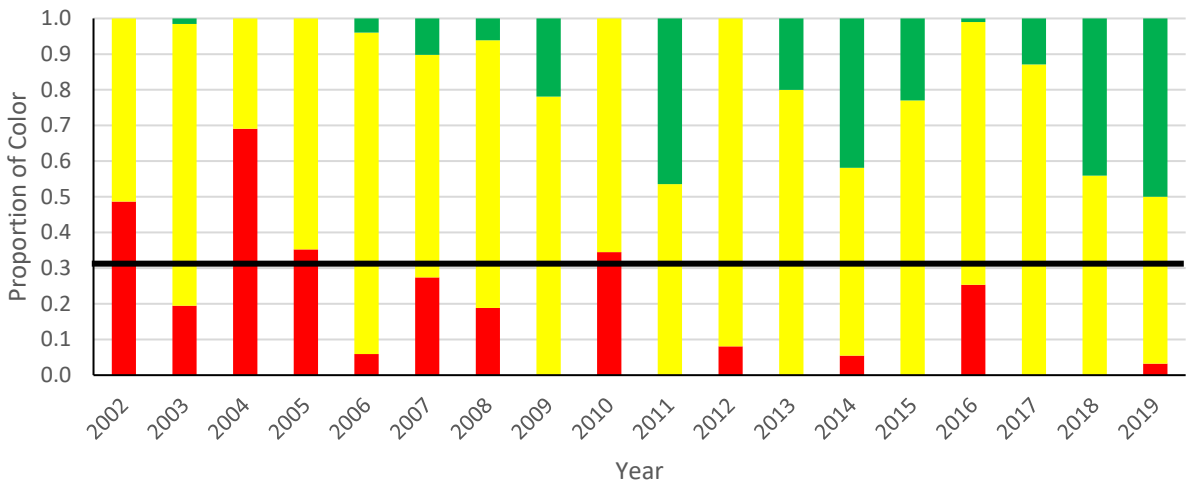
**Figure 3. Annual color proportions for harvest composite TLA of Mid-Atlantic region (NJ-VA) for Atlantic croaker recreational and commercial landings using a 2002-2012 reference period**



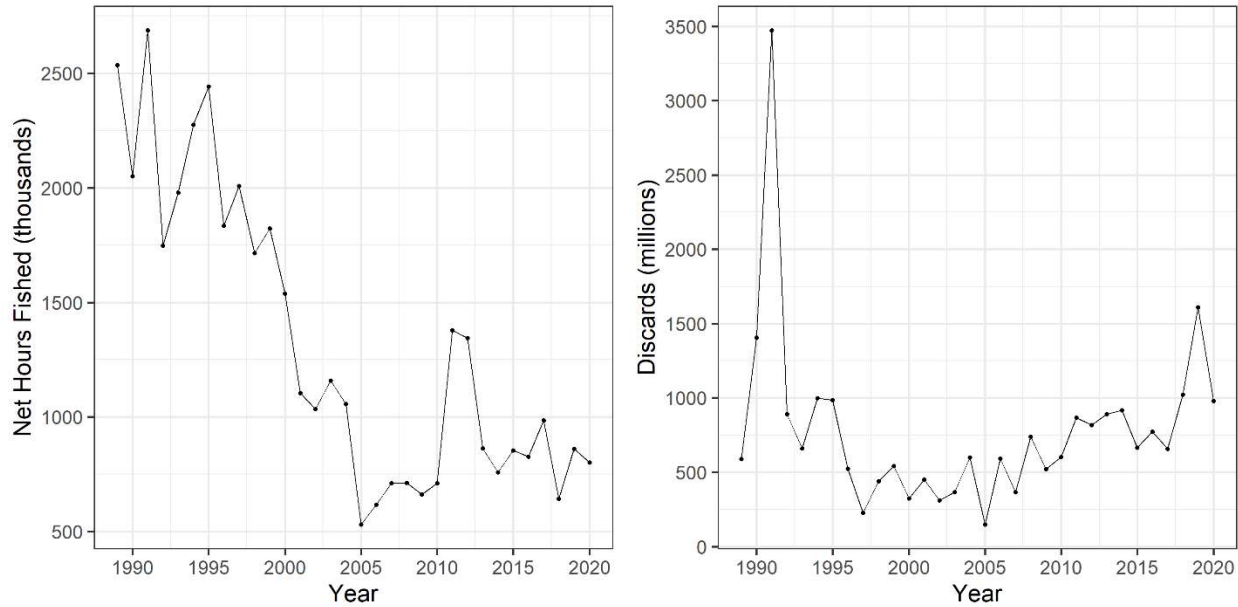
**Figure 4. Annual color proportions for harvest composite TLA of South Atlantic region (NC-FL) for Atlantic croaker recreational and commercial landings using a 2002-2012 reference period**



**Figure 5. Adult (age 2+) Atlantic croaker TLA composite characteristic index for the Mid-Atlantic (NJ-VA; NEFSC and ChesMMAP surveys). This figure is unchanged from last year due to the recalibration effort of ChesMMAP.**



**Figure 6. Adult (age 2+) Atlantic croaker TLA composite characteristic index for the South Atlantic (NC-FL; SEAMAP and SCDNR trammel survey). This figure is unchanged from last year due to the recalibration effort of ChesMMAP.**



**Figure 7. Total net hours fished (left) and discards of Atlantic croaker (right) in the South Atlantic Shrimp Trawl Fishery.**

**XI.  
Tables**

**Table 1. Summary of state regulations for Atlantic croaker in 2020.**

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: 2/15 to 12/15
VA	none	none
NC	recreational use of commercial gears with license and gear restrictions	none
SC	mandatory for-hire logbooks, small Sciaenidae species aggregate bag limit of 50 fish/day	none
GA	25 fish/day	25 fish/day limit except for trawlers harvesting shrimp for human consumption (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, 2011-2020.**

(Estimates for 2020 are preliminary. Sources: 2021 state compliance reports for 2020 fishing year and for years prior to 2020, personal communication with ACCSP, Arlington, VA, except PRFC [compliance reports only].) Note that Georgia does not have a commercial fishery for Atlantic croaker.

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL	Total
2011	C	C	714,347	243,196	5,415,432	5,054,186	C		47,649	11,933,396
2012	C	C	915,432	273,849	6,842,005	3,106,616	C		74,527	11,582,978
2013	C	C	820,777	130,285	6,237,602	1,927,938	C		76,463	9,538,901
2014	265,166	C	443,661	177,777	4,697,381	2,629,908	C		45,587	C
2015	C	C	294,038	118,996	4,426,957	1,819,007	C		39,096	6,784,146
2016	C	C	101,949	168,889	3,825,737	2,092,287	C		57,538	6,302,799
2017	C	C	42,958	114,319	2,822,005	1,008,015	C		43,033	4,032,993
2018	C	C	44,306	16,561	2,450,984	1,643,646	C		54,409	4,210,715
2019	C	C	2,865	C	595,434	1,278,340	C		68,179	1,945,723
2020	C	C	1,857	601	147,026	570,453	C		84,906	806,781

C: Confidential data

**Table 3. Recreational harvest (pounds) of Atlantic croaker by state, 2011-2020.** (Sources: 2021 state compliance reports for 2020 fishing year and for years prior to 2020, personal communication with ACCSP, Arlington, VA)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
2011	50,153	123,487	1,188,916	4,584,599	360,390	583,280	38,219	995,506	7,924,550
2012	259,645	147,737	1,980,417	4,664,264	307,338	30,149	29,815	1,063,337	8,482,702
2013	1,637,516	253,447	1,581,384	6,442,166	453,881	84,248	89,781	642,887	11,200,818
2014	750,580	427,615	1,265,217	4,354,046	758,751	104,434	138,423	712,090	8,511,554
2015	263,749	189,320	871,596	3,514,410	557,735	181,909	248,431	881,185	6,708,335
2016	7,133	10,959	407,010	2,998,022	443,728	81,896	116,313	1,893,203	5,958,264
2017	0	26,441	238,659	3,383,057	237,160	310,621	100,565	555,389	4,851,892
2018	34,125	5,859	191,854	2,245,518	164,644	81,251	83,258	445,663	3,252,172
2019	973	23,973	38,895	995,491	224,337	133,227	97,791	358,941	1,873,628
2020	16,358	21,870	91,047	2,410,612	223,685	230,205	77,876	1,072,714	4,144,367

**Table 4. Contribution of imputed harvest rate data from 2018 and 2019 for 2020 MRIP harvest estimates of Atlantic croaker.**

State	2020 Harvest (A+B1) Total Weight (lb)	PSE	Contribution of Imputed Data to Total Harvest Rate
NEW JERSEY	16,358	60.6	70%
DELAWARE	21,870	26.8	33%
MARYLAND	91,047	36.9	0%
VIRGINIA	2,410,612	20.2	50%
NORTH CAROLINA	223,685	20.6	21%
SOUTH CAROLINA	230,205	19.1	2%
GEORGIA	77,876	41.4	13%
FLORIDA	1,072,714	27.5	3%

**Table 5. Recreational harvest (numbers) of Atlantic croaker by state, 2011-2020.** (Sources: 2021 state compliance reports for 2020 fishing year and for years prior to 2020, personal communication with ACCSP, Arlington, VA)

<b>Year</b>	<b>NJ</b>	<b>DE</b>	<b>MD</b>	<b>VA</b>	<b>NC</b>	<b>SC</b>	<b>GA</b>	<b>FL</b>	<b>Total</b>
2010	142,887	207,601	2,994,889	12,961,723	1,280,446	88,399	121,252	470,168	18,267,365
2011	91,014	212,613	1,530,723	8,891,276	873,659	949,132	129,941	2,593,963	15,272,321
2012	830,891	202,283	2,565,599	8,786,350	848,495	132,264	104,944	2,190,268	15,661,094
2013	2,707,410	530,236	2,308,987	12,517,286	1,300,804	336,140	264,984	1,332,465	21,328,324
2014	852,733	806,256	2,197,125	9,533,829	1,935,961	600,482	289,781	1,359,207	17,576,096
2015	339,021	334,676	1,738,576	8,024,381	1,437,019	555,263	790,014	2,429,723	15,648,673
2016	8,236	24,546	659,318	7,276,719	1,109,570	268,470	402,254	3,553,777	13,302,890
2017	0	65,606	423,790	7,644,516	666,930	765,227	371,301	969,146	10,906,516
2018	104,321	12,370	305,469	5,472,329	472,917	335,833	241,382	1,176,999	8,121,620
2019	3,031	53,048	69,771	3,055,510	651,268	593,475	332,073	801,751	5,559,927
2020	58,097	54,193	244,788	6,529,494	673,377	827,904	232,535	2,010,168	10,630,556

**Table 6. Recreational releases (number) of Atlantic croaker by state, 2011-2020.** (Sources: 2021 state compliance reports for 2020 fishing year and for years prior to 2020, personal communication with ACCSP, Arlington, VA)

<b>Year</b>	<b>NJ</b>	<b>DE</b>	<b>MD</b>	<b>VA</b>	<b>NC</b>	<b>SC</b>	<b>GA</b>	<b>FL</b>	<b>Total</b>
2010	380,916	1,056,528	3,060,983	13,470,836	4,571,287	621,497	651,984	1,014,552	24,828,583
2011	252,419	214,603	937,220	14,160,124	7,005,152	1,187,686	748,696	2,559,976	27,065,876
2012	3,336,964	1,036,383	7,090,976	15,140,369	3,878,710	1,070,703	781,302	2,999,225	35,334,824
2013	2,980,744	1,811,661	7,557,223	18,480,099	6,729,556	3,754,143	1,361,943	1,265,571	44,025,744
2014	703,031	1,396,970	2,806,693	10,314,405	10,347,332	4,742,718	2,057,898	2,265,961	34,635,008
2015	240,840	309,389	1,236,293	6,815,343	9,632,560	3,236,774	1,320,939	2,451,253	25,243,391
2016	139,085	390,655	726,662	6,993,470	7,254,382	5,233,835	1,178,630	4,073,001	25,989,720
2017	152,540	230,455	2,829,255	8,464,305	4,631,445	4,755,853	1,059,539	1,770,846	23,894,238
2018	144,637	85,424	203,081	5,359,179	4,311,368	5,568,892	1,403,560	1,072,381	18,148,522
2019	33,333	101,523	1,243,785	6,642,685	3,634,211	3,768,288	1,893,287	2,259,705	19,576,817
2020	147,494	286,780	2,870,268	6,223,025	5,560,605	12,921,019	1,696,852	2,057,158	31,763,201